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Encyclopedia of Aging and Public Health

Sana Loue
Martha Sajatovic
Editors

 Springer

Encyclopedia of Aging and Public Health

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Encyclopedia of Aging and Public Health

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With 10 Figures and 19 Tables

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ISBN-13: 978-0-387-33753-1

This publication is available also as:

Electronic publication under 978-0-387-33754-8 and

Print and electronic bundle under ISBN 978-0-387-35419-4

Library of Congress Control Number: 2007931335

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Editor: Bill Tucker, New York; Thomas Mager, Heidelberg

Development Editor: Susanne Friedrichsen, Heidelberg

Production Editor: Christian Kopecki, Frank Krabbes, Heidelberg

Cover Design: Joseph Piliero, NYC; Erich Kirchner, Heidelberg; Frido Steinen-Broo, Barcelona, de'blik, Berlin

springer.com

Printed on acid-free paper

SPIN: 11426011

2109 –5 4 3 2 1

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Preface

Health issues in the context of aging are becoming an increasing concern to individuals, health care providers, and health care systems. This is, to a large extent, a result of the increasing prominence of persons aged 50 and older who comprise the global population. Not only has the number of older persons in the world tripled over the past 50 years, but it is expected to more than triple again over the next 50 years. In fact, the older population is growing at a faster rate than the total population in almost all regions of the world!

As an example of this growth, consider the following. In 1950, only three countries in the world—China, India, and the United States—had more than 10 million people aged 60 years and older. In 2000, the number of countries with more than 10 million individuals aged 60 or older increased to 12. It is anticipated that by the year 2050, 33 countries will have more than 10 million people who are 60 years of age or older; of these, 5 countries will likely have more than 50 million people who are 60 years old or older.

This *Encyclopedia* focuses on issues of concern to individuals aged 50 years and older. Full-length chapters provide an in-depth examination of foundational issues including the biology of aging, the demographic characteristics of the U.S. aging population, legal issues critical to older persons, the participation of cognitively impaired older persons in research studies, and the development of competencies in order to meet the varying health needs of a diverse older population.

These full-length chapters are followed by an alphabetical listing of encyclopedia entries on health issues that are relevant to adults aged 50 years and older, which together address diverse aspects of life as a mature adult: theories of aging, illness, health care, diagnostic procedures, legal issues, recreational opportunities, relationships, sexuality, and personal hygiene. Each entry has been authored by one or more experts in the relevant field. Together, these chapters and entries provide a multi-faceted perspective of the aging experience.

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1 Biology of Aging

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Aging is a complex developmental process that is, as yet, poorly understood. From a physical perspective, aging involves a loss of resilience or reserve capacity to respond to stressors, and this acquired vulnerability usually means that aging is associated with some greater susceptibility to illness as well as some decline in function over time. Nevertheless, the effects of aging are highly variable; some men and women are still running races at the age of 82, while others are frail and bed-bound in a nursing home. In this brief overview, the physiology of aging in the major organ systems, what is known about the human life span, and different theories of aging are outlined.

Physiology of Aging

We have learned a great deal about aging physiology and which biological parameters change with age through the Baltimore Longitudinal Study on Aging, sponsored by the National Institute of Aging (NIA). This study has tracked a group of older persons for about half a century. It confirms that the most important physiological changes that accompany the aging process may relate primarily to disease susceptibility. Some clinical measures, such as laboratory tests for anemia or liver functioning, remain consistent for early and later adulthood. Nevertheless, there are patterns associated with aging in the various systems of the body, as described below.

Cardiovascular System

The cardiovascular system involves the heart and the blood circulatory pathways (e.g., arteries and veins) in the body. The heart rate at rest is generally unchanged with age. However, there is a reduced maximal heart rate in response to exercise among elderly subjects. This occurs even in older persons who are aerobically fit and have no evidence of underlying cardiac disease. Thus, the 82-year-old master athlete will likely run a marathon more slowly than he did in his younger years. Although his ability to pump blood throughout his body is unchanged when he is resting, he cannot reach the levels of cardiac output while running that he once did.

The left ventricle of the heart fills more slowly in older persons and becomes stiffer; this predisposes aging adults to heart failure. Older persons are more at risk of becoming overloaded with fluids (“volume overload”) when they have excess salt in their diets or when their blood pressure is uncontrolled. In addition, there is an increased stiffness of the blood vessels with aging, as the walls of the major arteries thicken and lose their elasticity. This greater rigidity predisposes older persons to increased blood pressure and to atherosclerosis. It also decreases the responsiveness of the automatic mechanisms in the body that help regulate blood pressure. These alterations, combined with a decreased ability to achieve a more rapid heart rate when needed, make older persons more susceptible to drops in their blood pressure (“hypotension”), e.g., when they are dehydrated.

Respiratory System

With age, the chest wall stiffens, which affects the compliance and elasticity of the lungs. Further contributing factors are osteoarthritis of the spine and calcification of the cartilages of the rib cage. Thus, a 70-year-old “healthy” man has about 50% of the lung function of a 30-year-old man, who himself is probably at the peak of his lung functioning. The energy expenditure of breathing is increased, although the lungs maintain adequate exchange of oxygen and carbon dioxide. There is only a slight decrease in the concentration of oxygen in the arteries of older adults (Janssens 2005).

In normal aging, these changes cause less respiratory “reserve” and make older persons more likely to experience shortness of breath with any illness. Older persons are also more susceptible to severe respiratory consequences from the same influenza viral infection that may cause only minor illness in younger family members. This increased susceptibility to morbidity from respiratory illness is the reason why physicians target older persons for influenza and pneumococcal vaccinations.

Renal and Urinary Systems

One of the most clinically significant changes in older adults is a decline in ability to maintain salt and water balance in response to stress (Hodak and Verbalis 2005). Maintaining this balance is an important function of the kidneys. Blood volume in the human body is already decreased with aging. The older kidney loses its ability to concentrate urine in response to acute volume losses, such as bleeding in the gastrointestinal tract or dehydration. This may be coupled with a decrease in the sensation of thirst, as the special nerve endings (“osmoreceptors”) that help regulate this function are less robust in signaling to the brain to initiate water-seeking behavior. Therefore, a 90-year-old woman who begins vomiting from a viral gastroenteritis is more likely to become dehydrated and develop acute renal failure from the illness than her 30-year-old counterpart. This older patient is also more likely to be admitted for hypernatremia, or increased sodium levels in the blood. The proportion of sodium and other elements of blood (“electrolytes”) is delicate, and disturbance of this balance may create increased risk of mortality from a viral illness that is usually self-limited in younger persons.

With age, there is also a loss of the diluting capacity of the kidney and a reduction in the ability to excrete excess water in the face of fluid overload. This makes management of an older person, who requires intravenous (IV) fluids for dehydration, more difficult than that of a younger person. This loss in dilutional capacity of the kidney is partially due to a decline in the filtration ability of the kidney. This decline does not seem to occur inevitably with aging, but does seem to occur in about 70% of persons after the age of 65. This change also affects the metabolism of drugs that are cleared by the kidney.

The capacity of the bladder decreases with age, and so older persons are less able to hold their urine voluntarily. This problem is compounded by enlargement of the prostate in older men, which also contributes to the urgency of voiding. The force of bladder contractility declines, so that more urine remains in the bladder of both men and women after voiding. This predisposes both sexes to an increased incidence of urinary tract infections. Older women are also more susceptible to infections because of thinning of the vaginal wall and the tissues of the urethra after menopause. Interestingly, older persons also tend to produce more urine at night, which is thought to be related to changes in the daily rhythm of hormones (antidiuretic hormone or ADH) that help regulate urine production.

Endocrine System

The endocrine system refers to the body’s hormonal production and regulation. Much attention has been focused on the hormonal changes that occur with aging. There is a decline in growth hormone (GH) levels among elderly persons, with a decline in both GH secretion and serum GH concentration. This decline in GH is thought to contribute to a decrease in lean body mass and muscle strength, a thinning of the skin and bones, and an increase of fat in older adults. Studies have shown conflicting results as to whether replacement of GH in older persons can lead to permanent reversal of these changes without untoward side effects.

Insulin resistance increases with age, so that older persons are more likely to present with hyperglycemia with acute illness, even if they were not previously known to be diabetic. This insulin resistance with aging seems to be independent of the degree of body fat or physical activity. Parathyroid hormone levels increase with age, making older persons more susceptible to hypercalcemia. There is no decline with age in serum total or free thyroxine concentrations. Thyroxine clearance does decrease with age, and this is why older patients with hypothyroidism often require lower starting doses of thyroid-replacement therapy.

Dehydroepiandrosterone (DHEA) is a hormone that decreases with aging. DHEA is produced by the adrenal cortex, and although its function in the body is unclear, it appears to be a chemical compound needed in the production of androgens and estrogens, the major sex hormones. Yet, researchers are studying it closely. In 80-year-old men and women, the serum concentration of DHEA is only 20% of that seen in 20-year-olds. Its effect on aging is unknown, and studies have shown some potential adverse effects with supplementation.

Skin

The skin is a very important “system” of the body. With age, there is a thinning of the epidermis and dermis, with wrinkling and increased laxity of the skin. This is independent of ultraviolet light exposure. There is also decreased vascularity of the skin. These changes make the skin more susceptible to friction injury and shearing forces, sometimes leading to “skin tears” as a result of minimal trauma in frail older persons. There is a decrease in the healthy turnover of the outer layer of the skin (the “epidermis”) and as a result, skin tends to be drier, with itching and cracking more common. Hair grows more slowly. Graying of hair is variable but does occur in all persons to some extent, as the number of melanocytes in hair bulbs decreases over time. There is a loss of subcutaneous fat, which may contribute to greater susceptibility to deep sores (decubitus ulcers) over pressure points such as the sacrum and heels.

Gastrointestinal System

The lining of the stomach secretes less acid with age, but this does not appear to affect digestion. Associated thinning of the gastric mucosa may decrease absorption of nutrients, making B12 vitamin deficiency more common with age. There is often a change in the timing and coordination of swallowing (“esophageal motility”), which may predispose to pill-induced esophagitis. Colonic function also declines so that older persons are more likely to experience constipation.

Brain and Sensory Systems

There is a slight shrinking of the brain with aging. Thus, on brain imaging, it is common to see some degree of cerebral atrophy in those who are over 80 years of age.

Additionally, there is a decline in sleep efficiency with aging, which is described as the ratio of time spent asleep to time in bed. Insomnia is thus a common complaint of the elderly. Multiple awakenings at night, some of which can be prolonged, are common.

Thermoregulation, the body’s maintenance of a constant body temperature, is altered with age, increasing the risk of both hypo- and hyperthermia. Older persons have decreased sweating also, which predisposes them to severe consequences of extreme temperatures.

Vision and hearing are likely to decline with aging. For instance, there are changes in the lens of the eye with age, as there are modifications in lens proteins. This leads to a thicker and more opaque lens, what can become clinically symptomatic as a cataract. Sensitivity to sound (i.e., auditory stimuli), especially in certain ranges, may decline, although these changes may be amenable to intervention and should be carefully evaluated.

In the sixth and seventh decades, there is a sharp decline in the sense of smell. The cause of this is multifactorial as the cells and cilia of the olfactory epithelium decrease in number and function (Seiberling 2004). Taste is also affected with age, but anatomic changes are less impressive, and may be related to changes in the taste cell membrane rather than to loss of taste buds. There is a greater reduction in the ability to detect salty/bitter tastes than sweet tastes. Older persons may therefore tend to add more salt to foods, which may in turn exacerbate hypertension or congestive heart failure.

Musculoskeletal System

Lean muscle mass and strength declines by the fourth decade. This has been demonstrated by cross-sectional imaging with CT scan. By the age of 70, muscle mass declines by about 25%, unless resistance training and exercise combats the decline.

Bone mass decreases with age, after reaching a maximum in the second decade. Bone loss is accelerated during menopause, when it can increase to 2–3% per year.

Life Span

Understanding the underlying physiology of aging may help practitioners to target therapies to help patients live both healthier and longer lives. It is thus important to understand the biological influences on life span.

The maximum life span is species-specific, and it is believed to represent the way in which organisms balance their ability to survive and reproduce in a competitive environment. In many organisms, this balancing act may represent what some biologists feel are evolutionary pressures for a minimally successful life. Field mice live only a few days, and most die from cold exposure. These mice invest their available energies in maintaining their body temperature and reproducing to maintain their species. They do not have sophisticated DNA repair-and-maintenance mechanisms for their cells as humans do, who survive much longer. In fact, the ability to repair ultraviolet (UV) radiation to DNA is directly related to a species' maximum life span (Hart and Setlow 1974).

The longest living human on record is now recognized to be Madame Jean Calment of France, who died at the age of 122 years in 1997. Average life expectancy has increased dramatically over time, gaining nearly 30 years in the past century. In 1900, the average life expectancy was less than 50 years. Today it stands at 77 years (see [Table 1](#)). The most dramatic advance occurred because of improvements in sanitation and the treatment of infections. Advances in treatment of cardiovascular disease caused gains during the past decade.

Table 1
Expectation of life at birth

Year	Average expectation of life (years)
1970	70.8
1980	73.7
1990	75.4
2000 (projected)	77.1
2010 (projected)	78.5

Source: U.S. Census Bureau, Population Division, Working Paper No.38. U.S. Center for Vital Statistics of the United States, Annual, and National Vital Statistics Reports (NSVR).

But can this trend continue? Experts project that the maximum life span will remain at 90–100 years. Even if we eliminated the top 10–15 causes of death, including cardiovascular disease, cancer, and kidney disease, demographers feel that we would not gain more than another 20 years of life expectancy. The rate of infant mortality will not decline, because of congenital disease and accidental death, and to reach an average life expectancy of 100 years, experts feel would require the elimination of all mortality before the age of 85 (Kinsella 2005).

Research has given some interesting clues about how the human life span may be lengthened. One of the interventions known to reliably extend life span in animal models ranging from *Drosophila* flies to primates, such as the rhesus monkey, is calorie restriction (CR). What is meant by CR is underfeeding without malnourishment. Most studies involved severely restricting calories (up to 40% of what animals would eat freely), while still providing essential minerals and vitamins. CR can increase both the average and maximum life spans of mice and

rats by more than 50% (Weindruch and Walford 1988). Even more important perhaps is the fact that CR seems to delay physiological and pathological changes usually seen with aging. Diet-restricted animals show less aging in hormonal, immune, and cardiac function and less cancer than animals that are allowed to eat freely. They do, however, show a decrease in reproductive abilities.

The underlying mechanism for the increase in life span is not entirely clear, and likely represents how inherent genetic/developmental determinants can be manipulated by environmental factors. It likely represents an interaction of changes at the molecular, cellular, and system levels. It does not seem to be related only to an alteration in metabolic rate (McCarter and Palmer 1992). The model of CR may also help to demonstrate how many of the theories of aging overlap. Genetic theory may be involved. When gene expression is compared in calorie-restricted animals and normally fed animals, there are a number of genes that show altered expression (Koubava and Guarente 2003). Some of these genes likely affect the insulin growth factor-1 (IGF-1) pathways. The oxidative stress theory may also help explain the benefits of CR (Sohal and Weindruch 1996). There is some evidence that oxygen consumption is lowered by CR, thus oxidative stress is lowered and there is less production of reactive oxygen species (ROS). This leads to less cellular damage and cross-linking of proteins. Hormonal factors may also be involved, as there is evidence that GH levels may be affected by CR.

There are ongoing studies in rhesus monkeys on the physiological effects of CR (Roth 2005). There is even NIA sponsored research with trials of CR (20–30% reduction) in young and middle-aged persons to see the effects on aging in humans.

Theories of Aging

Given that aging is complex, there exist many theories that attempt to explain the concept (see [Table 2](#)). Animal models have served as the basis for much of what is currently known about the aging process. Not one unifying

Table 2

Selected theories of aging

Evolutionary	
Disposable soma	Selective pressures for reproduction; body is disposable once this occurs
Antagonistic pleiotropy	Antagonism between genes beneficial for reproduction but not for longevity
Molecular	
Genetic	Changes in gene expression affect longevity and aging
Somatic mutation	Damage occurs to DNA over time, affecting transmission of genetic material
Cellular	
Wear and tear	Damage accumulates to cells over time
Free radicals	Oxidative metabolism produces free radicals toxic to DNA and proteins
Telomere shortening	Shortening of telomeres with time permanently affects cell division (senescence)
System	
Neuroendocrine	Master biological clock controls hormones and body's ability to react to stress
Immune	Immune function declines with age, increasing risk of cancer and infection

theory for the mechanism of aging exists, and the translation from short-lived animal models to human models is not ideal. Aging involves changes at the molecular, cellular, and system levels and is influenced by developmental, environmental, and “chance” factors.

Genetic Theory

Is longevity genetically based? The fact that longevity is species-specific seems to support an underlying genetic component. Centenarians are currently being studied by researchers to unravel the mystery of longevity, as their

siblings and children are also likely to live longer. If the reason why siblings of centenarians are much more likely to live to age 100 themselves was entirely due to socioeconomic or environmental factors, that advantage should decline with age (Perls and Dellara 2003).

In animal models such as the nematode and the *Drosophila* fly, single-gene mutations have been associated with longevity. There is a line of *Drosophila* with a specific gene mutation nicknamed “Methuselah” (Lin et al. 1998), which show an approximately 35% increase in average life span. They also show an increased resistance to stress, including starvation and higher temperatures. In mice, there seems to be a link between longevity and genes that encode for a hormone, IGF-1, which is an insulin-like hormone that influences the rate of growth. Lower levels of IGF-1 seem to be associated with longevity in multi-model systems. In mice, the shorter, smaller, lighter-weight animals are the ones that live the longest. Mice with higher levels of IGF-1 die younger, and tend to be heavier and larger animals at 3 months of age (Miller 2005). Shutting off insulin-signaling pathways in nematodes also makes them live longer (Kimura et al. 1997).

Are there human longevity genes? There is an ongoing New England Centenarian Study that includes genome studies to look at links for genes that may be associated with longevity in centenarians and their families. There does seem to be a locus on chromosome 4 that is common to many long-lived families, but studies are ongoing and attempts to replicate prior studies continue (Puca et al. 2001).

The genetic puzzle remains complicated for researchers and is unlikely to be the only underlying explanation for aging. For example, baboons and humans share about 97% of their genes, yet baboons live for about 20 years and humans about 80 years. Experts foresee that what we have learned about genes and longevity is unlikely to lead to gene therapy or other types of genetic manipulation to extend life. Instead, it is likely to help provide clues about how the cells of our bodies work. We are more likely to use this knowledge to design drug therapies that might slow down the process of aging (Miller 2005).

DNA Maintenance and Repair Mechanisms

Some “evolutionary” models of aging (Kirkwood 1988) focus on the balance that must exist between the need of a species to reproduce and the disposability of the organism once this occurs (Disposable Soma Theory). For example, the cells of the human body accumulate damage to their DNA over time, and humans must invest some energy into maintenance-and-repair mechanisms. Despite these attempts at repair mechanisms, damage eventually accumulates in key molecules in the cell. This causes some cells to permanently stop dividing, a term called senescence. Some say that this process is ultimately protective, as abnormal cells cannot survive and replicate to produce a cancer (Campisi 2005). This process may be genetically driven, so that some genes guide early reproduction and are advantageous in early life, but can be “pro-aging” to prevent cancer later on. This is a concept referred to by the term “antagonistic pleiotropy.”

Free Radical Theory

A specific form of the “wear and tear” theory, where accumulated debris in cells leads to their malfunction and death, is the free radical theory. This theory was first proposed by Harman (1956). The mitochondria, where energy is produced in human cells, produce vital energy. However, this process is tied to the production of what is termed ROS. These are unstable compounds, such as superoxide or hydroxyl radicals, that can combine with cell components and lead to damage to DNA and proteins (Finkel and Holbrook 2000). Species with longer life spans produce more superoxide dismutase, an enzyme that inactivates ROS.

One of the specific ways ROS cause damage is by producing cross-linking of proteins. These cross-links increase with age and alter especially long-lived proteins such as collagen and elastin, which can lead to stiffening of the arteries and heart (Lakatta and Levy 2003a, b). Cross-linked proteins are often not functional and cannot be cleared by the usual system for dealing with damaged protein in the cell. Thus, they accumulate and can contribute to damage or disease. One specific example of cross-linking is the reaction between glucose in cells

and an amino group found in proteins, a process known as “glycation.” One of the underlying theories for why diabetic patients show premature aging is that hyperglycemia or increased sugar levels leads to increased ROS in the cells that line the aorta and thus causes premature atherosclerosis.

Cellular Aging and Senescence

A recurring theme in aging is maintenance and repair, and this goes on also at the cellular level. Cell turnover is a way of ensuring healthy cells. However, normal human cells will not divide forever, even in culture in the laboratory. After a defined number of cell divisions, cells enter a non-dividing state termed senescence. Thus, cells seem to be able to “count” the number of their divisions rather than the time that passes.

What is responsible for this process? Is there a master biological clock? Some feel that what may be responsible for this counting mechanism are telomeres and their process of shortening over time. Telomeres are caps at the end of chromosomes that become shorter with every cell division. This process is what is thought to keep human cells from becoming immortal and from dividing indefinitely in culture. This is thought to take place because, after a defined number of cell divisions, critically shortened telomeres generate a “DNA-damage signal,” which causes the cell to enter senescence (Wright and Shay 2005).

There is, however, a mechanism to counteract this process by an enzyme called telomerase, which is able to “add back” parts of telomeres that are lost. Telomerase is turned off in most cells of the body early on in life so that they are not immortal. Cells meant to keep dividing, such as stem cells of the bone marrow, do have active telomerase. In the 1990s, it was discovered that introducing telomerase into non-stem cells of the human body could make them immortal in cell culture (Bodnar et al. 1998).

Cancer cells, in nearly 90% of cases, show abnormal expression of telomerase, and this is thought to be one of the underlying reasons why the abnormal cancer cells can survive and replicate. Introducing telomerase into normal cells does not, however, turn them into cancer cells.

Higher levels of telomerase expression in cancer cells correlate with a worse clinical prognosis. One of the challenges for researchers is to find ways to inhibit telomerase in cancer cells, as this may ultimately make cancer cells more responsive to chemotherapy and other anti-cancer therapies (Wright and Shay 2005).

Telomere length may also correlate with human longevity. A study looking at telomere length in peripheral blood smears showed that longer telomeres were associated with a lower risk of death (Cawthon et al. 2003).

Telomeres shorten not only with cell replication, but can also shorten with oxidative stress (Von Zglinicki 2002). This serves as one example of how multiple theories of aging interact. Another example is demonstrated by how telomere activity may be modulated by genes. The *p53* gene may be a mechanism for “controlling” cell senescence. It is an example of “antagonistic pleiotropy,” as it may be “anti-tumor” early on in life (thought in the evolutionary sense to promote reproduction) and “pro-aging” later on. In mice models, too little *p53* expression results in death from cancer early on (Chin et al. 1999). Too much *p53* gene expression results in accelerated aging with development of premature osteoporosis, weight loss, and decreased wound healing (Tyner et al. 2002). This again demonstrates the theory that cell senescence may actually be protective, and aging may be the price that we pay to avoid cancer (Campisi 2005).

Cell Death: Necrosis and Apoptosis

While cellular senescence, or a permanent withdrawal from cell division, may be a mechanism to prevent the development of cancer, cell death may represent another way in which the body protects itself from abnormal cells. Cell death can take two forms including necrosis and apoptosis (Kumar et al. 2005). Necrosis is thought to result from massive cell injury that is accidental and is always pathological. An example would be when cells of the heart muscle undergo necrosis because of ischemia, or lack of blood flow, during a myocardial infarction. Apoptosis is more of a controlled cell death, what some call “programmed” cell death, in response to a stimulus. It is thought to be genetically driven. In contrast to necrosis, apoptosis is thought to be physiological, and may be

a means of ridding the body of unwanted cells. An example of this is seen in the immune system, whereby T lymphocytes undergo cell death in what is thought to be a reaction to the recognition of self-antigens that might cause autoimmune diseases (Troen 2003). Death of neuronal cells is seen in many degenerative diseases, including Alzheimer's disease.

Neuroendocrine/Immune Theory

Some biologists feel that the nervous, endocrine, and immune systems coordinate all the other systems in the body, and that aging is tied to an overall declining ability to deal with stressors (McEwen 2003). Some believe that the master "biological clock" is ultimately in the hypothalamus in the brain, and that it is responsible for aging through hormonal pathways. There are decreases in hormones with normal aging, most notably the reproductive hormones such as estrogen and testosterone. There are also decreases in growth factors and in secretions of other hormones that affect the older individual's ability to deal with stressors such as infection or dehydration.

There is evidence that immune function declines with age. The function of T lymphocyte cells declines, increasing the chances of developing infection and cancer. This may be caused by an alteration in cytokines, which are molecules responsible for communication between immune cells.

Models of Premature Aging

There are examples of premature aging in humans that may teach us about the biology of aging. The term progeria literally means "premature aging."

Werner's Syndrome

In Werner's syndrome or "adult progeria," features of aging are first seen at puberty. Usually, affected children are of normal height in elementary school, but then fail to have an adolescent growth spurt. They develop many features typical for aging early on in life. They develop early cataracts, although not in the same part of the lens of the eye usually seen in older persons. They have typical skin changes with aging, such as tightening and skin fragility, and graying and thinned hair. They usually suffer from osteoporosis, early menopause, myocardial infarctions, diabetes mellitus, and cancer. Death is usually from a myocardial infarction or cancer, at a median age of 47 years. Interestingly, they do not usually develop Alzheimer's disease or hypertension.

Werner's syndrome is an autosomal-recessive condition and the gene responsible lies on chromosome 8. It is thought to be from a single gene mutation of a DNA helicase, an enzyme thought to be involved in "unwinding" DNA (Gray et al. 1997). The DNA repair process appears to be normal, but initiation of DNA synthesis seems to be defective. Cells show normal length of telomeres but accelerated telomere shortening (Martin 2005).

Hutchinson–Gilford Syndrome

Classic "progeria" or Hutchinson–Gilford (HG) syndrome is a very rare condition that affects one-eighth million births (Sarkar and Shinton 2001). It is a syndrome of premature aging that begins within the first 2 years of life. Affected persons suffer from wrinkled skin, stooped posture, and growth retardation. They have absent sexual maturation but normal mental development. They have advanced atherosclerosis and usually die from a myocardial infarction by the age of 30, with an average life span of 12 years. Interestingly, unlike Werner syndrome patients, they do not usually develop cataracts, diabetes, or skin ulcerations. Like patients with Werner's syndrome, they also do not develop Alzheimer's disease, but do develop premature atherosclerosis. Therefore, both syndromes may offer clues to studying atherosclerosis.

Cells of patients with HG have shorter telomeres, and so they may have a shortened cellular “master clock.” Thus, their cells demonstrate a reduced ability to replicate and may allow DNA damage to remain un-repaired (Ahmed and Tollefsbol 2001).

Down Syndrome

Patients with Down syndrome also demonstrate premature aging. Down syndrome is secondary to a trisomy or a translocation on chromosome 21. Patients with Down syndrome often experience early vascular disease, diabetes, hair loss, osteoarthritis, and an increased incidence of cancer. Early dementia, in contrast to patients with Werner’s syndrome and HG, does occur in patients with Down syndrome. They have pathological changes in their brains similar to those that are seen in older patients with Alzheimer’s disease. This may be secondary to the fact that the B-amyloid gene is present on chromosome 21, which has been associated with the plaques and tangles typically seen on pathology in the brains of patients with Alzheimer’s disease.

Conclusions

Research into the biology of aging tends to focus on single mechanisms for aging. No theory clearly explains why some age successfully and some do not. We do not yet know all that we can do to keep our bodies’ homeostatic mechanisms in check, to avoid frailty, disability, and disease as we age. Additionally, it is unclear how studies done on short-lived animal models will translate to longer-lived humans. Experts in the biology of aging hope to use current research knowledge to help target future interventions. This may help us not only to live longer, but to age successfully as we do.

References

- Ahmed A, Tollefsbol T (2001) Telomeres and telomerase: basic science implications for aging. *J Am Geriatr Soc* 49:1105–1109
- Bodnar AG, Ouellette M, Frolkis M et al (1998) Extension of life-span by introduction of telomerase into normal human cells. *Science* 279:349–352
- Campisi J (2005) Senescent cells, tumor suppression, and organismal aging: good citizens, bad neighbors. *Cell* 120:513–522
- Cawthon RM, Smith KR, O’Brien E, Sivatchenko A, Keiber RA (2003) Association between telomere length in blood and mortality in people aged 60 years and older. *Lancet* 361:393–395
- Chin L, Artandi SE, Shen Q et al (1999) p53 deficiency rescues the adverse effects of telomere loss and cooperates with telomere dysfunction to accelerate carcinogenesis. *Cell* 97:527–538
- Finkel T, Holbrook NJ (2000) Oxidants, oxidative stress and the biology of ageing. *Nature* 408:239–247
- Gray MD, Shen JC, Kamath-Loeb AS et al (1997) The Werner syndrome protein is a DNA helicase. *Nat Genet* 17:100–103
- Harman D (1956) Aging: a theory based on free radical and radiation chemistry. *J Gerontol* 11:298–300
- Hart RW, Setlow RB (1974) Correlation between deoxyribonucleic acid excision-repair and life-span in a number of mammalian species. *Proc Natl Acad Sci USA* 71:2169–2173
- Hodak SP, Verbalis JG (2005) Abnormalities of water homeostasis in aging. *Endocrinol Metab Clin N Am* 34:1031–1046
- Janssens J (2005) Aging of the respiratory system: impact on pulmonary function tests and adaptation to exertion. *Clin Chest Med* 26:469–484
- Kimura KD, Tissenbaum HA, Liu Y, Ruvkun G (1997) Daf-2, an insulin receptor-like gene that regulates longevity and diapause in *Caenorhabditis elegans*. *Science* 277:942–946
- Kinsella KG (2005) Future longevity—Demographic concerns and consequences. *Journal of the American Geriatrics Society* 53(9S):S299–S303
- Kirkwood TB (1988) The nature and causes of aging. *Ciba Found Symp* 134:193–207
- Koubava J, Guarente L (2003) How does caloric restriction work? *Genes Dev* 17:313–321
- Kumar V, Abbas AK, Fausto N (2005) Robbins and Cotran: pathologic basis of disease, 7th ed. W.B. Saunders, St. Louis
- Lakatta EG, Levy D (2003a) Arterial and cardiac aging: major shareholders in cardiovascular disease enterprises. Part I. Aging arteries: a “set up” for vascular disease. *Circulation* 107:139–146
- Lakatta EG, Levy D (2003b) Arterial and cardiac aging: major shareholders in cardiovascular disease enterprises. Part II. The aging heart in health: links to heart disease. *Circulation* 107:346–354
- Lin YJ, Seroude L, Benzer S (1998) Extended life-span and stress resistance in the *Drosophila* mutant Methuselah. *Science* 282:943–946

- Martin GM (2005) Genetic modulation of senescent phenotypes in *Homo sapiens*. *Cell* 120:523–532
- McCarter R, Palmer J (1992) Energy metabolism and aging: a life-long study of Fischer 344 rats. *Am J Physiol* 263:E448–E452
- McEwen BS (2003) Interacting mediators of allostasis and allostatic load: towards an understanding of resilience in aging. *Metabolism* 52(10):10–16
- Miller RA (2005) Genetic approaches to the study of aging. *J Am Geriatr Soc* 53:S284–S286
- Perls T, Dellara T (2003) Understanding the determinants of exceptional longevity. *Ann Intern Med* 139(5):445–450
- Puca AA, Daly MJ, Brewster SJ et al (2001) A genome-wide scan for linkage to human exceptional longevity identifies a locus on chromosome 4. *Proc Natl Acad Sci USA* 98:10505–10508
- Roth GS (2005) Caloric restriction and caloric restriction mimetics: current status and promise for the future. *J Am Geriatr Soc* 53: S280–S283
- Sarkar PK, Shinton RA (2001) Hutchinson–Guilford progeria syndrome. *Postgrad Med J* 77:312–317
- Seiberling KA (2004) Aging and olfactory and taste function. *Otolaryngol Clin North Am* 37:1209–1228
- Sohal RS, Weindruch R (1996) Oxidative stress, caloric restriction, and aging. *Science* 273:59–63
- Troen BR (2003) The biology of aging. *Mount Sinai J Med* 70(1): 3–22
- Tyner SD, Venkatachalam S, Choi J et al (2002) p53 mutant mice that display early ageing-associated phenotypes. *Nature* 415:45–53
- Von Zglinicki T (2002) Oxidative stress shortens telomeres. *Trends Biochem Sci* 27:339–344
- Weindruch R, Walford RL (1988) The retardation of aging and disease by dietary restriction. Charles C. Thomas, Springfield, IL
- Wright WE, Shay JW (2005) Telomere biology in aging and cancer. *J Am Geriatr Soc* 53:S292–S294

Suggested Readings

- Hadley EC, Lakatta EG, Morrison-Bogorad M, Warner HR, Hodes RJ (2005) The future of aging therapies. *Cell* 120:557–567
- Kirkwood T (2005) Understanding the odd science of aging. *Cell* 120:437–447
- Weinert BT, Timiras PS (2003) Invited review: theories of aging. *J Appl Physiol* 95:1706–1716

Suggested Resources

- Longevity Consortium, involving large-scale human studies working in collaboration with basic-science researchers in the biology of aging. www.longevityconsortium.org
- NIA-supported Baltimore Longitudinal Study on Aging. www.grc.nia.nih.gov/branches/blsa/blsa.htm

2 The History and Demography of Aging in the United States

Gail E. Souare and Linda S. Lloyd

Introduction

Aging is a natural process that begins at birth and ends at death. Society often identifies aging with disease, disability, loss of mental capacity, and the final stages of life. However, the Baltimore Longitudinal Study of Aging (BLSA) demonstrated that the previously assumed “natural decline associated with aging” is not inevitable; increased activity and other health-promoting behaviors may prevent and even reverse these effects.

Therefore, it is essential to distinguish between the true effects of aging and those processes, including disease, that may appear or become more pronounced with time but are biologically irrelevant to the underlying mechanisms of human aging. The fact that chronic debilitating conditions may be in part preventable, demands that rehabilitation specialists, and particularly rehabilitation researchers, focus their efforts on the restoration, maintenance, and promotion of a healthy lifestyle. Key elements of a healthy lifestyle may well be the maintenance of an active and involved life, particularly the promotion of exercise and good nutrition and elimination of harmful behaviors.

Defining Aging

Who is old? Specific chronological markers for old age are arbitrary. The definition of “older adult” or “senior” varies, depending on different perspectives and purposes. For example, gerontologists traditionally focus on persons aged 60 years and older. The US federal government uses the age of 65 as a marker for full Social Security and Medicare benefits, yet the US Department of Housing and Urban Development defines a senior as anyone aged 55 or older. The largest advocacy group for older adults, the American Association of Retired Persons (AARP), defines an older adult as a person aged 50 or older. Is “old” the age of retirement? If so, the Social Security Administration (SSA) defines retirement age as 62, yet full retirement is not until 65 for persons born after 1937 and it is being raised to 67 for persons born after 1959. In addition, there is no longer one category that includes all older adults. Health care providers and planners now identify subgroups of “older adults” as “younger old” (ages 65–75), “older-old” (ages 75–85), and “oldest old” (ages 85+).

Subjectively, though, many older adults do not label themselves as “old,” even at advanced ages. Studies have shown that as seniors age, they continue to grow, create, and engage in activities linked with education and travel. Some older adults are late-life career bloomers; others become active with their families or proactive in their communities. Free from work commitments, older adults are becoming invaluable to their communities as more and more volunteer their time.

Demographics and Trends of Older Adults

There is an increased awareness of the aging of America. According to the US Census Bureau, in 2002, 26.6 million men and 33.0 million women in the noninstitutionalized population were aged 55 and over. While the population of the United States has tripled in the last century, the population of Americans aged 65 and older has increased 11 times. Demographic data show that one in eight Americans is aged 65 or older; more than 35% of these seniors

are aged 75 and older. By the year 2030, seniors will comprise one in five Americans. As the Baby Boom generation grows older and Americans live longer, there is new interest in senior health care and health longevity to increase productivity, independence, and optimal health while aging. For optimal health, older adults need access to health care services, quality medical and psychosocial assessments, effective treatment plans, and culturally sensitive medical care and social programs.

The following are some important demographic data to consider when planning services for older adults and seniors:

- *Marital status:* Living arrangements and marital status of the older population differ considerably between men and women as they age. In 2002, among people 55 years and over, men were more likely than women to be married and living with their spouse (74 and 50%, respectively). Due to longer life expectancies than men, it is not surprising that 31% of women but only 9% of men aged 55 and over were widowed. With increasing age, this proportion rises rapidly: 10% of women 55–64, 41% of women 65–84, and 79% of women 85 and over were widows.
- *Education:* Among the older population, men are more likely than women to have higher levels of education. High-school completion rates vary among the older population. In 2002, 84% of people aged 55–64, 71% of those aged 65–84, and 58% of those 85 and over had completed high school.
- *Income:* Married-couple households with a member aged 55–64 are more likely to have higher incomes than those with a member 65 years or older. In 2001, 77% of married-couple households with at least one member aged 55–64 had an income of \$35,000 or more, compared with 49% of married-couple households 65 and over. Married-couple households were more likely to have an income below \$20,000 when the person was aged 65 and over than when the householder was aged 55–64 (20 and 10%, respectively).
- *Poverty:* Among people 55 years and over, those aged 65 and over are most likely to be poor. In 2001, 5.8 million (9.8%) people of 55 years and over were living below the federal poverty level. The highest rates of poverty among this group were unmarried households: 14.1% of women and 10.7% of men. This compares with a 4.8% rate of poverty for married-couple households.
- The poverty rate also increases with age. The poverty rate was 9.4% for those 55–64 and 10.1% for those 65 years and over. Older women, in general, had a higher poverty rate than older men, with 10.3% of women and 8.4% of men aged 55–64 living in poverty compared with 12.4 and 7.0%, respectively, among those 65 and over.
- *Minority elderly:* Older adults are a highly diverse group, ethnicity and race as well as sexual orientation are important characteristics to consider.

Ethnicity and Race

The status and resources of many ethnic minority seniors reflect social and economic discrimination experienced earlier in life. Many seniors, especially those who immigrated to the US, face cultural and language differences as well. Consequently, ethnic/racial minority groups in the US have increased risks for lower educational levels, substandard housing, poverty, malnutrition, and generally poor health. Health care assistance is a special concern of minority older persons because cultural and language differences, along with physical isolation and lower income, often make US health care services difficult to access. In recent years, the older population has been growing faster among minorities than among whites, and this trend is expected to continue. In 1990, about 4.2 million persons, or 13% of the population 65 and over, were non-White. By 2025, 25% of the elderly population is projected to be non-White.

Sexual Orientation

Lesbian, gay, bisexual, and transgender (LGBT) older adults have been referred to as a “twice hidden” group, that is, a group that is invisible within the mainstream (heterosexual) senior population, regardless of ethnicity or race.

Precise numbers on LGBT older adults are not available because data on sexual orientation are not routinely collected. However, using extrapolations from national surveys, it has been estimated that between 1.4 and 4.3% of women and 2.8 and 9% of men are LGBT. If one applies these ranges to the current estimates on the number of older adults (33 million women and 26.6 million men), there are between 1,206,800 and 3,813,000 LGBT older adults (462,000–1,419,000 women and 744,800–2,394,000 men). Although many of the needs of LGBT seniors are similar to those of other seniors, such as concerns about independence, finances, loneliness, and health, LGBT seniors have needs that are unique to this group. For example, an assumption of heterosexuality by health care providers may result in dissatisfaction with the quality of care (e.g., lack of culturally appropriate care) and substandard medical care (e.g., some screening tests not being recommended as the provider assumes that the partner is of the opposite sex).

- *Family support.* Contrary to popular belief, seniors are not typically abandoned by their families, and admission to a nursing home is usually a last resort. But as the number of frail older persons continues to grow, so does the burden placed on those who care for them.

Social Security

Social Security has been the cornerstone of the nation's income protection system for nearly 70 years. It provides disability, retirement, and life insurance protections to virtually all American workers and their families. As the Western world underwent the industrial revolution, the extended family and the family farm as sources of economic security became less common as more people became wage earners, working for others. Along with the shift from an agricultural to an industrial economy, Americans moved from farms and small rural communities to larger cities. In 1890, only 28% of the US population lived in cities; by 1930, this percentage had doubled to 56%. However, the Great Depression of the 1930s triggered a crisis in the nation's economic life, and it was against this backdrop that the Social Security Act emerged.

Social Security has turned out to be the nation's top antipoverty program. It is particularly important to older women and people of color, who are more likely to face poverty in their retirement years. Social Security's benefit formula is weighted so that lower- and average-wage workers will receive benefits replacing a larger percentage of earnings than higher-wage workers. This means that those who earned less will have a more adequate retirement income than they might have had otherwise. Largely because of Social Security, the poverty rate among older Americans fell from 35% in 1959 to under 11% in 1999, and less than 10% in 2004. Without Social Security, 15 million more Americans would be living in poverty—not only the seniors and the disabled, but almost 1.5 million children as well.

Healthy Aging

Healthy aging is a broad concept that is more than just physical health status or the absence of disease; it encompasses many other important aspects of health, including intellectual, emotional, social, vocational, and spiritual health. If these critical areas are out of balance, optimal healthy aging may be impaired. Behavior and lifestyle choices impact each of these aspects of health; therefore, any program designed to facilitate optimal health in aging must address these areas through education, behavior modification, and supportive environments.

The most current data show that Americans, although living longer, are not necessarily living in better health during their senior years. Since 1990, healthy life expectancy (the number of healthy years after the age of 65) has remained at about 12 years. The good news is that the current gap between life span and healthy life span can be narrowed, and the primary responsibility rests with older adults themselves.

Seventy percent of the physical decline that occurs with aging is related to modifiable factors, including smoking, poor nutrition, lack of physical activity, injuries from falls, and the failure to use Medicare-covered preventative services. Seniors can and should be encouraged to reduce harmful behaviors, such as stopping or

reducing smoking, and increase healthy behaviors, such as exercising and healthy eating. In the area of mental health, primary care physicians, if given the right screening tools, may do a better job of diagnosing and treating depression and other mental disorders among older patients. In addition, providing training and education in geriatrics to practicing physicians, nurses, pharmacists, and other health care professionals can help them better address the health needs of older patients.

According to a 2004 report by The Merck Institute of Aging and Health, the Centers for Disease Control and Prevention (CDC), and the Gerontological Society of America (GSA), Americans are living longer due to declines in heart disease and stroke mortality, but chronic diseases, such as diabetes and high blood pressure, are becoming more prevalent among older adults—especially among African Americans and Hispanics. Among those aged 65–74, the share of those reporting very good to excellent health rose to 42% in 1999, an increase of 7% from 1982. Those aged 75 or older, however, reported little improvement or a decline in health status. Although national goals for improving the health status of older Americans for smoking, colorectal cancer screening, mammograms, and flu vaccinations were met, targets for physical exercise, nutrition, weight, pneumonia vaccinations, and injuries and deaths due to falls, were not.

Good mental health is an important part of healthy aging. Almost 20% of older Americans experience mental disorders. Many primary care physicians are not trained to screen for mental illness, and, unfortunately, may attribute psychiatric symptoms to “normal aging” or to chronic physical illness. As a result, close to 90% of depressed older patients in primary care receive little to no treatment, despite the availability of effective treatments. Only 3% of older adults receive treatment for mental disorders from a mental health specialist. Finally, access to appropriate and quality health care is critical for healthy aging. Yet most health care professionals do not receive the geriatrics training necessary to respond to the unique and complex health needs of older adults. As such, inaccurate diagnoses and inappropriate care often result. Studies indicate that older patients who receive care from geriatric-trained professionals show greater improvement than those treated with usual care. According to one estimate, proper geriatric care could reduce hospital, nursing home, and home care costs by at least 10% a year, saving \$133.7 billion in 2020 (The Merck Institute on Aging and Health, 2004).

Aging Issues

Nutrition

Seniors tend to be at a disproportionate risk of poor nutrition that can adversely affect their health. According to the US Food and Drug Administration (FDA), the signs and symptoms of malnutrition can baffle and mislead even health professionals. For example, weight loss, disorientation, lethargy, and loss of appetite are often diagnosed as illness-related. Unfortunately, encouraging older citizens to eat well and to pay serious attention to sound nutrition is a complex challenge with no single, simple solution. For one thing, the aging process itself becomes a real barrier. As interest in food diminishes, incomes fall, and other health issues affect appetite, seniors may cut back on calories even though the requirements for many nutrients do not change. Other factors that may affect one’s nutritional status are not so obvious. Loneliness, for example, can cripple a person who has always lived with a spouse or other family members. With limited cooking or shopping skills, older men may eat less or skip meals altogether. Women living alone may simply grow tired of preparing food and lose interest in eating. Depression, which is often linked to loneliness, may likewise curtail a person’s interest in food.

Exercise

Lack of physical activity and poor diet contribute to chronic diseases and are the major causes of the obesity epidemic in this country. Despite overwhelming evidence demonstrating the now well-known benefits of physical activity, older adults have the lowest rates of activity among all adults. Nearly 75% of older Americans do not participate in any routine physical activities.

Chronic Diseases

Chronic diseases are not generally prevented by vaccines or cured by medication, nor do they just disappear. To a large degree, the major chronic disease killers—heart disease, cancer, stroke, and diabetes—are an extension of what people do, or not do, as they go about their daily lives. Eighty-eight percent of those over 65 years of age have at least one chronic health condition. Health damaging behaviors, particularly tobacco use, lack of physical activity, and poor eating habits, are major contributors to the nation's leading chronic diseases. Clearly, promoting healthy behavior choices, through education, community policies, and practices, is essential to reducing the burden of chronic diseases.

- *Arthritis* and related conditions are the leading cause of disability in the United States, affecting nearly 43 million Americans. Although cost-effective interventions are available to reduce the burden of arthritis, they are currently underused. Regular, moderate exercise offers a whole host of benefits to people with arthritis by reducing joint pain and stiffness, building strong muscle around the joints, and increasing flexibility and endurance.
- *Cardiovascular health* is a growing concern for all Americans. Heart disease is the nation's leading cause of death. Three health-related behaviors—tobacco use, lack of physical activity, and poor nutrition—contribute markedly to heart disease. Modifying these behaviors is critical for both preventing and controlling heart disease. Modest changes in one or more of these risk factors among the population could have a profound public health impact.
- *Colorectal cancer* is the second leading cause of cancer-related deaths in the United States, accounting for 10% of all cancer deaths. The risk of developing colorectal cancer increases with advancing age. Lack of physical activity, low fruit and vegetable intake, a low diet, obesity, alcohol consumption, and tobacco use may contribute to the risk for colorectal cancer. Three screening tools—flexible sigmoidoscopy, colonoscopy, and the fecal occult blood test (FOBT)—are widely accepted and used to detect colorectal cancer in its earliest stages, when treatment is most effective. However, according to the CDC, in 2000, only 45% of men and 41% of women aged 50 years or older had undergone a sigmoidoscopy or colonoscopy within the previous 10 years or had used an FOBT home test kit within the preceding year.
- *Diabetes* is a serious, costly, and increasingly common chronic disease. Early detection, improved delivery of care, and better self-management are the key strategies for preventing much of the burden of diabetes. Seven million persons aged 65 years or older (20% of all people in this age group) have diabetes.
- *Obesity* has reached epidemic proportions among Americans in all age groups. Obesity among adults has doubled since 1980. Of Americans over the age of 50, 28% are now considered obese. People who are obese or overweight are at increased risk for heart disease, high blood pressure, diabetes, arthritis-related disabilities, and some cancers. After the age of 50, metabolic rates drop sharply; metabolism may drop by 30% over the course of a lifetime. A decreased calorie need must be taken into account when considering elder nutrition: as people age, most simply do not need to eat as much. Although body fat tends to rise with age, muscle mass tends to drop. To maintain muscle mass, higher amounts of protein but fewer calories may be required.
- *Oral health* is an important and often overlooked component of an older adult's general health and well-being. Oral health problems, such as ill-fitting dentures, poor condition of the teeth and gums, or side effects from medications, can cause pain and suffering as well as difficulty in speaking, chewing, swallowing, and maintaining a nutritious diet. During the past 50 years, the oral health and use of dental services among older adults have improved. Although this trend is expected to continue, additional improvement will depend on access to appropriate dental care.

Mental Health

As a person ages, signs of depression are much more likely to be dismissed as crankiness or grumpiness. Confusion or attention problems caused by depression can sometimes look like Alzheimer's disease or other

brain disorders. Mood changes and signs of depression can be caused by medicines older people may take for high blood pressure or heart disease. An estimated 2 million adults aged 65 or older have a depressive illness, and another 5 million may have “subsyndromal depression” or depressive symptoms that fall short of meeting full diagnostic criteria for a disorder. Subsyndromal depression is especially common among older persons and is associated with an increased risk of developing major depression. In any of these forms, however, depressive symptoms are not a normal part of aging. In contrast to the normal emotional experiences of sadness, grief, loss, or passing mood states, they tend to be persistent and to interfere significantly with an individual’s ability to function.

Depression often co-occurs with other serious illnesses, and because many older adults face these illnesses as well as various social and economic difficulties, health care professionals may mistakenly conclude that depression is a normal consequence of these problems—an attitude often shared by patients themselves. These factors together contribute to the underdiagnosis and undertreatment of depressive disorders in older people. Depression can and should be treated when it co-occurs with other illnesses because untreated depression can delay recovery from or worsen the outcome of these other illnesses. The relationship between depression and other illness processes in older adults is a focus of ongoing research.

Suicide

Several studies have found that many older adults who die by suicide—up to 75%—have visited a primary-care physician within a month of their suicide. These findings point to the urgency of improving detection and treatment of depression as a means of reducing suicide risk among older persons. Comprising only 13% of the US population, individuals aged 65 and older accounted for 18% of all suicide deaths in 2000.

Alzheimer’s and Related Dementias

Alzheimer’s disease is a complex disease of the brain that affects approximately 4.5 million Americans. Although many things about Alzheimer’s disease remain a mystery, research continues to bring us a better understanding of the disease, more accurate diagnoses, and more effective treatments. Alzheimer’s disease is one of several disorders that cause the gradual loss of brain cells. One in 10 persons over 65 and nearly half of those over 85 have Alzheimer’s. A very small percentage of people as young as their thirties and forties will also get the disease. A person with Alzheimer’s disease will live an average of 8 years from the onset of symptoms. More than 70% of people with Alzheimer’s disease live at home and almost 75% of the home care is provided by family and friends, creating a great need for caregiver support and training.

Dementia is an umbrella term for several symptoms related to a decline in cognitive functions. Common symptoms include a gradual loss of memory, problems with reasoning or judgment, disorientation, difficulty in learning, loss of language skills, and decline in the ability to perform routine tasks. People with dementia also experience changes in their personalities and behavioral problems, such as agitation, anxiety, delusions (believing in a reality that does not exist), and hallucinations (seeing things that do not exist).

Several disorders that are similar to Alzheimer’s disease can cause dementia. These include frontotemporal dementia, dementia with Lewy bodies, Parkinson’s disease, Creutzfeldt–Jakob disease, and Huntington’s disease. All of these disorders involve disease processes that destroy brain cells. Vascular dementia is a disorder caused by the disruption of blood flow to the brain. This may be the result of a massive stroke or several tiny strokes. Some treatable conditions—such as depression, drug interactions, and thyroid problems—can also cause dementia. If treated early enough, this type of dementia may be effectively treated and even reversed.

Substance Abuse

It is estimated that one in five older people abuse substances. Although the substances most abused, for example, prescription medications and alcohol, are legal, this does not make the addiction any less devastating for them and

their families. Substance abuse by seniors can lead to depression, dramatic personality changes, memory loss, malnutrition, falls, several forms of cancer, heart disease, and early death.

Health, Health Care, and Disability

According to a report issued by AARP in 2000, 27% of older adults assessed their health as fair or poor (as compared to 9% for all persons). There was little difference between the sexes on this measure, but older African Americans (41.6%) and older Hispanics (35.1%) were much more likely to rate their health as fair or poor than were older Whites (26%).

Limitations on activities because of chronic conditions increase with age. In 2000, among those 65–74 years old, 26% reported a limitation caused by a chronic condition. In contrast, almost half (45%) of those 75 years and over reported they were limited by chronic conditions. The percentage of seniors with disabilities increases sharply with age. Disability takes a much heavier toll on the very old. Almost three-fourths (74%) of those aged 80 and older reported at least one disability. Over half (58%) of those aged 80 and over had one or more severe disabilities, and 35% of those 80 and over reported needing assistance as a result of disability. There is a strong relationship between disability status and reported health status. Among those aged 65 and older with a severe disability, 68% reported their health as fair or poor. Among persons aged 65 and older who reported no disability, only 11% reported their health as fair or poor. Presence of a severe disability is also associated with lower income levels and educational attainment.

Immunizations for Older Adults

Although infectious diseases are no longer the most common causes of death, pneumonia and influenza remain among the top ten causes of death for older adults. In 2000, pneumonia and influenza were responsible for 3.3% or 58,557 deaths among people 65 years of age and older. Influenza vaccination can reduce both direct health care costs such as physician visits and antibiotic use, as well as indirect costs from work absenteeism associated with influenza illness.

Legal and End-of-Life Decisions

Although many people would prefer not to think about the end of their lives, planning increases the chances that one's wishes will be met. In addition to preparing a will, estate planning should include preparing and signing advance directives that comply with state law. The documents should reflect the senior's wishes and appoint someone to make decisions for him/her if he/she is unable to do so. Advance directives include either or both of these documents:

- *Living Will or Health care Directive.* This document allows one to state in advance one's wishes regarding treatments that may prolong life.
- *Health care Power of Attorney or Durable Power of Attorney for Health care Decisions.* This document allows one to name a person to make health care decisions for him/her.

Housing

Housing plays a unique role in the life of older Americans. In addition to serving as shelter, it provides a sense of comfort and security. It also provides wealth to approximately 80% of Americans aged 50 and older who own their own homes. Safe and secure housing can influence the ability of an older person to age in place and remain independent. Yet many older people experience serious housing problems because of cost, inappropriateness of

the home for aging in place, or challenges to protecting their financial interest in the home. In addition, enjoying the benefits of home and community may be difficult without improved home and community services programs and legal protections.

The 1999 American Housing Survey indicated that 55% of renter households aged 65 and older incurred “excessive expenditures,” defined as housing costs in excess of 30% of income. The percentage of older households with excessive housing expenditures was particularly high for subgroups such as renter households headed by individuals aged 75 and older (59%), females living alone (60%), and older African Americans (63%).

For older homeowners, the home is usually their single largest asset. Older persons can use this wealth for a variety of purposes: to serve as collateral for the upgrade and repair of the property, to provide economic security in the face of major unforeseen expenses (such as long-term care), and to provide shelter or finances to future generations through inheritance. Home ownership is growing: between 1982 and 2001, the home ownership rate for households aged 65 and older grew from 74 to 80%. Home repair programs and improved construction standards for manufactured homes can help safeguard this physical asset. Standards for reverse mortgages and other financial instruments can provide reliable options for using the equity in a home.

The physical features of housing can be critical to a person’s ability to age in place. Much of the nation’s current housing may prove inappropriate as the population ages, especially for those people experiencing increased frailty. Home modification is one method to help meet the changing needs of an aging resident. There is also growing recognition that promoting adaptable and accessible design into homes as they are built may generate significant financial and social benefits down the road. But regardless of a home’s features, many older people, especially those who live alone, eventually need some supportive services to remain independent.

The growing population of people aged 75 and older will present special challenges. Households headed by an individual aged 75 or older are more likely than those headed by 65–74-year-olds to be renters, live alone, and experience poverty, health problems, and substandard housing conditions. Meeting these multiple needs will require housing subsidies, more extensive provision of in-home health care, and community support services, such as transportation.

The “oldest-old” who can no longer stay in their homes will require specialized housing with more extensive services such as assisted living, congregate housing, or group homes. Unfortunately, many older people with moderate or low incomes cannot afford such specialized supportive housing on their own, and current state subsidy programs are limited. One crucial challenge for policy makers will be determining how to extend supportive housing opportunities to frail older people with modest means. The problem is especially acute for older renters, who not only have fewer financial resources, but also are more likely to live alone and have difficulty with everyday activities.

Transportation

Automobiles

For many seniors, transportation is a critical concern. The majority of seniors see driving as crucial to being able to lead an independent and fulfilling life. Fears faced by seniors at the prospect of reducing or terminating their driving include loss of personal independence, social isolation, and a reduction in or lack of access to essential services. The point at which older people voluntarily give up or are forced to relinquish their driving privileges is viewed by elders and those around them as a watershed event with significant implications regarding independence, self-sufficiency, and social responsibilities.

The tendency of seniors to rely on personal autos as their primary means of transportation is increasing. Driving rates among people 60 years of age and older are increasing, and people are continuing to drive later in life. The increases are most dramatic for women, who used to have much lower licensing rates than men. As today’s near-seniors age, with their high rates of driving, the percentage of older women who drive will continue to increase. Most older adults believe that they will know when they should stop driving, yet most have peers whose driving they consider to be so unsafe that they will not accept rides from them. When faced with the

difficult transition from driving to not driving, most families struggle alone. Studies have reported that most families have never discussed driving issues with anyone, and most do not know where to obtain information or advice. There is widespread interest in and need for such resources. Owning an auto is expensive, especially if someone seldom drives or drives only short distances (as do many seniors), yet few seniors understand how much mobility they could purchase for their car's annual cost.

Public Transit

Ability to use public transit also declines with age. Based on national survey data, 7% of people aged 69–74 are prevented or limited from using public transit by an impairment or health problem. For the 85 and older group, this percentage rises to 35%. In the case of seniors who can no longer drive due to an impairment or health condition, fully 55% are also limited or prevented from using public transit. Since the number of seniors, especially in the oldest age group, will grow rapidly, and since so many of those people cannot use public transit, there will also be a rapid increase in the number of people who are eligible for “paratransit” services, as required by the Americans with Disabilities Act (ADA). Paratransit services are defined as transport services, usually vans and small buses, for people with disabilities who cannot use existing fixed-route bus and train services. Federal law and increasing mobility by people with disabilities, in general, will probably cause even greater growth in paratransit use.

As people age, they face unique challenges in getting around in their communities. Helping older adults maintain this essential mobility is a major concern of transportation planners throughout the country. Not only is the size of the senior population expected to grow rapidly, the most rapid growth is expected to occur in the oldest age groups, which have the most severe mobility problems. Further, much of the growth will occur in places that are poorly served by public transportation. Even in places where transit service is good, many seniors do not use it because they have little familiarity with the transit system and are used to relying on personal automobiles as the most convenient mode of travel.

Grandparents Raising Grandchildren

Grandparents raising their grandchildren are responding to a problem in the middle (parent) generation, such as death of the parent, illness, divorce, incarceration of the parent, parental substance abuse, child abuse, or child neglect. For example:

- There are 4.5 million children under 18 years growing up in grandparent-headed households, and approximately one-third of these children have no parent present in the home.
- The number of children in grandparent-headed households has increased by 30% since 1990.
- The majority of grandparents raising grandchildren are between ages 55 and 64 and approximately 20–25% are over 65.
- Fifty-one percent of grandparents raising grandchildren are White, 38% African American, and 18% Hispanic.
- Although grandparent-headed families cross all socioeconomic levels, grandparents raising their grandchildren are more likely to live in poverty than other non-grandparent-headed households.
- There are eight times more children in grandparent-headed homes than in the foster care system.

Grandparents are faced with many challenges. They must investigate and resolve legal questions around custody, guardianship, or adoption. Without legal status, grandparents may not be able to enroll their grandchildren in schools or make medical decisions for them. Grandparents are forced to make financial decisions that may involve the grandparent's employment or applying for benefits like Medicaid, foster care, temporary assistance for needy families (TANF), or Social Security. Grandparents are faced with choosing appropriate child care, providing adequate medical care, educating and providing emotional support to their grandchildren, and finding support for themselves.

Elder Abuse

Elder abuse is an unspoken horror in the lives of many older persons. Four to six percent of America's senior population may be victims of some form of abuse, accounting for 2.4–3.6 million potential victims every year. Elder abuse is a largely unreported crime that will only get worse as 77 million baby boomers reach age 65 over the next decade. Older adults who are abused or mistreated are three times more likely to die within a decade than same-age adults who were not mistreated. Persons from all social classes and ethnicities are the victims of abuse.

Many of these abusers are criminals who prey on the elderly, but the majority are caregivers or relatives pushed to the brink of violence and neglect from daily stress combined with oftentimes overwhelming responsibilities. Forty percent of all elder abuse involves some form of financial exploitation. This is of increasing concern because nearly 70% of our nation's household net worth is controlled by people over the age of 50. Perpetrators abuse older persons for a variety of reasons, but the main causes have to do primarily with dependency and vulnerability. If an abuser is the primary caregiver and the caregiver views the dependency of an older adult as burdensome and stress producing, the caregiver may exhibit abusive behavior. If the abuser is not the caregiver, the dependency of an older adult creates vulnerability to persons who seek to exploit dependence. Finally, if an abuser simply does not know how to care for an older adult, abuse may occur through passive neglect.

Fiduciary Abuse

In a survey by the National Association of Adult Protective Services Administrators for the National Center on Elder Abuse (2000), financial abuse or exploitation comprised 13% of the allegations of mistreatment that were investigated. Although people over age 65 represent 12% of the population, experts estimate that, more than 30% of consumer fraud investigations involve people in this age group. Fiduciary abuse, exploitation, and financial mistreatment encompass a broad range of conduct. Examples include the attendant who shortchanges his/her elderly client, the neighbor who secures a power of attorney to help out with chores and uses it to take possession of an older person's home, and the son or daughter who persuades an impaired elderly family member to change a will in his/her favor.

Of all the types of elder abuse, financial abuse may be the most difficult to grasp because the problem itself is poorly defined. Evaluating whether or not financial abuse has occurred often involves complex and subjective determinations. It may involve differentiating between misconduct and mismanagement, or distinguishing between acceptable exchange and exploitative conduct. Abuse may be obscured by the victims' diminished mental capacity, which makes it unclear as to whether or not they understood the transactions or exchanges. Even when victims are mentally competent, it may be unclear as to whether or not they were the victims of unfair persuasion.

Many reasons have been cited for why the elderly are targeted for financial abuse. Clearly, one contributing factor is that persons over the age of 50 control 70% of the nation's wealth. Other explanations include the fact that older people are more trusting than their younger counterparts, they may not realize the value of their assets, and the perpetrator may be someone they trust and love. Additionally, they are more likely to have conditions or disabilities that make them easy targets including forgetfulness or other cognitive impairments. They are also less likely to take action against their abusers, particularly if they have been victimized by family members. Abusers may also recognize that older people who are in extremely poor health may not survive long enough to follow through on lengthy legal interventions.

Crime

Although adults aged 65 or older experienced less violence and fewer property crimes than younger persons between 1992 and 1997, crime committed against seniors is still a serious problem. According to the Bureau of Justice, persons aged 65 or older, when compared with other age groups, are disproportionately affected by property crimes. For example, nine out of ten crimes against individuals aged 65 or older were property crimes,

whereas less than four of ten crimes against individuals 12–24 years were property crimes. Between 1992 and 1997, an average of 2.5 million property crimes against persons aged 65 or older occurred annually. However, during the same time period there was an annual average of 46,000 purse snatchings or pocket pickings, 166,000 nonlethal violent crimes (rape, sexual assault, robbery, and aggravated and simple assault), and 1000 murders committed against older adults. Robbery accounted for a quarter of the violent crimes against persons aged 65 or older, which is less than one-eighth of the violent crimes experienced by those aged 12–64.

Violence Against Midlife and Older Women

Although the statistics on this issue are sparse, anyone who interacts with older women knows that violence and fear of violence pervade their lives. Facts on violence against midlife (50–64 years) and older (65+ years) women include the following:

- Twice as many women over the age of 65 are mugged at or near their homes as younger women, and are much more likely to have the incident occur during daylight. In fact, three of four muggings involving women aged 65 and over occur during daylight.
- One of every hundred women aged 50–64 is likely to be a victim of a violent crime (including assault, rape, and robbery), and two of every hundred women aged 65 or older are likely to be a victim of personal larceny (theft of property or cash with and without contact).
- Midlife and older African American women are more than twice as likely as White women in the same age groups to be victims of violent crimes.
- Between 1974 and 1990, the murder rate for women aged 65 and older increased by 30%, whereas the murder rate for men for the same age dropped by 6%.
- According to a national survey of the health of women conducted for the Commonwealth Fund in 1992, an estimated 1.4 million women between the ages of 45 and 64 were physically abused by their spouses.
- Of more than 1500 shelters for battered women nationwide, few offer programs specifically designed to meet the needs of older battered women. For instance, a study of 25 shelters in Florida—where there are a disproportionate number of older people—found that just two offered services for older women.
- More than a million American women aged 65 and over are victims of abuse each year.
- Nearly 400,000 older women living in institutions are victims of physical or sexual abuse. In one study, more than 36% of care providers in institutional facilities had witnessed at least one incident of physical abuse by another staff person, and four in five (81%) had witnessed an incident of psychological abuse (House Select Committee on Aging, 1991).
- In elder sexual abuse cases, the victim is typically a woman in her seventies, dependent for care upon the person who abused her.

Conclusions

As the United States faces a rapidly increasing population over the age of 65, research on what constitutes healthy aging, how to promote healthy lifestyles among older adults, and the health care workforce, including professional and paraprofessional, requirements is urgently needed. Older adults, and in particular seniors, have not traditionally been viewed as a productive segment of the population. However, with more seniors in the public arena either through employment or volunteer work, perceptions of people over the age of 65 are slowly changing, and hopefully becoming more positive. Older adults themselves have not always viewed the aging process as a positive process; hence, healthy aging can serve as a framework within which health promotion messages and prevention services can be offered. The increasing senior population is also increasingly diverse across many demographic variables, including ethnicity and race, sexual orientation, religion, and language, among others. The challenges to creating a diverse health care workforce, in general, are significant, that of ensuring diversity in the health and social services targeting the older population is even greater.

Related Topics

▶ Access to health care, ▶ Advance directives, ▶ Alzheimer's disease, ▶ Cancer, ▶ Coronary risk factors, ▶ Crime, ▶ Dementia, ▶ Depression, ▶ Diabetes, ▶ Durable power of attorney for health care, ▶ Elder abuse and neglect, ▶ Ethnicity, ▶ Exercise, ▶ Grandparents as parents, ▶ Housing, ▶ Immunizations, ▶ Institutionalization, ▶ Loneliness, ▶ Long-term care, ▶ Mental illness, ▶ Minority seniors, ▶ Nursing home, ▶ Nutrition, ▶ Obesity, ▶ Oral health, ▶ Osteoarthritis, ▶ Race, ▶ Social Security, ▶ Substance use, ▶ Suicide, ▶ Transportation services, ▶ Violence.

Suggested Readings

Hoffman C, Rice D (1996) Chronic care in America: A 21st century challenge prepared by the Institute for Health and Aging, University of California, San Francisco, for The Robert Wood Johnson Foundation. RWJF, Princeton, NJ.

United States Department of Health and Human Services (1991) Healthy people 2000: national health promotion and disease

prevention objectives. Public Health Service Publication #017-001-00473-1. U.S. Government Printing Office, Washington, DC

Zians J (2004) The San Diego County LGBT Senior Healthcare Needs Assessment. LGBT Seniors—Proud Pioneers. Alliance Healthcare Foundation, San Diego, CA. www.alliancehf.org

Suggested Resources

American Association of Retired Persons (1995–2005). <http://www.aarp.org>

Merck Institute on Aging and Health (2004) The state of aging and health in America 2004 (2005). http://www.miahonline.org/press/content/11.22.04_SOA_Report.pdf

National Institute on Aging (1998) Baltimore Longitudinal Study of Aging: 1958–1998. Selected findings from 1978 to 1998. National Institutes of Health, Bethesda, MD. <http://www.grc.nia.nih.gov/branches/blsa/blsnew.htm> (September 1, 2005)

National Institute of Aging and the National Library of Medicine. NIH Senior Health National Institutes of Health, Bethesda, MD.

<http://nihseniorhealth.gov> (October 24, 2005)

United States Census Bureau. Your gateway to Census 2000. Washington, DC. <http://www.census.gov>

United States Department of Health and Human Services. Healthy people 2010: a systematic approach to health improvement. Office of Disease Prevention and Health Promotion, Rockville, MD. <http://www.healthypeople.gov>

3 Cultural Diversity among Elders in the US: Meeting the Challenge of the Ethnogeriatric Imperative

Gwen Yeo

America's Ethnogeriatric Imperative

Demographers, teachers, and reporters have made the vision of the bulge in the population pyramid that is approaching the age of Social Security and Medicare benefits familiar to the American public and the public health community. Its predicted influence on health care is frequently referred to as “the geriatric imperative.” Not so familiar, however, is the recognition that this bulge of older Americans represents an increasingly diverse population—diverse in many ways, but especially in their ethnic background, so that, in reality, *the imperative is an ethnogeriatric one*.

The ethnic population categories for which data are available are those used by the census and other federal agencies, designated as the “ethnic minority” populations. The projected growth of the number of elders from those categories from 2000 to 2050 is included in [Table 1](#). The categories considered “races” by the US Census are American Indian and Alaska Native, Asian, Pacific Islander, black or African American, and white; Hispanics or Latinos can be of any “race,” as defined by the census, so that the separation by Hispanic and non-Hispanic is necessary for each racial group. Projections are that more than one in three of the projected 80 million elders will be from one of the “ethnic minority” categories by mid-century and that all are growing more rapidly than non-Hispanic whites (Federal Interagency Forum on Aging Related Statistics 2000).

Although the projections for the growth of elders in these populations are impressive, it drastically underrepresents the diversity the US will increasingly experience. Within each of these populations designated as ethnic minority is a vast heterogeneity. Among the rapidly growing set of elders in the Hispanic/Latino designation, for instance, the most numerous are those who describe themselves as Mexican, and smaller proportions from Puerto Rico and Cuba. But in addition, Hispanic/Latino elders are from seven different countries in Central America, ten in South America, and from Spain.

Soon to be the second largest minority population are elders who describe themselves as black or African American. While US-born African American elders make up the vast majority, immigrants from the Caribbean and from Somalia, Nigeria, and other African nations are also part of this category and will make up a growing proportion as they age. As is true in all of the population categories, large and important differences exist among African American elders in education, rural/urban background, income, occupation, religion, family support, living arrangements, health and functional status, and almost all other variables that affect public health concerns.

It is particularly important to recognize the heterogeneity among older Asian and Pacific Islander Americans as their cultural traditions originate in countries that span more than half the globe, and frequently have very little in common with each other, in spite of the common usage of term “Asian” to designate individuals in this category. [Table 2](#) illustrates some of the heterogeneity of these populations.

The unique and frequently unrecognized differences also apply to elders from American Indian background. There are over 500 federally recognized tribes in the US, and many smaller groupings known as bands or *rancherías*, most of whom have their own specific histories and cultures. More American Indian elders than those from other racial categories described themselves as being from more than one race when they had that opportunity in the 2000 census, which emphasizes the diversity in acculturation among this group. Another important source of diversity is the difference in types of communities in which they live. In spite of the stereotype

■ Table 1

Relative size of older ethnic minority populations in the US 2000 & 2005

Ethnic minority category	Percent of US population	Projected percent of US population
	65 and Over, 2000	65 and Over, 2005
Hispanic or Latino	6	16
Non-Hispanic American Indian and Alaska Native	0.4	0.6
Non-Hispanic Asian and Pacific Islander	2	7
Non-Hispanic Black or African American	8	12
Non-Hispanic White	84	64

Source: From Federal Interagency Forum on Aging Related Statistics (2000)

of Indians on remote reservations, more Indian elders are now in urban areas than on reservations, which means that they have less access to Indian Health System resources.

Elders in the “white” non-minority population are also very ethnically diverse. In addition to those from Northern and Western European backgrounds usually associated with the white designation, increasing numbers of elders in the US are from Arab and other countries in the Middle East. Older immigrants from Russia and other Eastern European countries also comprise populations with unique cultural backgrounds and needs.

Celebrate the Diversity and Appreciate the Complexity

This ethnogeriatric imperative presents providers who work with older adults an amazingly diverse population with which to be familiar, if they are to provide competent care, and that diversity provides interest, fascination, and richness, which is to be celebrated. It also presents amazing complexity that needs to be appreciated in itself. However, if one also considers the increasing ethnic diversity of the providers working with older Americans, that complexity multiplies many times over. This is especially evident in long-term care settings where individuals from countries around the globe have taken positions on the nursing staff in nursing homes and in assisted living communities in the US. This is also true in geriatric medicine where the ethnic background of geriatric fellows reflects an international population, many of whom go on to take positions in geriatric medicine in hospitals and clinics. As a result of the growing diversity of both the elders and their providers, the probability that a clinical encounter will be an intercultural interaction becomes very high.

So what difference does all this complexity make? At a minimum, it means that the need for cultural competence in geriatric care is probably the most important need for organizations to develop in meeting the challenge of this ethnogeriatric imperative. With the increasing attention to the disparities in health status and health care between ethnic populations highlighted in the publication of the Institute of Medicine (2002) report, “*Unequal treatment: confronting racial and ethnic disparities in health care*,” and among older Americans (Anderson et al. 2004; Schneider et al. 2002), cultural competence has become a suggested tool to decrease those disparities (Brach and Fraser 2000).

Organizational Cultural Competence

The term “cultural competence” is becoming increasingly common, and organizations are encouraged to use it as a guidepost for their missions and goals. There are numerous definitions in the literature, but most include some of the components proposed by Cross et al. (1989) in one of their earlier papers: “a set of congruent behaviors, attitudes, and policies that come together in a system, agency, or amongst professionals, and enables that system, agency, or those professionals to work effectively in cross-cultural situations.”

The two parts of cultural competence commonly identified are organizational or institutional and provider competence. The organizational component is usually conceptualized as a continuum. Although there are other versions of this continuum, the one suggested by the pioneering work of Cross et al. (1989) indicates that

Table 2
Asian and Pacific Islander American elders 65 and over, 2000

Ethnic identification	Number 55+	Number 65+	Percent of Asian 65+	Percent 65+ foreign-born ^a	Percent 65+ in poverty	Percent 65+ with education		Percent 65+ linguistically isolated ^b
						<9 years	Bachelor's +	
Asian American alone	1,577,339	800,795	100	NA	12.3	30.9	20.8	30
Chinese	418,300	235,995	29.5	84.2	16.2	38.0	21.7	46
Filipino	334,022	164,768	20.6	90.5	8.4	29.4	26.6	17
Japanese	240,527	161,288	20.1	20.0	5.6	11.3	15.2	19
Korean	162,050	68,505	8.6	90.2	22.1	31.7	20.9	53
Asian Indian	176,793	66,834	8.3	88.9	9.1	31.6	31.9	12
Vietnamese	137,729	58,241	7.3	92.1	16.0	47.3	8.4	46
Cambodian	14,975	6,570	0.8	100.0	22.3	73.7	4.6	54
Pakistani	12,174	4,804	0.6	96.7	13.0	30.7	29.8	NA
Hmong	9,056	4,698	0.6	92.61	29.3	91.6	2.0	59
Thai	13,198	2,954	0.4	97.2	11.7	36.2	21.4	31
Other Asian	58,515	26,138	3.2	88.1	8.6	27.2	24.3	NA
Asian in combination with one or more other races	122,860	60,930						
Native Hawaiian and other Pacific Islander (NHPI)	44,391	20,821	100	NA	11.5	24.6	9.4	NA
American alone								
Native Hawaiian	21,581	10,451	50.2	NA	9.3	18.8	9.1	NA
Samoa	7,721	3,567	17.1	NA	16.5	32.4	7.9	NA
Guamanian or Chamorro	6,090	2,845	13.7	NA	10.9	25.0	13.1	NA
Tongan	2,418	1,030	4.9	NA	12.8	36.3	2.6	NA
Other Pacific Islander	6,581	2,928	14.1	NA	NA	NA	NA	NA
Native Hawaiian and other Pacific Islanders in combination with one or more races	90,793	43,802			12.5	23.2	11.5	NA

NA, not available

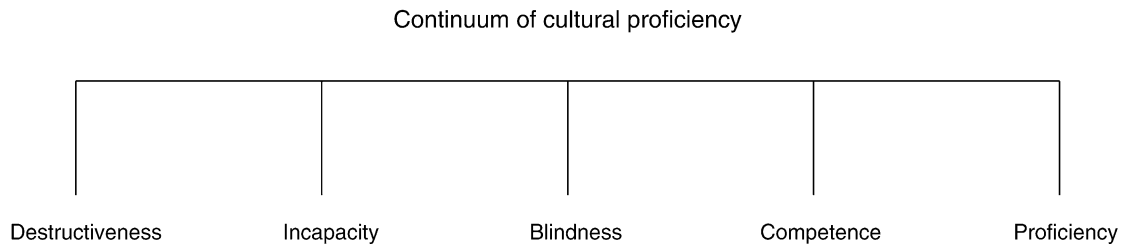
^bData on linguistically isolated are from 1990 since they were not available from the 2000 census; it should be noted that some of the data are from very small samples so they may not be completely accurate

Source: From 2000 Census Data provided to author by A. Locsin, National Asian Pacific Center on Aging, Seattle

■ **Figure 1**

Continuum of cultural proficiency

Source: From Cross et al. (1989).



organizations can be placed on a scale from “destructiveness” to “proficiency” depending on how culturally competent they are, as illustrated in [Figure 1](#). If the two poles of the continuum are thought of as being the extremes, very few organizations are likely to be at either end, especially those serving older adults. Providers in workshops conducted by the Stanford Geriatric Education Center (SGEC) have suggested that perhaps the Ku Klux Klan would be an example of a “destructive” organization, and the United Nations one that fits the requirements of “proficiency.” In reality, most health care organizations would probably lie somewhere between “incapacity” and “competence.” It is interesting to note that “blindness” is placed on the middle of the continuum when many organizations pride themselves as being “color blind,” treating everyone the same. So, the goal for organizations would be to find strategies to move themselves up this continuum toward cultural competence, or even the ideal of proficiency.

One of the motivations that health care organizations have been given to move up the continuum, including outlining techniques that should be used, is the development and publication of the *Standards for culturally and linguistically appropriate services* (CLAS Standards) by the US Office of Minority Health (2000) included in [Table 3](#). These are increasingly being used as guidelines for accrediting agencies for clinical care. Standards 4–7 dealing with language access for patients are actually part of the mandates from the Civil Rights Acts. The remaining standards are highly recommended, except for the last one, which is optional.

The CLAS Standards provide major strategies for organizations to focus on to improve their ethnogeriatric care. Among the most important they call for are:

- a. Training staff to show culturally appropriate respect and to recognize and respect culturally based health beliefs.
- b. Providing trained and competent interpreter services for verbal interactions and translation services for written materials, including posting signs in languages appropriate for the patients in the populations they serve.
- c. Collaborating with diverse communities to assess needs and provide appropriate services for elders from those populations.

Having appropriate interpreter services for all their older non-English-speaking patients is a major challenge for many health care organizations, but is extremely important, especially for elders who may want to talk to their providers about issues not culturally appropriate for family members acting as interpreters to hear, such as gynecological issues or elder abuse. A practice that can be devastating emotionally for children is asking them to act as interpreters for older members of their families because they are not likely to know the terminology involved in English or their native language. If organizations cannot have trained interpreters available for all the major language groups they serve, they are encouraged to make telephone-based services available to their providers.

In addition to the strategies for increasing cultural competence included in the CLAS standards, some other important ones are the following:

- a. Recruiting board members and administrators from the diverse populations they serve so that individuals in policymaking and decision making roles will more likely understand the needs of elders from diverse communities.
- b. Hiring staff at all levels that mirror the population they serve. Level of comfort of new patients is enhanced if they can see someone that “looks like them” or at least might seem to be from a familiar background.

■ **Table 3**

Standards for culturally and linguistically appropriate services, Office of Minority Health, US Department of Health and Human Services

Health care organizations should ensure that patients/consumers receive from all staff members effective, understandable, and respectful care that is provided in a manner compatible with their cultural health beliefs and practices and preferred language.
Health care organizations should implement strategies to recruit, retain, and promote at all levels of the organization a diverse staff and leadership that are representative of the demographic characteristics of the service area.
Health care organizations should ensure that staff at all levels and across all disciplines receive ongoing education and training in culturally and linguistically appropriate service delivery.
Health care organizations must offer and provide language assistance services, including bilingual staff and interpreter services, at no cost to each patient/consumer with limited English proficiency at all points of contact, in a timely manner during all hours of operation.
Health care organizations must provide to patients/consumers in their preferred language both verbal offers and written notices informing them of their right to receive language-assistance services.
Health care organizations must assure the competence of language assistance provided to limited English proficient patients/consumers by interpreters and bilingual staff; family and friends should not be used to provide interpretation services (except on request by the patient/consumer).
Health care organizations must make available easily understood patient-related materials and post signage in the languages of the commonly encountered groups and/or groups represented in the service area.
Health care organizations should develop, implement, and promote a written strategic plan that outlines clear goals, policies, operational plans, and management accountability/oversight mechanisms to provide culturally and linguistically appropriate services.
Health care organizations should conduct initial and ongoing organizational self-assessments of CLAS-related activities and are encouraged to integrate cultural and linguistic competence-related measures into their internal audits, performance improvement programs, patient satisfaction assessments, and outcomes-based evaluations.
Health care organizations should ensure that data on the individual patient's/consumer's race, ethnicity, and spoken and written language are collected in health records, integrated into the organization's management information systems, and periodically updated.
Health care organizations should maintain a current demographic, cultural, and epidemiological profile of the community as well as a needs assessment to accurately plan for and implement services that respond to the cultural and linguistic characteristics of the service area.
Health care organizations should develop participatory, collaborative partnerships with communities and utilize a variety of formal and informal mechanisms to facilitate community and patient/consumer involvement in designing and implementing CLAS-related activities.
Health care organizations should ensure that conflict and grievance resolution processes are culturally and linguistically sensitive and capable of identifying, preventing, and resolving cross-cultural conflicts or complaints by patients/consumers.
Health care organizations are encouraged to regularly make available to the public information about their progress and successful innovations in implementing the CLAS Standards and to provide public notice in their communities about the availability of this information.

For more information, see www.omhrc.gov/CLAS

- c. If hiring qualified staff from target populations is not possible, organizations can recruit “cultural guides” or “cultural brokers” from diverse communities to be consultants for appropriate services. They might be from ethnically based religious or civic groups, clan leaders, or interpreters. These resources are especially important to have available when there is a culturally based misunderstanding.

Provider Cultural Competence

The second necessary part of cultural competence is that of individual providers. This can be seen as having three components: attitudes, knowledge, and skills.

Attitudes

Providers' attitudes toward individuals from other cultures or traditions are likely to be the most important but frequently the least accessible part of provider cultural competence. The images and assumptions people have about elders and families from other groups are frequently learned early and emotionally rather than rationally, so that they are more difficult to unlearn directly. The importance of attitudes in clinical care was illustrated by the study of physician referral patterns by Schulman et al. (1999) in which internists and family physicians were half as likely to refer older black women to cardiac catheterization as they were white women and men, and black men with the same symptoms, based on professionally acted video-taped scenarios. The authors concluded that the results suggest bias among the physicians that could be overt prejudice, but was more likely to be based on subconscious perceptions.

To minimize the possibility of similar subconscious perceptions affecting clinical interactions, providers are encouraged to explore their own memories of learning about other groups at an early age, how and what they learned and from whom, so that they can be aware of, and perhaps avoid, potential unintended consequences.

Other strategies to help reduce the effects of unconscious stereotypical images would be for providers to expect within group differences, consciously making note of a wide variety of characteristics they observe in elders and family members from the same ethnic background. For example, if one is clearly aware of both well and poorly educated individuals, those practicing different religions, with different language abilities, and different health beliefs in the same ethnic group, it is more difficult to let specific preconceptions influence decisions and interactions.

Knowledge

There might be a long list of types of information one could make that would be helpful for providers, administrators, and policy makers to know to increase their cultural competence, but given the complexity of the diversity with which health care must deal, reality suggests that there are limits to what can be expected. One valuable guide, *Doorway thoughts: cross-cultural care for older adults*, was developed by the Ethnogeriatrics Committee of the American Geriatrics Committee (Adler and Kamel 2004). Some crucial pieces of knowledge were recommended by Lavizzo-Mourey and MacKenzie (1996) in an early paper on the topic, when they suggested that health care providers should know the specific health risks faced by different populations with which they deal, and their culturally related health beliefs and practices.

Health Risks of Elders from Diverse Backgrounds

Morbidity and mortality data for older Americans are much easier to access for some ethnic populations than others. The majority of the national data sets compare white and black or African American health status; recently, much more is available for elders in the Hispanic category, but little is specific to the Hispanic/Latino subpopulations. The smaller populations frequently have too few individuals in national samples to analyze, so that available data rely on community-based studies. Much of the data for older American Indians come from the Indian Health Service, which includes only those on or near reservations. Given those reservations, examples of available information on differences in health risks are included in [Table 4](#). For a comprehensive review of disparities data on mortality and their limitations, see Hummer et al. (2004).

One particular anomaly should be pointed out in the information available for Hispanic/Latino elders, which is known as the "Latino Paradox." Although much of the morbidity and functional status data indicate greater impairment for Hispanic/Latinos than for non-Hispanic/Latino whites, their death rates are lower. The reason for this paradox is not clear, but possible explanations include misclassification of ethnicity on death records and older immigrants returning to Mexico and other native countries to die.

Health Beliefs and Practices

There are major between-group and within-group variations in the kind and degree of beliefs about health that elders hold. Because these beliefs influence elders' health-seeking behavior, the degree to which they act on clinical recommendations, their satisfaction with care, and their concurrent use of non-biomedical alternative therapies and medications, it is important for providers to be familiar with the major culturally based belief systems they may encounter. Examples of these systems that are very different from the Western biomedical model are: the balance system of health and illness (*yin/yang*) and the influence of the life force *Qi* from classical Chinese medicine, which has influenced many other Asian countries, such as Korea, Japan, and Vietnam; *Ayurvedic* medicine from India that also relies on balance of elements; religiously based beliefs concerning punishment for bad deeds in this life or past lives such as those in Latin America or belief in the *karma* associated with Buddhism; and the influence of spirits in the health beliefs of the Hmong. A more complete description of these and other beliefs are included in the various modules of the online Curriculum in Ethnogeriatrics developed by the inter-Geriatric Education Center Collaborative on Ethnogeriatric Education, which can be accessed at www.stanford.edu/group/ethnoger (Yeo 2001).

■ Table 4

Examples of differences in health risks among ethnically diverse elders in the US

Population	Conditions for which they may be at greater than average risk ^a	Conditions for which they may be at less than average risk ^a
African Americans	Heart diseases	Respiratory diseases
	Cancer (especially prostate)	Osteoporosis/hip fracture
	Cerebrovascular disease/stroke	
	Diabetes	
	Nephritis/kidney disease	
	Septicemia	
	Hypertension	
American Indian	Dementia (especially vascular)	
	Diabetes	Heart diseases
	Cervical, esophageal, and gallbladder cancer	Cerebrovascular disease/stroke
	Cataracts	Respiratory diseases
	Kidney disease	
	Liver disease	
	Tuberculosis	
Asian American	Accidents	
	Hearing problems	
	Adenocarcinoma	Heart diseases
Asian Indian		Cerebrovascular disease/stroke
		Respiratory diseases
Chinese	Diabetes	
	Esophageal, liver, pancreatic, and nasopharyngeal cancer	Breast and colon cancer
	Diabetes	Hypertension
	Vascular dementia	
Filipino	Suicide	
	Hypertension	Cancer
	Diabetes	
	Gout	
Japanese	Tuberculosis	
	Esophageal, liver, and stomach cancer	Breast cancer
		Prostate cancer
	Hemorrhagic stroke	
	Vascular dementia	
	Diabetes	

■ **Table 4 (continued)**

Population	Conditions for which they may be at greater than average risk ^a	Conditions for which they may be at less than average risk ^a
	Osteoporosis	
	Suicide	
Korean	Liver cancer	
Southeast Asian	Depression	
	Posttraumatic stress disease	
Vietnamese	Cervical cancer	
Pacific Islander (Guamanian)	Hypertension	
	Diabetes	
	Obesity	
	Parkinson's disease	
Hispanic/Latino	Adenocarcinoma	Respiratory diseases
		Accidents
Mexican American	Diabetes	Breast and lung (females) cancer
	Cervical, liver, lung (males), pancreatic, and stomach cancer	Heart diseases
	Depression (females)	Osteoporosis
Puerto Rican	Diabetes	
	Liver cancer	
	Heart diseases	

All population categories other than Hispanic/Latino are non-Hispanic

^aBased on average risk for majority of older Americans

Sources: Hummer et al. (2004). The following reviews of the literature from Stanford GEC: McBride et al. (1996), McCabe and Cuellar (1994), Richardson (1996), and Villa et al. (1993)

As there is great variation by acculturation level and other variables in the degree to which elders in the US in specific ethnic populations believe in and practice these culturally based beliefs, providers should use the knowledge as general background but not assume that any one person adheres to the systems from their native culture or religion.

Cohort Experiences

Another set of information important for geriatric cultural competence is the knowledge of what elders are likely to have experienced in their lifetimes. In taking a health and social history, assessing the risk for certain health problems, or providing patient education, some knowledge of the experience of the patient's cohort in issues such as discrimination, trauma, and migration provides important background. This is especially true in long-term care, where knowing, for example, that fear of showers may be related to dementia patients' experience as holocaust survivors, or the importance older Russian residents place on tiny pieces of paper may be related to the fact that they are the only surviving possessions from a lifetime of forced migrations.

In the effort to make this information more accessible, core faculty members from SGEC have developed summaries of the cohort experiences of elders from eight ethnic populations in the US (Yeo et al. 1998).

Skills

Culturally Appropriate Respect

Especially because other cultures tend to value age and elders more than is found in mainstream America, the expectation for respectful courteous behavior toward older patients may be high. However, it may be difficult for

providers to know what behavior is considered respectful in various cultures. Some of the indications of respect that vary by culture include: shaking hands, bowing, eye contact, personal conversation before business conversation, and where and how someone may be touched. In most cases (and especially with African American elders because of the indignities and disrespect their cohort has experienced), it is recommended that providers address elders by Mr. or Mrs. unless they are given permission to do otherwise, although in some Southeast Asian cultures, the most respectful greetings of elders use family terms such as “grandmother.” It is extremely important for reception staff also to be trained to show respect and call elders by “Mr.” and “Mrs./Ms.” because they are usually the first interactions older patients will have. To learn the appropriate respectful skills, cultural guides and bicultural interpreters can be extremely valuable.

Younger members of the family frequently bring elders in for health care appointments, and it is very easy for providers to talk directly to them rather than to the elders themselves, especially if only the younger ones speak English. This, however, is frequently seen as disrespectful by both the elders and their adult children.

Communication

Skills in a number of other communication issues are also important for providers.

Use of Interpreters Because of the large proportion of foreign-born elders among Asian and Latino populations, providers need to be prepared to offer and appropriately use trained interpreters. Appropriate use would include orienting the interpreters to the plan for the encounter, looking at and talking to patients rather than the interpreters, and asking the interpreters for help in understanding any cultural issues that come up.

If trained interpreters are not available and there is no other choice but to use family members (not children), they can be oriented briefly to make the interactions more effective. This would include: assuring the family member that his/her own opinion and information about the elder’s condition is important to hear after the provider talks to the elder; asking the family member to translate everything the elder says without comment to the extent the family member is able; asking the family member to let the provider know if there are terms that are not familiar to him/her so that they can be said another way. Unless the elder is cognitively impaired, it is important that he/she understands the recommendations the provider makes, and not just the family member. Writing instructions down in English makes it possible for the elder to have them translated by other members of the family as well if there are any questions about it. It should be noted that in some cultures, modesty values make it unacceptable to talk about some private health issues (e.g., gastrointestinal and genitourinary) in the presence of family members of the opposite sex.

Nonverbal Communication Gestures and other nonverbal forms of communication can be problematic, sometimes without the provider knowing it. For example, certain common American gestures (e.g., the upcurled index finger requesting someone to “come here”) are offensive because they are associated with communicating with animals in some cultures. Even worse, some are considered very insulting (e.g., showing the sole of a shoe to someone in some Arab cultures). It is highly recommended that providers working with elders who are less acculturated to the mainstream US culture ask cultural guides about particular nonverbal communication issues.

Explanatory Models of Illness

Eliciting an older patient’s perception of her own condition can be extremely helpful in helping providers understand the cultural beliefs involved and what may be acceptable as management strategies. These perceptions, known as explanatory models, and their importance, were described in a pioneering article by Kleinman et al. (1978) that has become a classic in the literature. Being able to understand and incorporate elders’ explanatory models in recommendations is thought to increase patients’ “compliance.” Questions such as “What do you call your condition?” and “What do you think caused your condition?” can be used to help elicit these perceptions.

For a more comprehensive discussion and recommended techniques, see Module 4 in the Core Curriculum of the web-based Curriculum in Ethnogeriatrics (Yeo 2001).

Physical Examination and Assessment

In many cultures, it is inappropriate to have a provider of the opposite sex, especially when it involves physical examinations. This is especially true among Afghan American elders, and others from conservative Muslim cultures (Morioka-Douglas et al. 2004). As there are portions of the body that are inappropriate for providers to touch in some cultures, it is safer to explain the procedures in physical exams and ask permission before beginning.

Another major issue in assessments is the use of standardized measures of cognitive status and depression that may not be appropriate because of language or literacy level. It is extremely important to have versions in the elders' preferred language, preferably versions that have been validated for those populations. The commonly used cognitive screening measure, the Mini Mental Screening Exam, is available in more than 40 languages online at <http://www.minimental.com>. Likewise, translations of the Geriatric Depression Scale commonly used to screen for depression is available at <http://www.stanford.edu/~yesavage/GDS.html>. However, a large proportion of older adults from a number of ethnic backgrounds (e.g., Mexican American) did not have the opportunity to go to school at all, and many others had an elementary education or less, so that translations are not adequate if elders are not able to read them even in their preferred language. In those cases, the screens need to be administered orally. Other resources on cross-cultural assessments are found in Module 4 of the Curriculum in Ethnogeriatrics (Yeo 2001) and the book *Ethnicity and the dementias* (Yeo and Gallagher-Thompson 1996).

End of Life Care

There are many culturally relevant issues involved in appropriate care of terminally ill elders. Provider skills are needed to ascertain preferences for life-sustaining treatments among elders in cultures where families are expected to make those decisions. It is not uncommon for families to request that elders not be told they have a serious or life-threatening illness in order to protect them from bad news or giving up hope. Hospice care and/or advance directives are seen as inappropriate by some families because death is based on God's timing. In others, such as among African Americans, preference for all possible aggressive treatments stems from lack of trust in the health care system due to centuries of discrimination in health care. Understanding and learning to respond appropriately to these varied needs requires the development of skills not frequently taught in health care training programs.

Conclusion

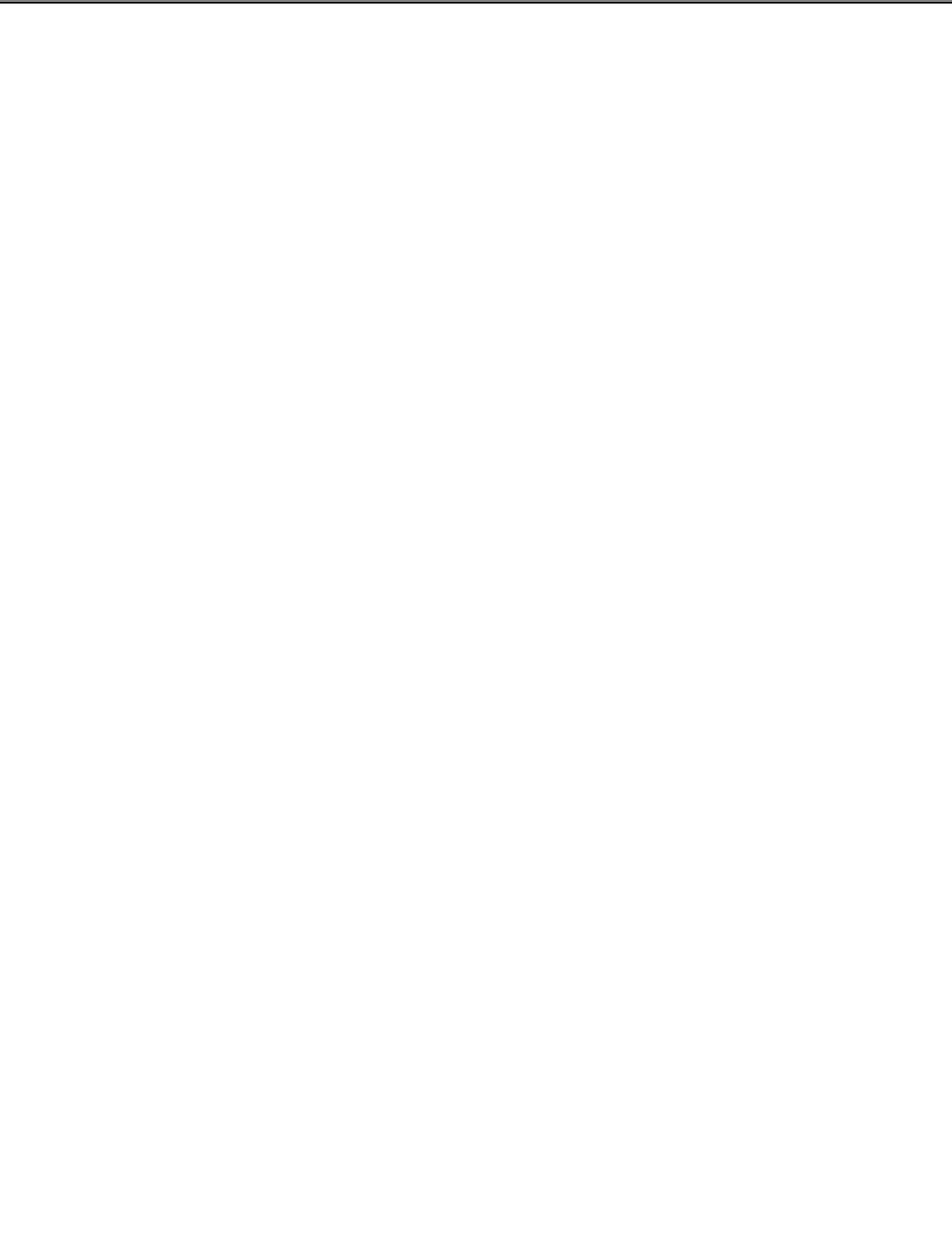
In order to meet the challenge of the impending ethnogeriatric imperative, it is imperative that the US public health community prepare itself quickly by educating health care organizations and providers. This should take the form of assisting them in understanding the need for, and complexities of, providing accessible and culturally appropriate care to the older Americans from widely diverse ethnic backgrounds.

Acknowledgment

This work was partially supported by a grant from the Bureau of Health Professions, Health Resources and Services Administration, for a Geriatric Education Center.

References

- Adler R, Kamel H (2004) Doorway thoughts: cross-cultural care of older adults. American Geriatrics Society. Jones & Bartlett, Boston
- Anderson NB, Bulatao RA, Cohen B (eds) (2004) Critical perspectives on racial and ethnic differences in health in late life. The National Academies Press, Washington, DC. www.nap.edu
- Brach C, Fraser I (2000) Can cultural competency reduce racial and ethnic health disparities: a review and conceptual model. *Med Care Res Rev* 57(Suppl 1):181–217
- Cross TL, Bazron BJ, Dennis KW, Isaacs MR (1989) Towards a culturally competent system of care: a monograph of effective services for minority children who are severely emotionally disturbed. CASSP Technical Assistance Center, Georgetown University Child Development Center, Washington, DC
- Federal Interagency Forum on Aging Related Statistics (2000) Older Americans 2000: key indicators of well-being. Federal Interagency Forum on Aging Related Statistics, Hyattsville, MD
- Hummer RA, Benjamins MR, Rogers RG (2004) Racial and ethnic disparities in health and mortality among the US elderly population. In: Anderson NB, Bulatao RA, Cohen B (eds) Critical perspectives on racial and ethnic differences in health in late life. The National Academies Press, Washington, DC
- Institute of Medicine (2002) Unequal treatment: confronting racial and ethnic disparities in health care. National Academy Press, Washington, DC
- Kleinman A, Eisenberg L, Good B (1978) Culture, illness, and care. *Ann Intern Med* 88:251–258
- Lavizzo-Mourey R, MacKenzie E (1996) Cultural competence: essential measurements of quality for managed care organizations (editorial). *Ann Intern Med* 124:919–921
- McBride M, Morioka-Douglas N, Yeo G (1996) Health and aging: American Asian and Pacific Islander American elders. Stanford GEC Working Paper, Stanford, CA
- McCabe M, Cuellar J (1994) Health and aging: American Indian and Alaska Native elders. Stanford GEC Working Paper, Stanford, CA
- Morioka-Douglas N, Sacks T, Yeo G (2004) Issues in the care of Afghan American elders: insights from the literature and a focus group. *J Cross Cultural Gerontol* 19:27–40
- Office of Minority Health (2000) Assuring cultural competence in health care: recommendations for national standards and an outcomes-focused research agenda. Federal Register, December 22, 2000, pp. 80865–80879.
- Richardson J (1996) Health and aging: African American elders. Stanford GEC Working Paper, Stanford, CA
- Schneider EC, Zaslavsky AM, Epstein AM (2002) Racial disparities in quality of care for enrollees in Medicare HMOs. *J Am Med Assoc* 287:1288–1294
- Schulman KA, Berlin JA, Harless W, Kerner JF, Sistrunk S, Gersh BJ, Dubé R, Taleghani CK, Burke JE, Williams S, Eisenberg JM, Escarce JJ (1999) The effect of race and sex on physicians' recommendations for cardiac catheterization. *New Engl J Med* 340:618–626
- Villa M, Cuellar J, Gamel N, Yeo G (1993) Health and aging: Hispanic American elders. Stanford GEC Working Paper, Stanford, CA
- Yeo G (ed) (2001) Curriculum in ethnogeriatrics: core curriculum and ethnic specific modules. Stanford Geriatric Education Center, Palo Alto, CA. www.stanford.edu/group/ethnoger.
- Yeo G, Gallagher-Thompson (eds) (1996) Ethnicity and the dementias. Taylor & Francis, New York
- Yeo G, Hikoyeda N, McBride M, Chin S-Y, Edmonds M, Hendrix L (1998) Cohort analysis as a tool in ethnogeriatrics: historical profiles of elders from eight ethnic populations in the United States. SGEN Working Paper Series Number 12. Stanford Geriatric Education Center, Palo Alto, CA. sgec.stanford.edu



4 Legal Aspects of Aging

Janet L. Lowder · Sandra J. Buzney · Catherine M. French · Sana Loue

Introduction

Age is one of the defining criteria for a number of protections and benefits that our society has conferred upon older citizens. Yet one of the first challenges in identifying legal issues unique to older individuals is defining the age at which one is considered an “older” person. In many ways, it is a relative term based on behavior, physical status, and attitude, as well as chronological age. Many would find it shocking to use age 50 as the demarcation line, yet that is the age used as a membership criterion for AARP (formerly called the American Association of Retired Persons). Twenty-five percent of the US population is age 50 or older; it is important to identify the legal issues that this group has in common with younger adults as well as issues that may be more pressing, if not unique, to this segment of the population.

Some of the protections and benefits that our society confers upon older citizens include protective services to investigate allegations of abuse or neglect, public benefit programs for which one can qualify by being a certain age or being permanently disabled (as well as meeting financial criteria) such as Medicare, and eligibility for retirement programs and Social Security.¹ At age 50, the amount that can be contributed to various types of private retirement plans begins to increase so that the individual has the opportunity to “catch up” and build up the balance put away for retirement. Moreover, reaching a specified age, which is dependent to some extent on the specific type of retirement plan, is one of the conditions under which withdrawals can be made without penalty. In fact, for traditional Individual Retirement Plans (IRAs), an individual must start receiving periodic distributions by 1 April of the year following the year in which he or she reaches age 70-1/2 or a severe tax penalty will be imposed (CCH 2006).

Aging also brings an increased risk of illness, incapacity, and death, although none of these misfortunes are exclusive to older individuals. Although adults of all ages should consider appointing surrogate decision makers for financial matters and health care decisions, taking control of one’s future in this manner becomes more important as individuals age. If incapacity strikes, an individual may not be able to manage financial or personal affairs and may not be able to make a knowing decision about who to appoint to make these important decisions. Much like insurance must be purchased before the need to make a claim arises, choices about surrogate decision makers must be made and formalized before they are actually needed. If the need for a surrogate decision maker or “agent” arises but no one has been formally appointed to fill the void, legal proceedings, such as appointment of a conservator or legal guardian, may be necessary.

Tools for Surrogate Decision Making

As stated earlier, the opportunity to and benefit of appointing surrogate decision makers for financial and health matters is not unique to the older population. The risk of suffering a chronic illness, debilitating physical condition, and/or mental deterioration does increase with age, albeit probably not as dramatically as stereotypes of aging might suggest. Tragedy can strike at any age, and everyone can have peace of mind that one’s wishes will likely be honored if tragedy strikes. Planning tools, such as powers of attorney, revocable living trusts, and advance medical directives allow an individual to have some control and independence in an otherwise uncontrollable

¹ Age is not the only criterion for these programs, but it certainly is an important one.

situation. They empower an individual to choose a surrogate decision maker and provide direction as to how their personal, financial, and/or medical issues should be handled in the event of incapacity. If an individual is responsible for the care and support of a spouse or child with a disabling condition, planning in advance can offer protection for those who are emotionally, physically, and/or financially dependent.

Capacity is a medical and legal term referring to a person's mental competence and ability to make informed decisions regarding medical, personal, financial, and/or legal matters. Potentially disabling conditions may affect an individual's capacity, such as mental retardation, severe mental illness not controlled by medication, brain injury, chronic substance dependence, or a physical illness that severely impairs awareness of the environment, intellectual functioning, and/or reasoning abilities.

Incapacity and disability are not equivalent terms. An individual is not incapacitated simply by reason of age or a potentially disabling diagnosis. One's capacity can vary over time and is dependent on the circumstances and the task involved. Some areas of decision making require a higher level of comprehension and reasoning than others. Therefore, a person with a condition affecting his/her capacity may be able to make some decisions but not others. A person with capacity who has a disabling condition may choose to execute documents, which allow others to advocate and act on his/her behalf regarding such matters as education issues, vocational training, and applying for public benefits. Thus, while planning tools are particularly helpful in the event of incapacity, they are flexible enough to address a broader range of issues.

Besides offering flexibility, planning tools are advantageous because they are generally more cost-effective than proceedings requiring court oversight. It is important to keep in mind that state law governs planning tools, meaning that states may differ on the types of planning tools allowed, the terminology used, the requirements to execute legal documents, and the circumstances in which they are effective. Therefore, it is necessary to assure that procedures and documents are in compliance with state law.

Case Examples

Before delving into the technicalities of each planning tool, the following cases illustrate some of the unforeseen circumstances that planning tools address and the potential consequences of a lack of planning.

Ms. T

Ms. T, age 51, was involved in a sporting accident, which resulted in a traumatic brain injury. At the time of the accident, she was living independently and had recently left a job with health care benefits to start her own business. During the 2 weeks that she was hospitalized in intensive care, hospital staff did communicate with her parents even though Ms. T did not have a health care power of attorney in effect. Her parents advanced funds to pay her immediate bills, but again, had no legal authority to handle her finances. Fortunately, Ms. T's condition improved to the point where she did have the capacity to execute a durable general power of attorney, health care power of attorney, and living will. Now, her father can request information about her health care benefits, collect information about her finances, pay her bills, and communicate with her physicians.

Mrs. H

Mrs. H never executed a durable general power of attorney or health care directives. She was the parent of three adult children, including John, who was permanently disabled due to a combination of mild cognitive impairment and physical limitations. When she remarried, she and her second husband bought two very modest houses—one in which they resided and one across the street for John and his wife.

Both houses remained titled in the couple's name and passed to Mrs. H upon her husband's death. Mrs. H's health had deteriorated to the point where she was physically and mentally incapacitated and her daughter was

appointed as Mrs. H's guardian of person and estate. Mrs. H eventually was placed in a nursing home. She had inadequate funds to pay for her care, and her daughter applied for Medicaid on her behalf. If she had executed a durable general power of attorney with provisions allowing her agent to make gifts of her finances and negotiate all financial transactions, including executing a deed, the individual appointed as her agent would have had the authority to transfer the home that John lived in to him, as Mrs. H and her husband intended.

Mr. R

Mr. R was a 70-year-old individual with severe diabetes and end-stage renal disease that was treated by hemodialysis. Mr. R's primary caregiver was his ex-wife. He was also survived by three children, the oldest of whom was a young adult.

Mr. R did not execute any health care directives while he had the mental capacity to do so. As his health deteriorated, he developed an ulcer on his foot and eventually required a below-the-knee amputation. The surgical site did not heal, resulting in the need for further surgery. Mr. R had told his ex-wife that he did not want aggressive care. After enduring several surgeries, he asked to be left alone. However, his status had deteriorated to the point where he lacked the mental capacity to make informed decisions about his health care. His eldest child was recognized as his legal decision maker by the medical team even though no formal guardianship proceedings were initiated. She could not accept that Mr. R's prognosis was very poor and held out hope that he would receive a kidney transplant. Therefore, she wanted all means taken to prolong his life. Thus, hemodialysis and aggressive care continued until Mr. R's death. Had he executed a health care power of attorney and living will naming his ex-wife as his agent, she would have been able to direct the medical team to discontinue dialysis and institute comfort measures, which would have been consistent with his expressed wishes.

Mrs. E and Mr. J

For various reasons, many individuals who are in a committed relationship with another adult never formalize their relationship through marriage. One such couple in their 80s have lived together as man and wife for a number of years but never married due to financial concerns. There was some friction between Mrs. E's adult children and Mr. J. Fortunately, they both executed durable general powers of attorney, health care powers of attorney, and living wills and appointed each as the other's agent. When Mrs. E. became ill, Mr. J was able to access her health care information and make decisions on her behalf when she could no longer do so. He was also able to handle her financial matters. Without these legal documents in place, Mrs. E's children would have had priority for directing their mother's medical care and would have also had priority if appointment of a legal guardian was required. Due to the poor relationship, the children would have been able to exclude Mr. J from any involvement in Mrs. E's care or finances, even though his presence was a great comfort to her.

Planning Tools

Each of the planning tools discussed below—powers of attorney, revocable living trusts, advance medical directives, and guardianships and conservatorships—provides various benefits, and is characterized by various limitations. [▶ Table 1](#) provides a summary of the uses and limitations of each of these mechanisms, which are discussed in significant detail below.

Powers of Attorney

A power of attorney is a legal document that allows a person (the “principal”) to name another person (the “agent” or “attorney in fact”) to act in place of the principal. The power of attorney must be signed while the

■ **Table 1**

Comparison of features of various advance planning mechanisms

Feature	Powers of attorney	Revocable living trusts	Advance medical directives	Guardianships/ conservatorships
Mechanism	Allows individual (principal) to name another person (agent) to act in his/her place	Like a contract for management of one's assets; allows individual to manage own assets for his/her own benefit	Three basic types: health care power of attorney, living wills, DNR orders	Available when other planning mechanisms have not been utilized
Duration	May be effective upon signature or at time or event, depending upon type of power of attorney and wishes of principal	Effective at time of signature		Varies by individual situation
Capacity	Must be signed while principal has capacity	Must be signed while individual has capacity	Must be signed while principal has capacity	Individual lacks capacity in some or all aspects of functioning
Court involvement	Varies by state	None in most circumstances	None in most circumstances	Required to establish mechanism; ongoing court monitoring in most states
Scope	May be unlimited or restricted	Allows individual to designate which assets to be part of trust; trust governs distribution of property during period of incapacity and following death	Varies by state and type of advance medical directive	Varies by state and mechanism; guardianships and conservatorships may be over person, estate, plenary, limited, or emergency only depending on state law and circumstances
Revocability	Revocable as long as principal is alive and retains capacity	Revocable while individual still alive and has capacity	Revocable while principal is alive and retains capacity	May be terminated by court only

principal has the capacity to understand the purpose of the document. Therefore, a power of attorney is not a good tool when the mental capacity of the person is questionable. When a person has periods of lucidity, such as an individual with Alzheimer's disease, it is important to have evidence that the principal understood and voluntarily signed the document.

The principal grants authority to the agent to act in the principal's place. There is no court supervision of the agent in many states. The principal chooses the agent, but some states limit the principal's choice to certain categories of persons, such as family members (Guardianship Over the Elderly 2003). The principal should also consider choosing a successor agent in case the primary agent is unable to act. The authority of agent can be unlimited or restricted to handling specific matters, and is defined in the document itself. The principal has full power to continue handling his/her own affairs while the power of attorney is in effect.

There are three types of powers of attorney: (1) general, (2) durable, and (3) springing. The general power of attorney is effective upon signature, and the agent's authority lapses if the principal becomes incompetent. A principal may nominate a guardian for himself or herself in the event of incompetency, which the Court would formally need to approve during a guardianship proceeding. The general power of attorney is most useful, however, in authorizing the handling of short-term matters when the principal is not available rather than planning for future incapacity.

The durable power of attorney is a good tool for planning for future incapacity because it also is effective upon signature but survives the later disability or incompetence of the principal. All states have statutory provisions that allow the creation of a durable power of attorney but states differ in the scope of power allowed (Guardianship Over the Elderly 2003). There are two basic types: (1) general and (2) limited or special. A durable general power of attorney grants the agent broad powers, allowing the agent to act as the principal could act in situations. It is advisable to have an attorney prepare a durable general power to assure that it serves the purposes that the principal intended and complies with state law, and is properly executed. A limited or special durable power of attorney grants the agent only those powers specified in the document. For example, there are durable powers of attorneys for property and health care (which is also considered a type of advanced directive).

A durable general power of attorney may be used to avoid guardianship of the estate and probate court jurisdiction over the principal's financial matters. Sometimes, however, guardianship cannot be avoided. This may happen for a number of reasons: the agent is no longer capable of acting and there is no successor; the agent does not have authority to act in a particular situation; the agent abuses his/her powers; or other interested parties are dissatisfied by the agent's decisions and seek removal by guardianship. When a guardianship is created, some states terminate the durable power of attorney but a significant number of states do not, instead requiring accountability of the agent to the guardian (Smith 1996).

The springing power of attorney becomes effective at either a later specified date or upon the occurrence of a specific event as defined in the document, such as the disability, incapacity, or adjudged incapacity of the principal. Adjudged incapacity should be avoided if the goal is to avoid probate court proceedings. The principal may specify the meaning of incapacity and who will make that determination (this should be a person other than the agent). Although no state statute expressly prohibits this type of power, some are silent on this type of power (Guardianship Over the Elderly 2003).

There are many advantages to using powers of attorney. Powers of attorney are inexpensive, revocable (as long as the principal has the capacity to revoke it), does not require any accounting to the probate court, and the principal retains the ability to manage affairs while he or she is able to do so. There is a lot of flexibility, as the principal can choose the decision maker, the scope of power, and the time and method of deciding when the agent takes over (Guardianship Over the Elderly 2003). There are also disadvantages to powers of attorney. Financial institutions and companies are not obligated to honor a power of attorney. A few insurance companies, Social Security Administration, and IRS may disregard the power of attorney. Also, despite the fact that the agent is a fiduciary, there is a potential for abuse, as the agent may mismanage or take assets. To safeguard against abuse, because of the flexibility of powers of attorney, it is possible to write clauses in the document requiring accountings or a bond/insurance.

Revocable Living Trusts

A trust is essentially a contract for the management of one's assets.² A "grantor" or "settlor" establishes the trust and funds it, the "trustee" manages and administers the trust, and the "beneficiary" receives the benefit of the trust assets. In a "living trust," or inter vivos trust, all three parties may initially be the same individual. The grantor may also designate successor trustees and remainder beneficiaries who receive the benefit of the trust assets after his/her death. A revocable living trust can be changed or canceled at any time, while the grantor has the capacity to do so.

An individual who has capacity may establish a trust and transfer his/her property to the trustee. This property can include land, stocks, bonds, vehicles, and cash. Retirement funds such as IRAs or 401(k) plans cannot be held

² It is important to note that a "living trust" or "revocable trust" is one type of trust arrangement. There are other mechanisms and ways to title assets which will minimize the need for appointment of a guardian to manage an incapacitated individual's funds. For example, by authorizing a signor or naming a co-owner of an asset, another individual will also be authorized to access the funds in the account.

in a trust; an agent under a durable power of attorney will still be needed to access or make elections concerning these assets. While an individual remains capable, he or she may act as the initial trustee and manage the trust for his/her own benefit, as the primary beneficiary. If that individual becomes incapacitated, the successor trustee is able to assume the management of the assets for the now incapacitated individual's benefit. Thus, the grantor, while no longer the acting trustee, remains the beneficiary.

A living trust should avoid the necessity of guardianship in the event of the grantor's incapacity. For all practical purposes, living trusts are easier, faster, more convenient, and allow greater privacy than guardianship (Summers 1996). In the event, however, of guardianship proceedings, state laws regarding trusts generally exempt the trust assets from the guardianship estate. Thus, if a guardian of the estate is appointed, he or she will have control over the assets that were not transferred into the trust and must work with, but not replace, the successor trustee (Summers 1996).

Another advantage of living trusts is that when the incapacitated individual dies, the trust agreement will govern the distribution of the property held in trust. Depending on the terms of the trust agreement, all assets may continue to be held in trust or may be distributed to the remainder beneficiaries. While a trust does not avoid federal or state estate taxes, it does avoid probate administration.

Advance Medical Directives

Advance medical directives communicate one's health care wishes. There are three basic types of advance directives: health care power of attorney, living wills, and do not resuscitate (DNR) orders. Living wills and health care power of attorneys are sometimes supplemented with a "values history," which includes an explanation of personal values related to medical care (Doukas and Reichel 1993). The majority of states recognize both the health care power of attorney and living will, although states vary in what they are called, the scope of decision making allowed, restrictions, and how they are created (Sabatino 2003).³ New York is one state that does not recognize living wills. Most states provide forms to create advance directives, although the majority of these states allow personalized deviations from provided forms (Sabatino 2003). If one executes "standard" forms issued by a state agency, there is usually no need for the involvement of an attorney, and the advanced directive is generally honored immediately. In contrast, if one wants to create an individualized document, it would be wise to consult an attorney to assure that the document complies with state law and will serve its intended purpose. An individualized directive should be honored, but may need to be reviewed by the medical facility's legal department before the decision is made.

Individuals must be competent when creating advance directives, and witnesses are usually required. Advance directives are usually not effective until the individual becomes incompetent, but some states allow immediately effective directives (Sabatino 2003). A competent individual, however, can always veto the agent or revoke the directive (Sabatino 2003).

A general power of attorney for health care, also called the health care proxy, allows a person, the "principal," to delegate any or all health care decisions to another, the "agent." The durable health care power of attorney survives incompetency and may be narrow, such as for a particular surgery, or broad, including both routine care and end-of-life decisions. (See the "Powers of Attorney" section for a thorough discussion of powers of attorney.) Some states limit who may be designated as the agent (Guardianship Over the Elderly 2003). A significant number of states do not allow a health care provider or facility to be an agent; a few states prohibit physicians (American Bar Association Commission, 2002). The agent makes health care decisions consistent with the principal's wishes. Minimally, the principal should at least express generalized preferences for the level of care in medical situations, such as no heroic measures, only comfort care, or to aggressively pursue all potential life-saving measures

³ The testimony of Penelope A. Hommel contradicts the "both" part of this statement (Guardianship Over the Elderly 2003, 109).

(Krohm and Summers 2002). Optimally, to guard against possible abuse by the agent, it is wise to include specific instructions regarding wanted and unwanted treatments (Guardianship Over the Elderly 2003). Even if instructed by the principal, however, some states limit the agent's power on matters such as mental health admission and treatment, psychosurgery, electroconvulsive surgery, sterilization, abortion, pregnancy, and life-sustaining procedures unless expressly authorized (American Bar Association Commission on Legal Problems of the Elderly 2002).

A living will is a written instruction to doctors about end-of-life treatments; although no third party is necessary to effectuate it, state law may require the physician to notify individuals named in the document, who will then have a limited time in which to object to the termination of life-sustaining treatment. In the majority of states, a living will authorizes medical staff to act, or not to act, in situations involving life-sustaining treatment of "terminal conditions" (Johns 2004; Guardianship Over the Elderly 2003). New York, however, does not recognize living wills. Some states also allow a living will to apply to individuals in a persistent vegetative state (Guardianship Over the Elderly 2003). Terminal condition is defined in statutes, and usually specifies that death must be imminent or expected to occur in a relatively or reasonably short time (Johns 2004, p. 131). Some statutes allow a person to name someone in the living will to make health care decisions when the person is terminal or in a persistent vegetative state (Guardianship Over the Elderly 2003). Other common features among state statutes include the right to personalize instructions, the need for one or two doctors to certify that the individual is terminally ill, the requirement of a doctor to honor the living will or transfer care, the requirement of a doctor to place a known living will in the medical file, the requirement of two witnesses or a notary public to the signing, and immunity from liability for doctors and facilities for following the living will (Doukas and Reichel 1993).

Typically, the living will states the circumstances in which life-sustaining treatment should be withheld or withdrawn and specifies what life-sustaining treatment the individual wants or does not want. States, however, have different definitions of life-sustaining treatment. For example, some states explicitly include a right to withdraw or withhold artificial nutrition and hydration, while others are silent on the issue, and a few prohibit such a right (Guardianship Over the Elderly 2003). While a living will should be written, statements regarding the withholding of life-sustaining procedures to family members may constitute an oral living will if determined by a court (Johns 2004; Doukas and Reichel 1993). Some states do not allow a living will to be operative if the principal is pregnant (Doukas and Reichel 1993).

There are several reasons why a health care power of attorney is preferable to a living will, as long as there is a trusted agent. Unlike a health care power of attorney, living wills have a limited functionality, applying only to terminal conditions or when a person is permanently unconscious (Guardianship Over the Elderly 2003). In contrast, most medical decisions for incompetents involve more routine issues. Living wills are also generalized and therefore can be difficult for medical staff to interpret and apply in actual medical circumstances where unforeseeable factors are involved. An agent, on the other hand, acts as an interpreter of the principal's wishes. In cases where artificial hydration and nutrition are needed, some states do not allow the withdrawal of sustenance under the terms of a living will if such withdrawal would cause death, but most states specifically authorize the agent to withhold artificial hydration and nutrition (Krohm and Summers 2002).

Ideally, it is best to have both a living will and a durable health care power of attorney, as the living will acts as a back up if the agent is unavailable in an emergency, and guides the agent when he or she is available. If a person normally spends time in two different states, it may be worthwhile to execute standard health care directives for both states. Although there is an emerging trend towards uniformity among states in regard to advance directive laws, current laws present obstacles to uniformity. These obstacles include the minority of states with state-specific mandatory educative warnings to those executing a durable health care power of attorney or mandatory forms (Sabatino 2003), and the minority of states that lack an explicit statutory provision recognizing valid out-of-state advance directives. Although national uniformity of the law is not necessary to ensure recognition among states, it would encourage more meaningful recognition in that the advance directive would be interpreted as the individual intended. Currently, a state with reciprocity may apply different meanings to the language in directives. For example, an individual in one state may use general language granting the agent the power to make all health

decisions, intending to include decisions about withdrawing or withholding sustenance. In the state where execution takes place, this intention is presumptively honored. Yet, if this individual travels to another state that requires an express statement regarding withdrawing or withholding sustenance, the individual's intention cannot be honored (Sabatino 2003).

A DNR order is another kind of advance directive. A DNR order instructs another who assists a person in severe medical distress to withhold life-saving medical intervention, such as cardiopulmonary resuscitation (Johns 2004). States differ on the circumstances under which a DNR is permitted (Krohm and Summers 2002). A vast majority of states allow both in- and out-of-hospital DNR orders (Krohm and Summers 2002). Some states prohibit a guardian's consent to a doctor's DNR order without prior court approval (Summers 1996; Krohm and Summers 2002). Within states, there are usually different regulations governing out-of-hospital and in-hospital DNR protocols (Krohm and Summers 2002). In-hospital DNR orders are usually placed in admission documents and staff are notified and directed as such (Johns 2004, p131). Out-of-hospital DNR orders are helpful in emergencies, where there is no time to locate and interpret other kinds of written advance directives (Krohm and Summers 2002). This is because DNR orders are typically more visible; states may issue DNR bracelets or prescribed forms on colored paper (Krohm and Summers 2002). Yet, there is a greater risk, as compared to in-hospital DNR orders, that the execution of a DNR order is not communicated (Johns 2004, p131).

In addition to living wills, health care power of attorneys, and DNR orders, a growing number of states are allowing declarations of preferences for mental health treatments, also called psychiatric advance directives. Legislatures created these statutes because of concern that existing directives did not address the specific treatment needs of those with mental illness (National Mental Health Association n.d.a). It is important to note, however, that some states specifically do not allow certain types of mental health treatment in their advance directive statutes (NAMI n.d.b; National Mental Health Association n.d.a). Psychiatric advance directives provide specific instructions regarding treatment and/or designate a proxy to make decisions regarding treatment in the event of incapacity. An increasing number of states require that a psychiatric advance directive can only be revoked when the individual is competent or in remission (National Mental Health Association n.d.b; Krohm and Summers 2002). Thus, in a middle of a psychiatric crisis, a doctor may continue to treat regardless of how ardently the individual protests (Krohm and Summers 2002). Critics contend that revocation during a crisis should be allowed because it would simply put the individual in a situation similar as if he or she had never executed the directive. A potential compromise is to allow the individual to specify whether or not his/her psychiatric advance directive can be revoked during a crisis (National Mental Health Association n.d.a). Some states specifically provide in statute an automatic expiration date (Krohm and Summers 2002). Because of the novelty of psychiatric advance directives, it is unclear whether or not and under what circumstances they will be legally enforceable (NAMI n.d. b). The National Alliance for the Mentally Ill is advocating support of such directives as a tool of empowerment but also call for ongoing research (NAMI n.d.a). Likewise, the National Mental Health Association (n.d.b) promotes psychiatric advance directives for psychiatric crises.

There are some common misperceptions about advance directives. People often assume that advance directives are only used to specify what treatment is not wanted, but advance directives can be used to direct doctors to use all possible life-saving treatment and provide comfort care. People also often associate advance directives with the elderly, but young adults can have more at stake, for, if there is an unfortunate accident, a young adult may be kept alive for decades in an unwanted condition (Sabatino n.d.).

Although advance directives are an important planning tool, there are some concerns about their implementation. There is fear that a doctor will conclude that if an individual does not have a directive, he or she intended to have life-sustaining treatment administered under all circumstances. Yet, evidence suggests that the real reason people do not create a directive is because of ignorance of available tools, unawareness of its importance, or uncertainty as to how to create it (Smith 1996). There is also concern that if an individual does have a living will, the medical staff may under-treat based on inattentive over-generalizations of the document (Lynn 2003). Yet, even with these concerns, advance directives are particularly helpful when the relationship to the proxy is not legally sanctioned, such as a partner (as in the case example of Mrs. E and Mr. J) or there is an unusual specific preference, such as not to be taken to a particular hospital (Lynn 2003). The documents are only useful if they are

provided to health care professionals, the appointed agents, and made available when an individual seeks emergency room treatment or is hospitalized.

Guardianship/Conservatorship⁴

Guardianship should be considered only when a person has failed to put in place the planning tools described above or circumstances demand a guardian. Guardianship is a legal process in which the court appoints an individual, association, or corporation (the “guardian”) to act on behalf of another who has been declared incompetent or incapacitated (the “ward”). There are several types of guardians, including guardian of the person, guardian of the estate, plenary guardian, limited guardian, and emergency guardian. A conservatorship is a distinct proceeding that might be described as a “voluntary” guardianship for individuals who are physically disabled or infirm but mentally competent. The individual selects the conservator, and asks the probate court to appoint that person and specifies the scope of authority. The individual may discharge the conservator if he or she is dissatisfied with the person or if his/her condition improves. Generally, all other appointment procedures, powers, and duties for a conservator are the same as those of a guardian. In guardianship of the person, the guardian is appointed to have custody and provide for the support or maintenance of a ward. This involves all day-to-day decision making of a personal nature, including arrangements for food, clothing, housing, medical care, and recreation. In guardianship of the estate, the guardian is appointed to manage the finances of the ward in the ward’s best interest. In a limited guardianship, the guardian has powers specifically limited by the court and the ward retains all other rights. An emergency guardian is appointed without a hearing by the court when an emergency exists and a guardian is necessary to prevent injury to the person or estate. An emergency guardianship usually occurs when consent for medical treatment is needed and the individual is unable to make an informed decision on his/her own behalf.

In many states, simply filing a short petition with the clerk, containing personal identifying information and a brief statement of the reasons for seeking guardianship, initiates guardianship (Summers 1996; Krohm and Summers 2002). Notice is then provided to the proposed ward and others as determined by state statute, usually the spouse, parents, adult children, or closest adult relative (American Bar Association Commission on Law and Aging and Hurme 2004c). The party initiating the case bears the burden of proving that the proposed ward is incapable of decision making (Krohm and Summers 2002). The standard of proof differs among states; most require a “clear and convincing” standard, some state statutes are silent on the issue, and a few have standards of “if the court is satisfied,” “preponderance of the evidence,” or “beyond a reasonable doubt” (American Bar Association Commission on Law and Aging and Hurme 2004a). States have different definitions of incapacity but each revolves around all or some of the following elements: functionality; cognition; necessity of guardianship and the risk of harm if no guardianship; and physical or mental conditions of the proposed ward (American Bar Association Commission on Law and Aging and Hurme 2004b). In making its determination of incapacity, the court gives a great deal of weight to medical or psychiatric evidence, but states have different requirements concerning medical documentation and evaluation of the proposed ward (American Bar Association Commission on Law and Aging and Hurme 2006).⁵ The medical evaluation must be current and centers on whether the proposed ward is fully capable, totally incapable, or partially capable of making personal and/or financial decisions. Based on the evidence, the court determines the scope of guardianship, specifically whether it will be limited or full, and then determines who will be appointed as guardian (Summers 1996).

⁴ Some states, following the Uniform Guardianship and Protective Proceedings Act, use the term “guardian” for guardianship of the person, whereas “conservator” is used for the guardianship over the estate—the “ward” in a conservatorship is called a “protected person.” Still other states, such as New York and Ohio, use the term guardianship in its plenary sense, whereas conservatorship is a voluntary proceeding for an individual who is not adjudged incompetent, but needs assistance with their affairs. This article uses the latter terminology.

⁵ For example, Maine requires only that a physician or licensed psychologist evaluate the proposed ward, whereas Kentucky requires an interdisciplinary evaluation by a physician, psychologist, and social worker.

Because a guardianship is a legal proceeding, the proposed ward is entitled to due process protection (National Guardianship Association n.d.a). All states afford notice of the hearing to the proposed ward (American Bar Association Commission on Law and Aging and Hurme 2005). All states allow counsel, but few require the appointment of counsel (Smith 1996; American Bar Association Commission on Law and Aging and Hurme 2004d). Generally, the courts make counsel available to indigent individuals. Most states provide for a guardian ad litem who represents the proposed ward's "best interests," but this person may act as an independent evaluator rather than an advocate (Smith 1996). Some state statutes explicitly allow a jury trial; only one state, Kentucky, mandates a jury trial (American Bar Association Commission on Law and Aging and Hurme 2004a). In practice, however, jury trials rarely happen; a judge will usually conduct a bench trial if the guardianship is contested (Summers 1996). Generally, states allow the proposed ward to compel, confront, and cross-examine witnesses, present evidence, and appeal the determination of the court (National Guardianship Association n.d.a). Thus, all states provide due process but the rights afforded vary state by state.

Unfortunately, in many situations, due process rights are disregarded or minimized in practice. A. Frank Johns, a Certified Elder Law Attorney (CELA), testified in 2003 before the US Senate Special Committee on Aging that empirical research shows that judges arbitrarily and paternalistically adjudicate guardianship proceedings without adhering to statutory due process requirements (Guardianship Over the Elderly 2003). For example, the proposed ward may not even be present at the hearing (Guardianship Over the Elderly 2003). Also, some judges disregard durable powers of attorney, including the ward's nomination of surrogate decision makers (Guardianship Over the Elderly 2003). The recommendations of Wingspan: The Second National Guardianship Conference, held in November 2001, included funding of court investigations at the beginning of guardianship proceedings to guarantee due process protection as a high priority (Guardianship Over the Elderly 2003).

As a result of guardianship proceedings, if the proposed ward is found to be incapable or incompetent, the ward loses legal rights in areas in which he or she has been declared incompetent. The ward may lose the right to: determine living arrangements; make medical decisions; drive; manage, buy or sell property; marry; and/or vote (National Guardianship Association n.d.a). Yet, there are certain rights maintained, including the right to be treated with dignity and respect; the right to privacy; the right to have personal desires, preferences, and opinions considered by the guardian; the right to have explanations of medical treatment; and the right to an attorney and to petition to modify or terminate the guardianship or bring a grievance against the guardian (National Guardianship Association n.d.a).

States usually have minimum requirements to become a guardian. The proposed guardian cannot be a minor, felon, or adjudicated as incompetent (Summers 1996). Some states require advance training or ongoing certification (Summers 1996). The guardian's responsibilities differ based on the type of guardianship. In regards to guardianship of the person, perhaps the most important responsibility is to understand that his/her role is to help and support the ward; the guardian cannot make the ward do anything against his/her own will, unless specified by the court (Summers 1996). When a guardian is faced with a major decision, such as whether to involuntarily commit the ward or consent to certain medical treatment, the guardian should formally petition the court for authorization if possible (Summers 1996). Some states require detailed reports by guardians, while other states have minimal requirements (Summers 1996).

In regards to guardianship of the estate, the guardian is responsible for all real and personal property. Generally, this entails marshalling and protecting assets; obtaining appraisals of property; protecting property and assets; receiving income and making appropriate disbursements subject to court authorization; and reporting to the court (National Guardianship Association n.d.a). Also, a guardian must usually obtain court approval before selling assets (National Guardianship Association n.d.a).

Ideally, a family member or close friend who knows of the person's wishes, beliefs, and values should be appointed as a guardian. Yet, sometimes such a person is unable to serve, and public guardianship is an emerging alternative. Some counties have public guardianship programs that may require that no family or friends are available and/or the ward lacks money to compensate a private, professional guardian. Another growing trend is non-profit guardianship services. Such programs often have hired staff but are primarily dependent on volunteers to act as guardians. Primarily, these nonprofits service indigent clients who lack family members or others to act as guardians, but may extend services to fee-paying clients.

While guardians have significant responsibility, they also acquire power stemming from these responsibilities, which too often leads to abuse.⁶ Because guardianship grants broad power to the guardian and deprives the ward of his/her legal rights, guardianship should be pursued as a “last resort.” In addition to the other planning tools discussed in this article, which are alternatives to guardianship, mediation is another up-and-coming alternative. Mediation involves a neutral facilitator in a nonadversarial forum who assists the family in resolving issues themselves (Guardianship Over the Elderly 2003). Mediation is useful because it addresses the underlying issues, such as caretaker stress or family disputes, that may be entwined with the legal reason the petitioner seeks guardianship (Guardianship Over the Elderly 2003).

Failure to Plan

It is all too common for people to avoid planning for the future, believing that such thinking is morbid, or that such planning is founded on negative thinking, which will bring bad luck, misfortune, and or ill health to the thinker. Unfortunately, a failure to plan may result in unwelcome consequences in both the health and financial contexts that could have been avoided had individuals been willing to contemplate their own potential disability and the inevitability of their own deaths.

Case Examples

The cases of Mrs. S, Mrs. P, and Mrs. Q serve as good examples.

Mrs. S

Mrs. S and her husband have been married for almost 20 years. Several years ago, Mrs. S developed severe chest pain but refused to see a physician, believing that “everything would be alright” and that “no news is good news.” The pain gradually increased and became more widespread. Mrs. S finally agreed to see a physician when she began to experience difficulty breathing due to the severe pain. Following a physical examination and a sequence of many tests, Mrs. S was diagnosed with lung cancer, which most likely was associated with her almost-lifelong heavy smoking. The cancer was found to have already metastasized to the ovaries by the time Mrs. S presented to the physician.

Surgery, radiation, and chemotherapies were utilized in an attempt to reduce the spread of the cancer. During this entire time, which spanned close to two years, Mrs. S refused to execute powers of attorney. She believed that her husband would be able to make health care decisions for her without having to execute such documents, and her husband believed that thinking about such things was morbid and depressing. Mrs. S became somewhat hysterical every time the subject was raised.

⁶ In Michigan, a 2003 state audit of five probate courts found widespread financial abuse by guardians, such as late payment of bills, lack of accounting, and borrowing interest-free loans from the estate. A Washington Post article reported that, since 1995 in Washington, DC, one of five guardians have gone years without reporting to the court, and in more than 24 cases, guardians or conservators have taken or mishandled money (Center for Social Gerontology 2004). A 2004 study by the United States Government Accountability Office (2004) shows that although all states require oversight, generally in the form of personal and accounting reports, fewer than half of the states require courts to actually review the submitted reports. Most of the courts surveyed in this study blamed insufficient funds for proper oversight. The lack of coordination between state courts and federal agencies perpetuate abuse. State courts and federal agencies do not systematically notify each other when a person is appointed a guardian or when a guardian or representative payee is abusing funds. Thus, an identified abuser in one system may remain in charge of finances in the other system. Also at issue is that the incidence of guardianship or representative payee abuse is unknown, in part because courts do not track basic information such as the number of guardians assigned. The Government Accountability Office study calls for both systematic information sharing and compilation of national data on the incidence of abuse.

Unfortunately, during this time, Mr. S was the victim of a fatal car crash. Mrs. S' condition steadily worsened, with the cancer metastasizing to an area near her spine. She was no longer able to understand what was happening around her and lacked capacity to make any decisions about life-saving procedures, the use of or withdrawal of a feeding tube, or maintenance in a hospital or hospice. Mr. and Mrs. S had had only one child, who suffered from mental retardation and could not be relied upon to make decisions for Mrs. S. Mrs. S had been estranged for many years from her only sibling, a sister. Given a choice, Mrs. S probably would not have wanted her sister to be recruited to make health care decisions for her. She most likely would have preferred that one of her closest long-term friends be enlisted to make such decisions, because the friend was aware of the values that Mrs. S held most dear, and she and Mrs. S had discussed many times how they would like to see their lives end in the event of an incurable or disabling condition. However, the governing state statute gave authority to Mrs. S' sister to make such health care decisions for her in the absence of legal document designating an agent or a relative with higher priority, such as a living spouse.

Mrs. P

Mrs. P has always been very sympathetic to the financial woes of her grandson. Two years ago, he encouraged her to transfer title in her two-family home to him alone and asked her to add his name to several bank accounts, which he then depleted. She told other family members that she felt very pressured to do these things and did not realize that her grandson would be able to withdraw money at will. However, when a social worker from the county protective services agency interviewed Mrs. P in response to a report made by another relative who suspected financial exploitation, she stated that she acted voluntarily because she did not want her grandson to get into legal trouble.

Mrs. P now recognizes that her actions were a mistake. Because she understood those actions at the time and acted voluntarily, there is little likelihood of recovering the transferred funds. However, to minimize the likelihood that she will give her grandson any additional money or direct access to her assets, she gave her daughter durable power of attorney so that the daughter can transfer funds to new accounts open in Mrs. P's name only and have the statements mailed to the daughter's home. Her grandson will not know where Mrs. P holds her remaining funds unless she decides to tell him and will not have direct access to the accounts.

Had Mrs. P. established a living trust much earlier, named another individual to serve as trustee, and transferred her house and other assets into the trust, Mrs. P would have had the benefit of her money and home without the ability to transfer any trust assets to her grandson, in response to future requests for assistance.

Mrs. Q

Mrs. Q also had a grandson who pressured her to assist him financially. However, by the time that others discovered that most of her funds had been depleted by "gifts" to her grandson, she did not have the capacity to execute a durable power of attorney or establish a trust. Therefore, the only alternative was to have a legal guardian appointed in order to handle her assets in the future.

Each state has laws designating which individuals may make health care decisions for a person who lacks decision making capacity and the order of priority among those individuals, in the absence of advance planning documents. In the worst possible scenario, this means that health care decisions could be made by an individual with whom the cognitively impaired elder has had no contact for many years and who may not understand the elder person's values and desires. Too, individuals who are designated by law to make such decisions may do so based on their own feelings, rather than the wishes of the elderly patient. As an example, an adult child who has been estranged from his/her parents for many years may choose to maintain the parents on life-sustaining equipment, which the parents would not have wanted, out of a sense of guilt and an inability to address or resolve the conflicts that had plagued their relationship.

References

- AARP (2006) History and mission. Retrieved February 23, 2006, from http://www.aarp.org/about_aarp/aarp_overview/a2003-01-13-aarphistory.html
- American Bar Association Commission on Law and Aging, Hurme SB (2004) Monitoring following guardianship proceedings. Retrieved July 16, 2004, from <http://www.abanet.org/aging/guardian5.pdf>
- American Bar Association Commission on Law and Aging, Hurme SB (2004a) Conduct and findings of guardianship proceedings. Retrieved July 16, 2004, from <http://www.abanet.org/aging/guardian6.pdf>
- American Bar Association Commission on Law and Aging, Hurme SB (2004b) Initiation of guardianship proceedings. Retrieved July 16, 2004, from <http://www.abanet.org/aging/guardian2.pdf>
- American Bar Association Commission on Law and Aging, Hurme SB (2005) Notice in guardianship proceedings. Retrieved September 20, 2006, from <http://www.abanet.org/aging/docs/Chart-Notice-12-05.pdf>
- American Bar Association Commission on Law and Aging, Hurme SB (2006) Representation and investigation in guardianship proceedings. Retrieved September 25, 2006, from <http://www.abanet.org/aging/docs/Chart-Representation-12-05.pdf>
- American Bar Association Commission on Legal Problems of the Elderly (2002) Appendix 1: Health care power of attorney and combined advance directive legislation. Retrieved July 16, 2004, <http://www.abanet.org/ftp/pub/aging/hcpacht02.pdf>
- Barnett TJ (1992) Living wills and more, Wiley, New York
- CCH (2006) Financial planning toolkit. Retrieved February 23, 2006. <http://www.finance.cch.com/financetoc.asp>
- Center for Social Gerontology (2004) Guardianship and alternatives. Retrieved July 2004, from <http://www.tcsg.org>
- Doukas DJ, Reichel W (1993) Planning for uncertainty: a guide to living wills and other advance directives for health care, The Johns Hopkins University Press, Baltimore, MD, pp27, 60, 118–119
- Guardianship Over the Elderly (2003) Security provided or freedoms denied?: Hearing before the Special Committee on Aging, Senate, 108th Cong., 1st Sess., 2003, pp43–46, 78, 97–99, 109, 110, 112–116
- Johns AF (2004) Older clients with diminishing capacity and their advance directives. *Real Property, Probate Trust J* 39:107–134
- Krohm C, Summers S (2002) Advance health care directives: a handbook for professionals, American Bar Association, Chicago, IL, pp 7, 10–12, 117, 136–138
- Lynn J (2003) Why I don't have a living will. *The Law of Bioethics: Individual Autonomy and Social Regulation*. Thomson West, St. Paul, MN, pp318, 321
- NAMI (n.d.a) NAMI's position on psychiatric advance directives. Retrieved July 26, 2004, from http://www.nami.org/Template.cfm?Section=Issue_Spotlights&template=/ContentManagement/ContentDisplay.cfm&ContentID=8382
- NAMI (n.d.b) Psychiatric advance directives: an overview. Retrieved July 26, 2004, from http://www.nami.org/Template.cfm?Section=Issue_Spotlights&template=/ContentManagement/ContentDisplay.cfm&ContentID=8381
- National Guardianship Association (n.d.a) Guardianship/conservatorship—an overview. Retrieved July 16, 2004, from <http://nga.affiniscape.com/associations/2543/files/guard-conserv.pdf>
- National Guardianship Association (n.d.b) Rights of an individual under guardianship. Retrieved July 16, 2004, from <http://nga.affiniscape.com/associations/2543/files/rightsofward.pdf>
- National Mental Health Association (n.d.a) Psychiatric advance directives: issue summary. Retrieved July 29, 2004, from <http://www.nmha.org/position/advancedirectives/PADSummary.pdf>
- National Mental Health Association (n.d.b) Psychiatric advance directives toolkit. Retrieved July 26, 2004, from <http://www.nmha.org/toolkit/advancedirectives/index.cfm>
- Ohio Department of Aging, Ohio Elder Abuse Task Force Final Report, Published January 2005, <http://www.goldenbuckeye.com/eatffinal.pdf>
- Sabatino CP (2003) De-Balkanizing state advance directive law. BIFOCAL, 25. Retrieved July 16, 2004, from <http://www.abanet.org/aging/bifocal251.pdf>
- Sabatino CP (n.d.) 10 legal myths about advance medical directives. Retrieved July 16, 2004, from <http://www.abanet.org/aging/myths.html>
- Smith GP II (1996) Legal and healthcare ethics for the elderly. Taylor & Francis, Washington, DC, pp40, 59, 60
- Summers SK (1996) Guardianship and conservatorship. American Bar Association Senior Lawyers Division, Chicago, IL, pp6, 10, 30, 46, 58, 59, 64, 105, 110
- United States Government Accountability Office (2004) Guardianships: collaboration needed to protect incapacitated elderly people. Retrieved July 23, 2004, from <http://www.gao.gov/new.items/d04655.pdf>



5 The Participation of Cognitively Impaired Elderly in Research

Sana Loue

Introduction

A significant body of literature has developed that addresses the various ethical issues arising in the context of the recruitment and enrollment into research protocols of cognitively impaired individuals, institutionalized individuals, and elderly persons. Much of this discourse has taken place between professionals in the medical, public health, and legal arenas. This article is not intended to debate the various points raised in these discussions. Rather, it is intended as a guide to the relevant issues for individuals involved in the professional care and caregiving of cognitively impaired elderly individuals, whether residing in their communities or in institutions, who may be called upon by their elderly patients, family members, or friends to assist in decisionmaking regarding their participation in research.

The need for such guidance is critical and growing. Estimates suggest that 4 million people in the United States currently have Alzheimer's disease and, among those aged 85 and older, the prevalence of the disorder approaches 50% (Evans et al. 1989; Markesbery 1998). It has been estimated that as many as 5 million individuals will demonstrate evidence of dementia by the year 2040, when the Baby Boomers reach "old age" (Manning 1993) and that by the year 2050, as many as 13.2 million will be affected by Alzheimer's disease (Hebert et al. 2003). This means that 1 out of every 45 Americans will have Alzheimer's disease (Brookmeyer et al. 1998).

Yet additional individuals will experience a lesser level of cognitive impairment due to various other causes, including mental illness, stroke, adverse drug interactions, acute infections (Buckwalter et al. 1999), mental retardation (American Association in Mental Retardation 2004), and/or malnutrition (Goodwin et al. 1983; Manders et al. 2004). In the absence of a formal assessment, these individuals may not be recognized by their primary care physicians as experiencing any level of cognitive impairment. For instance, a study of 3954 apparently relatively healthy primary care patients over the age of 60 found that 10.5% had mild impairment and 5.2% had moderate to severe impairment (Callahan et al. 1995). Less than one-quarter of those found to have severe impairment had been recorded by their physicians as having dementia. In yet another study of 2212 community-dwelling African American residents aged 65 and older in Indianapolis, it was found that almost one-quarter (23.4%) experienced some level of cognitive impairment (Unverzagt et al. 2001).

Many such individuals may eventually be forced to reside in a nursing home or other residential facility, despite their preference for other living arrangements. The National Alzheimer's Association, which has traditionally supported home- and community-based care to the extent possible, has noted

For many, perhaps most people with Alzheimer's disease, the time will come when it is no longer possible to stay at home—because there is no caregiver (at least 20% of people with Alzheimer's disease live alone); because they need more care than their family can provide; or because their caregiver becomes too frail or ill to continue (Alzheimer's Association 1997a, b: 11).

In 1990, 1% of those aged 65–74 lived in a nursing home, while among those aged 85 and older, one out of every four persons did (United States Census Bureau 2001b). The 2000 census indicates that 4.5% of all individuals aged 65 and older are residing in nursing homes (United States Census Bureau 2001a). Researchers have estimated that, at any given time, approximately 5% of the older population is confined to institutions (Himes et al. 2000).

These data indicate that a significant proportion of the aging population may be suffering from varying levels of cognitive impairment that have remained largely undetected, even by health care providers. A careful

questioning is critical in order to identify patients who may require referral for further assessment and who may need support in deciding whether or not to participate in research.

Conducting research with elderly persons suffering from cognitive impairment is critical if we are to improve our understanding of the causes of their cognitive impairments, our ability to assess individuals' capabilities, and our ability to develop and implement more effective and supportive interventions. Yet past history demonstrates the vulnerability of cognitively impaired individuals and institutionalized persons to abuse in research (Advisory Committee on Human Radiation Experiments 1996; Bein 1991; Garnett 1996; Lubasch 1982; Rothman 1991; *Scott v. Casey* 1983; *Valenti v. Prudden* 1977). An outright prohibition against the participation of cognitively impaired elderly in research would shield them from the potential for such abuse, but would also result in a loss of their individual autonomy, possibly foster their societal isolation and stigmatization. Such a prohibition would also deprive future generations of important scientific knowledge critical to the amelioration and/or prevention of disease and the improvement of care. Consequently, elderly individuals may face the twin dangers of exploitation and overprotection; our challenge is to foster such research while simultaneously protecting vulnerable elderly individuals from potential exploitation and abuse.

The Requirement of Informed Consent

Ethically and legally, researchers are required to obtain the informed consent of an individual in order to enroll an individual into a study. This ethical requirement was derived from several international documents, including the Nuremberg Code and the Helsinki Declarations, and has been integrated into US law by federal regulations. These federal regulations state that "no investigator may involve a human being as a subject in research . . . unless the investigator has obtained the legally effective informed consent of the subject or the subject's legally authorized representative" (Code of Federal Regulations 2005). The term "legally authorized representative" is defined in the regulations as "an individual or judicial or other body authorized under applicable law to consent on behalf of a prospective subject to the subject's participation in the procedure(s) involved in the research" (Code of Federal Regulations 2005). A number of states have implemented state regulations or statutes which govern in addition to the federal laws and which should be consulted to verify if an individual has legal status to make a decision on behalf of another individual. For instance, a blood or marital relationship may not be sufficient under law to authorize an individual to serve as a legal representative, as is the case in New York State.

The federal regulations, however, do not provide specific guidance to researchers who wish to conduct studies with cognitively impaired individuals. A number of organizations have developed guidelines, including the Alzheimer's Association (Alzheimer's Association 1997a, b), the American College of Physicians (American College of Physicians 1989), the Clinical Center of the National Institutes of Health (National Institutes of Health Clinical Center 1987), the Council of International Organizations of Medical Sciences in collaboration with the World Health Organization (Council for International Organizations of Medical Sciences 2001), the Council of Europe (Council of Europe 1997), and the British Medical Research Council (Medical Research Council Working Party on Research on the Mentally Incapacitated 1991).

Valid informed consent requires that four elements be present: (1) the individual from whom consent is to be obtained must be given the information necessary to make a decision; (2) the individual must understand the information; (3) the prospective participant must have the capacity to consent; and (4) the consent of the individual to participate must be voluntary (Faden and Beauchamp 1986; Meisel et al. 1977). It cannot be emphasized enough that informed consent is a process that continues from the time of recruitment and enrollment throughout the study; it is not and should not be construed as the mere presentation to and signing of a document by the prospective research participant.

Enhanced protections during this informed consent process may be ethically required for cognitively impaired elderly individuals who may become research participants, due to their potential vulnerability. Vulnerable participants are those individuals with "insufficient power, prowess, intelligence, resources, strength, or other needed attributes to protect their own interests through negotiations for informed consent" (Levine 1988: 72). This could encompass, among others, elderly individuals suffering from varying levels of cognitive impairment,

dementia, mental illness, and mental retardation. These additional protections are discussed below in the context of presenting information, ensuring understanding, assessing capacity to consent, and voluntariness. Additional considerations critical to informed consent are also addressed. These include confidentiality, elder abuse and neglect, and balancing the risks and benefits of participation in a research study.

Presenting Information

As an example of a situation in which inadequate information was provided to prospective research participants, consider the following statement that appeared in an informed consent form presented in conjunction with an 8-week, double-blind, crossover study of the effectiveness of imipramine compared to placebo on depression. This study was conducted from 1959 to 1960, prior to the implementation of federal regulations governing research with human participants.

The kind of trouble you have been telling me about often responds quite well to medicine. We now have two different medicines available that we know help many people with difficulty like yours. However, some people do better with one and other people do better with the other medicine. The best way to find out which of the two medicines is best for you personally is to try them both. So we have set up a treatment program that will give you the opportunity to do just that. You will be able to take each medicine for 4 weeks. At the end of the 8 weeks, if necessary, you may continue to take whatever medicine works best for you (Park et al. 1967: 350; Uhlenhuth and Park 1964: 103).

The defects in the information presented, if judged against today's standards, are glaring:

- Participants were not advised that they were to participate in research, but were led to believe that this was clinical treatment for their depression.
- Individuals were led to believe that the substances to be administered were both medicines that had been shown to be effective. In fact, one was a placebo with no therapeutic value and the other was a new medication whose effectiveness and efficacy had not yet been assessed.

Federal regulations now require that the following information be provided to all research participants during the informed consent process: (1) a statement that the study involves research, an explanation of the purposes of the research, the expected duration of the subject's participation, a description of the procedures required for participation, and the identification of any procedures which are experimental; (2) a description of any reasonably foreseeable risks or discomforts to the research participant; (3) a description of any benefits from the research that may be reasonably expected for the research participant or others; (4) a disclosure of appropriate alternative procedures or courses of treatment, if any, that might be advantageous to the research participant; (5) a statement describing the extent to which confidentiality of records identifying the research participant will be maintained; and (6) for research involving more than minimal risk, an explanation as to whether any compensation or any medical treatments are available if injury occurs and, if so, what they consist of, or where further information may be obtained; (7) an explanation of whom to contact for answers to pertinent questions about the research and the rights of research participants, and whom to contact in the event of a research-related injury to the research participant; and (8) a statement that participation is voluntary, that a refusal to participate will not involve any penalty or loss of benefits to which the research participant is otherwise entitled, and the participant may discontinue participation at any time without penalty or loss of benefits to which the subject is otherwise entitled (Code of Federal Regulations 2005).

In addition to these mandated disclosures, federal regulations indicate that the following information may be provided to research participants where appropriate: (1) a statement that the particular treatment or procedure may involve risks to the research participant (or to the embryo or fetus, if the participant is or may become pregnant) which are currently unforeseeable; (2) anticipated circumstances under which the participation of a research participant may be terminated by the investigator without regard to the participant's consent; (3) any additional costs to the subject that may result from participation in the research; (4) the consequences of a participant's decision to withdraw from the research and procedures for orderly termination of participation by

the participant; (5) a statement that significant new findings developed during the course of the research, which may relate to the participant's willingness to continue participation will be provided to the subject; and (6) the approximate number of participants involved in the study (Code of Federal Regulations 2005). As an example of when such disclosures might be appropriate, consider the following hypothetical scenario.

A woman suffering from the initial stages of Alzheimer's disease is enrolled into a study of an experimental drug that is intended to delay the onset of more severe symptoms. Use of the experimental drug results in an adverse reaction that was not previously seen in research participants or in animal experiments with the drug. An injury to the research participant would not be foreseeable in such circumstances. As the study progresses, this research participant becomes so confused as to be unable to participate meaningfully, and becomes distraught with study procedures to such a great degree that she is actually traumatized by participation. The investigator may choose to terminate the participation of the study participant against her wishes, in order to protect her from further trauma.

Under another scenario, during the course of the study, a pharmaceutical company markets a newly approved drug that will boost memory among those suffering from Alzheimer's disease; the investigators should inform the woman about this product and its availability, even though awareness of its potential usefulness to her may decrease her willingness to continue participation in the study. Although her decision to withdraw would result in a reduction in the number of participants and possibly affect adversely the researcher's ability to draw conclusions from the study, the researcher should still disclose this information to her (Code of Federal Regulations 2005).

Ensuring Understanding

It is critical that individuals understand that they are participating in research and that the procedures that they will undergo may not yield any direct benefit to them. A number of studies have found that many research participants may not understand either that they are participating in research rather than receiving clinical care, or the nature of the procedures that they will undergo in conjunction with their participation (Gray 1975; Fletcher 1973; Howard et al. 1981; Hassar and Weintraub 1976; McCollum and Schwartz 1969; Park et al. 1966; Riecken and Ravich 1982).

The National Bioethics Advisory Commission (2001) has recommended that the informed consent procedure be tailored to the specific abilities of each individual participant to receive and process information. For instance, some elderly patients may have hearing or vision impairments that impede their ability to understand the information in the form in which it might be presented; accommodations must be made for these limitations in order to ensure that potential research participants understand the substance of the information being presented. A number of suggestions have been made to maximize understanding, including the use of a clear and simple presentation format for the information (Bergler et al. 1980), the provision of sufficient time to enable the individual to process the information given to him or her (Morrow et al. 1978), and discussion of the information with the researcher or member of the research team (Williams et al. 1977). The individual may be asked to restate or summarize in his or her own words the information provided in order to confirm that he or she understood. Tailored questions, whether in multiple choice, true–false, or essay format, may be asked of the participant following the presentation of the information, to ascertain whether and how much the prospective participant understood of the information presented (Bonnie 1997; Flanery et al. 1978; Hassar and Weintraub 1976; McCollum and Schwartz 1969; Williams et al. 1977). One commentator has suggested that a family member participate with the cognitively impaired member in the informed consent process to ensure understanding and provide concurrent consent (Bonnie 1997).

Assessing Capacity to Consent

The terms *capacity* and *competence* are often used synonymously, but they actually represent distinct concepts. The term *capacity* is used here to refer to an individual's decisionmaking ability. In contrast, the term *competence*

reflects a legal judgment that an individual has a minimal level of mental, cognitive, or behavioral functioning to perform or assume a specified legal role (Bisbing et al. 1995; Loue 2001). It is important to recognize that being diagnosed with a particular condition is “relevant to, but not determinative of, incapacity for informed consent” (High et al. 1994). For instance, the course of schizophrenia may fluctuate, so that there may be periods of time during which an individual is able to understand and to give legally valid consent. • [Table 1](#) provides a brief

■ **Table 1**

Summary of common causes of diminished decisionmaking capacity in elderly individuals

Cause of diminished capacity	Presenting signs and symptoms
Alzheimer’s disease	Progressive degenerative brain disorder characterized by severe amnesia, lapses of short-term, memory, deficits in language, attention, executive functions, and visuospatial and constructional abilities (Masliah et al. 1993)
Depression	Symptoms include sleep disturbance, loss of appetite, impaired concentration, poor memory, psychomotor retardation, constipation, somatic pain, depressed mood, suicidal ideation (DeLisa and Gans 1993; Lakshmanan et al. 1986); decreased motivation may impede ability to protect own interests, causing reduction in decisionmaking capacity (Elliott 1997)
Frontal lobe dementia	A disorder of unknown cause, also known as frontotemporal dementia; characterized by slow and insidious progression, early loss of personal and social awareness such as neglect of personal hygiene, distractibility, mental rigidity and inflexibility, ritualistic behaviors, incontinence, the repetition of a limited number of words and phrases, the progressive reduction of speech, and echolalia (Usman 1997)
Huntington’s disease	A genetically transmitted neurodegenerative disorder (Bylsma 1997); onset may occur at any age; average duration is 15–17 years; characterized by moderate episodic or semantic memory disturbance, attention dysfunction, and deficits in problem-solving, arithmetic, and visuospatial abilities (Bylsma 1997; Salmon and Bondi 1997)
Lewy body dementia	Characterized by sudden onset and fluctuating level of awareness, frequently with visual and auditory hallucinations (Kennedy 2000); severe deficits in attention, verbal fluency, and visuospatial processing (Hansen et al. 1990)
Schizophrenia	Characterized by delusions, hallucinations, thought disorder, grossly disorganized or catatonic behavior, negative symptoms, social and/or occupational dysfunction (American Psychiatric Association 2000)
Vascular dementia	Also known as multifarct dementia (Roman 1991); earlier age of onset than other forms of dementia, abrupt onset, fluctuating course, nocturnal exacerbation of confusion, limb rigidity, incontinence, and gait abnormality
Wernicke-Korsakoff syndrome	Results from prolonged and heavy consumption of alcohol, characterized by permanent short-term memory impairment, resulting in an inability to remember new information for more than a relatively brief period of time (Oscar-Berman and Evert 1997); may also involve deficits in visuospatial, abstraction, and problem-solving abilities, with appearance of emotional apathy

synopsis of many common causes of incapacity in elderly individuals.

Care providers and caregivers approached by their elderly patient, family member, or friends for advice about participating in research, or by a member of a research team about an elderly person’s enrollment into a research study, will want to ask the following questions: Under what conditions will capacity be assessed? Who will conduct the capacity assessment? How will the assessment be conducted and what specifically will be assessed? How will the accuracy of the assessment be verified?

Under What Conditions Will Capacity Be Assessed?

It is critical that the conditions under which capacity is to be assessed maximize the likelihood that an accurate finding will be achieved. First, it is important that the individual who is to assess capacity be matched

appropriately with the prospective research participant (Kennedy 2000). For instance, an older woman with a history of being abused by her partner as she became increasingly dependent upon him physically for her care may be intimidated by the presence of a male interviewer and may choose to remain mute. Individuals, such as some elderly immigrants, who have been raised in cultures that demand deference and obedience to those endowed with power, authority, or greater social status, may be unwilling to answer some questions honestly, fearing that they will offend the interviewer.

An individual's ability to respond to questions posed or to perform well on a test of cognitive ability may also be impacted by iatrogenic and institutional factors (Kennedy 2000). The elderly individual's ability to concentrate or his or her level of awareness may be affected by his or her medications. Individuals accustomed to the regimentation associated with institutionalization may become confused or frightened with a change in routine; in the absence of careful assessment, signs of that confusion may be mistaken for signs of diminished capacity.

Other conditions may also adversely impact an individual's performance on an assessment of cognitive functioning. These include environmentally induced stress, such as sleep deprivation; recent bereavement, resulting in depression and a decline in functional ability; and fluctuating symptoms of pre-existing mental illness (American Psychiatric Association 2000). Physiological causes, such as fluctuations in the blood sugar of individuals with diabetes, sodium deficiency, and electrolyte imbalances, can also affect cognition.

Who Will Conduct the Capacity Assessment?

It has been suggested by some commentators that the assessment and monitoring of an individual's capacity to consent and to participate in a study is best done by the research team of a study in collaboration with family members (Keyserlingk et al. 1995). Four exceptions to this basic premise have been noted: (1) when project staff do not have the requisite skill to assess or monitor the participant's capacity; (2) when there is a strong danger of conflict of interest; (3) when the individual had previously executed an advance directive for research while he or she still had capacity, but the document requires interpretation; and (4) when the protocol does not have the potential to confer a direct benefit on the participant and it involves more than minimal risk.

How Will the Assessment be Conducted and What Specifically Will be Assessed?

There are many instruments that have been developed to assess capacity. Several of those that are in common use are listed in [Table 2](#), with the following caveat. These instruments will distinguish those individuals who are suffering from severe limitations in cognition and/or memory; they are inadequate to detect more subtle limitations, which will require a more thorough assessment.

In general, it is presumed at the commencement of research studies that a prospective participant has capacity to consent, unless there is *a priori* reason to believe that he or she does not or that the capacity to give consent may be limited in some way. Clearly, if a study focuses on a disorder involving either permanent cognitive impairment, such as mental retardation, progressive impairment, such as Alzheimer's disease, or fluctuating impairment, such as schizophrenia, an assessment of capacity should be conducted at the commencement of participation. Because capacity and decisionmaking ability may vary during the course of the study, depending upon the length of the study and the progression of the disorder or disease, it is also recommended that assessments of capacity and decisionmaking ability be conducted periodically during the course of an individual's participation in research, unless that participation is of very short duration.

How Will the Accuracy of the Assessment be Verified?

It has been suggested that a determination of capacity be verified through reliance on second opinions or the services of individuals who are consent specialists (Bonnie 1997).

■ **Table 2**

Common instruments used to assess capacity and/or memory

Instrument	Purpose	Design
Mini-Mental Status Examination (MMSE)	Measures cognitive capacity, specifically, orientation, ability to remember, attention, ability to calculate, ability to understand language and symbols (Folstein et al. 1975; Petersen et al. 2001)	Questions relate to orientation to time and place, requests to remember specified objects, to repeat designated phrases, and to name specified objects; impairment measured on continuum; lower scores indicate increased level of impairment and decreased capacity
Standardized Mini-Mental Status Examination (SMMSE)	Like MMSE	Standardizes time allotted to each question and answer, reducing length of test (Molloy et al. 1991)
Dementia Scale	Assesses cognitive capacity	Utilizes 10 questions related to orientation to time and place; lower score indicates greater impairment and lesser capacity (Kahn et al. 1960); usefulness with marginalized and unacculturated populations questionable
Clock Drawing Test	Assesses cognitive capacity	A 5-min test that asks the respondent to draw a clock with all the numbers on its face and state the time as it is drawn; awards points for the inclusion of all 12 numbers, the correct placement of numbers, the inclusion of two hands, and for correctly stating the time (Stahelin et al. 1997)
7-min Neurocognitive Screening Battery	Assesses memory; distinguishes on a preliminary basis between individuals experiencing cognitive deficits as a result of dementing disorders and those experiencing cognitive changes due to the normal aging process (Solomon et al. 1998)	Addresses orientation aphasia, clock drawing, and free and cued recall memory response (Solomon et al. 1998)

Voluntariness

The life situation of many elderly persons may affect their ability to consent or to refuse consent to participate in research. Some elderly individuals may be dependent on others for their physical care, for attention to their personal needs, or for their medical care. They may fear that if they refuse to participate in a particular research study, they will suffer the withdrawal of such assistance, a diminution in the quality of this assistance, or complete abandonment. This may be of particular concern to individuals living in institutions, such as nursing homes or mental hospitals (Annas and Glantz 1997). Individuals may also be concerned that they will disappoint their caregiver or care provider if they refuse to participate (Sachs and Cassel 1989). Some individuals may also believe that they would not have been offered the possibility of participation in a study unless the researcher believed that their participation would yield some clinical benefit to them personally. They may believe this despite all assertions by the research team that they may not receive any personal benefit from their participation and only future patients will derive any benefit from the new-found knowledge gained through the study. This misconception is known as the “therapeutic misconception” (Grisso and Appelbaum 1998).

Other Considerations Relating to Informed Consent

Confidentiality of the Data

The level of confidentiality protection of the information that is disclosed to the researcher may be of concern for a number of reasons. If there are inadequate protections, it may be advisable to refrain from participation. First,

confidentiality may be difficult to maintain if interviews or other procedures are conducted in the context of an institutional residence, such as a nursing home, due to the physical layout of the institution, a scarcity of private space, and the possibility that the participant may have impaired hearing ability, thereby requiring that the researcher speak at a level that is audible to others (Cassel 1985, 1988). The elderly individual may not want other individuals to hear the responses for any number of reasons.

Depending upon the nature of the study, attempts to access the study data could be made through the legal system. For instance, assume that a study is examining resilience and social support among the elderly. The researchers know through their interviews with a participant that he has been abusing alcohol. He is the driver in an accident in which the passengers of the other car are seriously injured. The insurance company for the injured passengers obtains a subpoena of the study records for this participant, claiming that the research records are relevant to the driver's negligence. It is critical that the investigators apply prior to the collection of data for a federal certificate of confidentiality to protect the data from subpoena if they believe that similar situations might arise, or if they are collecting data that may be of some interest to law enforcement or lawyers (National Institutes of Health 2005).

Elder Abuse and Neglect

As of March 1993, all states and territories, with the exception of Puerto Rico, had enacted laws to address elder abuse in domestic and institutional settings (Tatara 1995). (Some states also have legislation to protect disabled adults regardless of their age.) Accordingly, if abuse of an elderly research participant is suspected, the researcher may be obligated by state law to report that abuse, even if the participant indicates that he or she does not want the information provided to the designated authority. Essentially, the mandated reporting requirement will trump the participant's right to have this information about him or her kept confidential. Whether the suspected abuse must be reported will depend on whether the particular situation is encompassed in the state's definition of abuse, whether the elderly individual is within the age group specified in the state's definition of "elderly," whether the elderly person meets the definition of state residence or a physical presence requirement set forth in the governing state statute, whether the researcher is in a category of persons that is mandated by the state law to report elder abuse, and whether the researcher has obtained a certificate of confidentiality to exempt him or her from the reporting requirement (Loue 2001).

Assessing and Balancing Risks and Benefits

A decision about whether a cognitively impaired elder should participate in a research protocol requires that the decision-maker balance the risks and benefits to the individual of his or her participation. A balancing of risks and benefits must be done by the researcher proposing the study prior to its initiation and must also be conducted by the institutional review board (IRB) of the researcher's institution in its initial and continuing reviews of the research protocol. [IRBs are established by institutions to review research protocols as mandated by federal regulations for the receipt of such funding (Code of Federal Regulations 2005).] However, the assessment of risks and benefits by the researcher and the IRB focus on an examination of the risks and benefits to the class of persons to be enrolled into the study and not on the benefits or risks that an individual participant may experience. Consequently, it is very important that the elderly individual, his or her surrogate decision-maker, and/or the individual advising the elderly person work with the elderly person to determine the risks and benefits of participation to that specific individual.

Commentators have identified four categories into which research protocols may be classified: (1) research in which there is the potential for a direct therapeutic benefit to the participant and minimal risk is involved; (2) research in which the participant may obtain some direct therapeutic benefit, but more than minimal risk is involved; (3) research in which there is no expected benefit for the individual participating, but there is no more than minimal risk; and (4) research in which there is no expected therapeutic benefit to the participant and there

is more than minimal risk (Kapp 1998; LeBlang and Kirchner 1996). “Minimal risk” is often interpreted to mean that the risks of participation are no greater than those that would be experienced in the everyday course of living (Levine 1988).

Direct benefits may include short- or long-term improvement in the individual’s condition, an improvement in the individual’s symptoms, and the slowing of the degenerative process (Keyserlingk et al. 1995). Indirect benefits may include enhanced opportunities for social interaction, increased attention from health and ancillary health professionals, and a feeling of contributing in a way that may help others. Examples of risks include the physiological effects of an experimental drug or procedure and increased levels of anxiety associated with study questions or procedures (Dresser 2001).

Research suggests that even when risks of study participation are divulged to prospective participants, individuals may have difficulty comprehending the risks. In one clinical trial of a drug, respondents were found to be well informed about the study design and general risks of participation, but 39% were unable to enumerate specific minor side effects of the drug and 64% were unable to identify the serious risks of the medication that had been divulged to them (Howard et al. 1981). In yet another study, few of the respondents recognized the possibility of unknown risk, meaning that there could be risks that had not been anticipated prior to the initiation of the study (Gray 1975).

There is no formula that will dictate how the benefits and risks of a particular individual’s participation are to be weighed against each other. In fact, there is no consensus among researchers or ethicists as to the level of risk or benefit that must be present for a surrogate decision-maker to be able to consent to research participation by a cognitively impaired individual (Dresser 2001). It is critical that the elderly individual, together with his or her surrogate and/or others, carefully consider how the study procedures will affect their individual situation. [▶ Table 3](#) lists a number of questions that may be posed that will be helpful in this analysis.

■ Table 3

Consideration for participation in research by cognitively impaired elderly persons

How much time will participation require? At what intervals? Am I physically able to spend this much time participating?
If I am to spend long periods of time at the study site, what provisions will be made to provide me with meals or to administer other medications that I need?
What procedures are involved in the study? How do I usually react to such procedures (blood test, etc.)? Has my response changed?
Do I have transportation to go back and forth to the study site?
Does participation require a change in medications? Invasive procedures, such as a lumbar puncture? How do I feel about such procedures?
Will the study investigators provide their findings to my health care provider(s) to supplement the care that I am receiving?
To what extent will the information that I provide be kept confidential? For instance, what if a study researcher thinks I should not drive. Is he going to report it to the license bureau?
To what extent will the study staff share information with my caregiver(s) if I want them to do so?
If I am provided with new medication during the course of the study and it is found to be beneficial, will I be provided with the medication after the study ends?
Do any study procedures conflict with my religious principles or spiritual beliefs; for example, am I going to be asked to consent to an autopsy, which is prohibited by my religion?

Mechanisms for Expressing Choice During Incapacity

Advance Directives for Research

Because of the slow and progressive course of many dementias, and the intermittent nature of various other disorders that may impact decisionmaking ability, such as schizophrenia, some commentators have suggested

that individuals should be able to indicate in advance their desire to participate in research (Levine 1988). For instance, an individual at the beginning stages of Alzheimer's disease may strongly believe that he or she would like to participate in research if the opportunity were to arise, but fears that he or she will be unable to give consent at a future date, when the illness has progressed. Accordingly, the individual might want to express this intent at a time when he or she is still able to do so, when legally that expression will be recognized as valid.

One mechanism that has been suggested is an advance directive for research. Similar to an advance directive for health care, such a document would allow the individual to make his or her wishes known at a time when the individual retains decisionmaking capacity. Alternatively, the individual might execute a durable power of attorney for health care and specify that his or her designated agent should have the legal authority to decide for him or her whether participation in a particular research study would be advisable and to provide or withhold consent accordingly.

This type of advance decisionmaking may be an option, depending upon the residence of the elderly individual; not all states provide for such a document or recognize an agent as having the authority to make research-related decisions. Even where this possibility exists, many elderly individuals may be unaware of the mechanism. Even in the context of health care, it appears that only a minority of elderly patients execute durable powers of attorney for health care, often due to lack of knowledge about the mechanism or the erroneous assumption that a relative will automatically be able to make health care decisions for them if they are unable to do so (Cohen-Mansfield et al. 1991).

There are other difficulties associated with an advance directive for research even if the individual state permits this mechanism. Because the informed consent process is supposed to be ongoing throughout the course of the study, an individual who consents to participate before knowing what a study is about is not really giving *informed* consent.

Questions also arise about the current validity of the prior expression to participate in research because changes in the individual's situation may have occurred during the intervening period of time. For instance, an individual may have indicated while he or she had capacity to do so an intent and desire to participate in research. However, a number of years have passed and the elderly individual's mental abilities and awareness of his or her surroundings have declined. Some ethicists, distinguishing between the "then-person," the precursor to the person who now lacks capacity, and the "now-person," have argued that, as the individual's capacity decreases, so should the weight to be given to his or her previously expressed wishes in an advance directive decrease (Brock and Buchanan 1989; Dresser 1992). This perspective results in the incongruous result whereby the greatest weight is given to the severely demented now-self's needs, who has the least psychological continuity with his or her former competent self (Klepper and Roty 1999). Others have emphasized the concept of "precedent autonomy" and have argued that past decisions of the competent then-self must be respected even if they are not consistent with the wishes of the cognitively impaired now-self (Dworkin 1994). Still others have argued for the compassionate application of the principle of precedent autonomy, which would permit the implementation of previously expressed wishes as long as doing so does not result in discomfort to the now-self (Post 1995).

Surrogate Consent

Even in the absence of a legally executed document, such as an advance directive for research, some have suggested that elderly individuals who lack capacity to consent should be able to participate in research through the consent of a surrogate. Federal regulations permit a "legally authorized representative" to provide consent in some circumstances where the prospective participant is unable to do so (Code of Federal Regulations 2005). However, some states may place severe restrictions on the ability of cognitively impaired individuals to participate in research, on the ability of a legally authorized representative to consent to an individual's participation in research, and/or may require judicial approval for such participation. [Table 4](#) provides a partial listing of the states that have such restrictions, as well as the citation to these statutory provisions and relevant court decisions.

A question arises as to which individual(s) are best suited to be appointed as the surrogate decision-makers. The National Alliance for the Mentally Ill (NAMI) has proposed that family members are the most appropriate

■ Table 4

Examples of state law provisions restricting ability of cognitively impaired individuals and/or their surrogate decision-makers to consent to participation in research

State	Limitation	Provision
California	Conservator may consent to participation "only for medical experiments related to maintaining or improving the health of the subject or related to obtaining information about the pathological condition of the subject"	California Health and Safety Code § 24175(e) (West 1992)
Connecticut	Guardian may consent to participation in any biomedical or behavioral medical procedure or participation in any behavioral experiment "if it is intended to preserve the life or prevent serious impairment of the physical health of the ward or it is intended to assist the ward to regain his abilities" and has been approved for that person by the court	Conn. Gen. Stat. Ann. § 45a-677(e) (West Supp. 1997)
Delaware	Prohibits approaching residents of state mental hospitals for participation in pharmaceutical research if individual is "incapable of voluntary consent to care or treatment"; prohibits specified classes of state mental hospital residents from participating in pharmaceutical research, regardless of capacity	Del. Code Ann. Tit. 16, §§ 5174, 5175 (1995)
Illinois	Parent or guardian may not consent to ward's participation in any "unusual, hazardous, or experimental services" without approval by the court and determination that such services are in the "best interests" of the ward	§ 405 Ill. Comp. Stat. Ann. 5/2-110 (West 1993)
Massachusetts	Prohibits research on patients in mental facilities if the research will not provide direct, therapeutic benefit; prohibits research on patients with mental disabilities where the risk is greater than minimal and exceeds the benefit to the participant	Mass. Regs. Code tit. 104 § 13.01-.05 (1995)
Michigan	Experimental psychosurgery cannot be performed on a mentally incompetent person even if the surrogate decision-maker consents	Kaimowitz v. Michigan Department of Mental Health, in Disability Law Reporter, 1, 147 (1976); U.S. Law Week, 42, 2063 (Circuit Court, Wayne County, Michigan, 1973)
Minnesota	Guardian or conservator prohibited from giving consent to experimental treatment of any kind unless the procedure is first approved by the court, which will determine if it is in the "best interest" of the ward	Minn. Stat. Ann. § 524.5-313(c)(4) (2003)
Missouri	Prohibits state mental health patients from being "the subject of experimental research," with stated exceptions; prohibits the conduct of biomedical or pharmacological research on any individual with mental disabilities unless the research will provide direct therapeutic benefit	Mo. Stat. Ann. § 630.115(8) (West Supp. 1997)
New Hampshire	The probate court may authorize the guardian to consent to experimental treatment only after ensuring that the treatment is in the ward's "best interest"	N.H. Rev. Stat. Ann. § 464-A:25(l)(c)-(e) (1995)

■ Table 4 (continued)

State	Limitation	Provision
New York	Residents in a facility operated by NY State or licensed by the Office of Mental Health who lack decisionmaking capacity may not be participants in any non-federally funded non-therapeutic research that poses greater than minimal risk unless the individual, prior to the onset of his or her incapacity, gave specific consent or designated an appropriate surrogate from whom consent can be obtained	T.D. v. New York State Office of Mental Health, 650 N.Y.S.2d 173 (N.Y. App. Div. 1996), appeal dismissed, 680 N.E.2d 617 (N.Y. 1997), leave to appeal granted 684 N.E.2d 281 (N.Y. 1997), appeal dismissed, 1997 WL 785461 (NY., Dec. 22, 1997)

surrogates in the research context (Flynn 1997). Many IRBs allow family members or friends to give consent (LeBlang and Kirchner 1996). However, some IRBs interpret the phrase “legally authorized representative” in the federal regulations narrowly and require that the surrogate be a court-appointed guardian, a designated health care agent under a written durable power of attorney for health care, a health care surrogate as defined by the relevant state law, or a combination of these individuals (LeBlang and Kirchner 1996). At least one commentator has argued that judicial approval must be obtained any time an individual is to be involved in research if that individual is unable to consent for himself or herself (Bein 1991).

A number of commentators have pointed out the dangers to the elderly individual of having decisions made by a surrogate, whether appointed through the execution of a document or not. First, family members may be inappropriate due to their own lack of capacity, unavailability, or inattention to the needs of the cognitively impaired individual (High et al. 1994). Second, the surrogate may act in his or her own interest, rather than that of the elderly individual. This is most likely to occur if (1) the surrogate fears that the elderly individual will develop dementia and enrolls the individual in research even if it is not to the benefit of the elderly individual or (2) the surrogate serves in a caregiver role and the participation of the elderly individual in research will provide the caregiver–surrogate with a period of respite, regardless of the risks or benefits to the elderly individual of participation (Sachs 1994). Accordingly, it has been suggested that an appropriate surrogate be an individual who (1) is chosen, known, and trusted by the individual; (2) participates with the cognitively impaired individual in the informed consent process; (3) is familiar with the individual’s medical and psychiatric history; (4) in situations in which the elderly individual has a mental illness, is familiar with the prodromal signs and symptoms indicative of a relapse; (5) is informed about and is willing to assume the responsibilities of a surrogate decision-maker; (6) is willing to overrule the individual’s previously expressed desire to participate in research if the participation could adversely affect the individual; and (7) is willing and able to ensure appropriate medical and/or psychiatric follow-up care if needed (Backlar 1998).

Assuming that a surrogate, whether legally appointed or not, is able to decide for the elderly individual who lacks capacity to decide for himself or herself, there remains the question of how the surrogate should make that determination. Two processes have been suggested: the best interest test and the substituted judgment test. The best interest test requires an assessment of what is in the individual’s best interest at the time that the decision by the surrogate is to be made. This perspective allows a surrogate to more easily disregard any previously expressed desire or intent of the elderly individual because what was once expressed may no longer be in his or her best interest, as determined by the surrogate. The substituted judgment test requires that the surrogate decide the issue of research participation in a manner consistent with what the individual would have chosen for himself or herself if he or she had remained able to do so. This perspective allows the surrogate to preserve to a greater degree the psychological continuity between the once-capable then-self and the now-self. In situations in which an IRB permits reliance on the substituted judgment test, the IRB may require in addition to the surrogate’s consent, the assent of the elderly individual to participate, meaning that, to the best of their ability, they must indicate some preference, although that indication does not rise to the level of legal consent (cf. Sachs et al. 1994).

Conclusion

Each individual approached for his or her participation in research must carefully consider whether such participation is advisable in view of his or her own circumstances. Care providers and caregivers may be called upon to participate in and lend their guidance to this decisionmaking process. In order to make this decision, prospective research participants and their advisors must be equipped with as much knowledge as possible about the research, the expectations of the elderly participant engaging in such research, and the likely impact of the participation on the elderly individual. The risks and benefits to the elderly participant must be clearly identified and carefully considered and weighed. Researchers must be cognizant of and compliant with any state laws that may limit the ability of surrogate decision-makers to consent to research participation on behalf of the elderly individual. The participation in research of cognitively impaired elderly adults is critical if we are to understand the underlying mechanisms of diseases that plague elderly persons and discover effective treatments to prevent such diseases or ameliorate their symptoms. However, it is mandatory that we also protect those individuals who, while assisting in this endeavor through their research participation, are in need of additional protections.

References

- Advisory Committee on Human Radiation Experiments (1996) Final report. The Committee, Washington, DC
- Alzheimer's Association (1997a) National public policy program to conquer Alzheimer's disease. Alzheimer's Association, Chicago, IL
- Alzheimer's Association (1997b) Position statement: ethical issues in dementia research. Alzheimer's Association, Chicago, IL
- American Association on Mental Retardation (2004) Fact sheet: aging older adults and their aging caregivers. Available at <http://www.aamr.org/Policies> (last accessed November 10, 2004)
- American College of Physicians (1989) Cognitively impaired subjects. *Ann Intern Med* 11(10):843–848
- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th edn (revised). American Psychiatric Association, Washington, DC
- Annas GJ, Glantz LH (1997) Informed consent to research on institutionalized mentally disabled persons: the dual problems of incapacity and voluntariness. In: Shamoo AE (ed) *Ethics in neurobiological research with human subjects: the Baltimore conference on ethics*. Gordon & Breach, Amsterdam, pp. 55–79
- Backlar P (1998) Anticipatory planning for research participants with psychotic disorders like schizophrenia. *Psychol Public Policy Law* 4:829–848
- Bein PM (1991) Surrogate consent and the incompetent experimental subject. *Food Drug Cosmetic Law J* 46(5):739–771
- Bergler JH, Pennington AC, Metcalfe M, Freis ED (1980) Informed consent: how much does the patient understand? *Clin Pharmacol Ther* 27:435–440
- Bisbing S, McMenamin J, Granville R (1995) Competency, capacity, and immunity. In: ACLM Textbook Committee (ed) *Legal medicine*, 3rd ed. Mosby-Year Book, St. Louis, Missouri, pp. 27–45
- Bonnie RJ (1997) Research with cognitively impaired subjects: unfinished business in the regulation of human research. *Arch Gen Psychiatry* 54(2):105–111
- Brock D, Buchanan A (1989) *Deciding for others*. Cambridge University Press, Cambridge
- Brookmeyer R, Gray S, Kawas C (1998) Projections of Alzheimer's disease in the United States and the public health impact of delaying disease onset. *Am J Public Health* 88:1337–1342
- Buckwalter KC, Stolley JM, Farran CJ (1999) Managing cognitive impairment in the elderly: conceptual, intervention and methodological issues. *Online J Knowledge Synth Nursing* 6(10).
- Bylsma FW (1997) Huntington's disease. In: Nussbaum PD (ed) *Handbook of neuropsychology and aging*. Plenum Press, New York, pp. 245–259
- Callahan CM, Hendrie HC, Tierney WM (1995) Documentation and evaluation of cognitive impairment in elderly primary care patients. *Ann Intern Med* 122(6):422–429
- Cassel C (1985) Research in nursing homes: ethical issues. *J Am Geriatr Soc* 33:795–799
- Cassel C (1988) Ethical issues in the conduct of research in long term care. *Gerontologist* 28:90–96
- Code of Federal Regulations (2005) Title 45, §§ 46.101, 46.102(c), 46.111(a)(4), 46.116.
- Cohen-Mansfield J, Droge JA, Billing N (1991) The utilization of the durable power of attorney for health care among hospitalized elderly patients. *J Am Geriatr Soc* 39:1174–1178
- Council of Europe (1997) Convention for the protection of human rights and dignity of the human being with regard to the application of biology and medicine: convention on human rights and biomedicine. Available at <http://conventions.coe.int/Treaty/EN/Treaties/html/164.htm> (last accessed March 18, 2005)
- Council for International Organizations of Medical Sciences, World Health Organization. (2001) International ethical guidelines for biomedical research involving human subjects. Geneva, Switzerland
- De Lisa J, Gans B (1993) *Rehabilitation medicine: principles and practice*, 2nd ed. J.B. Lippincott, Geneva, Switzerland
- Dresser RS (1992) Autonomy revisited: the limits of anticipatory choices. In: Binstock RH, Post SG, Whitehouse PJ (eds) *Ethics, values, and policy choices*. Johns Hopkins University Press, Baltimore, Maryland, pp. 71–85

- Dresser R (2001) Dementia research: ethics and policy for the twenty-first century. *Georgia Law Rev* 35:661–690
- Dworkin R (1994) *Life's dominion: an argument against abortion, euthanasia, and individual freedom*. Vintage, New York
- Elliott C (1997) Caring about risks: are severely depressed patients competent to consent to research? *Arch Gen Psychiatry* 54:113–116
- Evans DA, Funkenstein H, Albert MS, et al. (1989) Prevalence of Alzheimer's disease in a community population of older persons. *J Am Med Assoc* 262:2552–2556
- Faden R, Beauchamp T (1986) *A history and theory of informed consent*. Oxford University Press, New York
- Flanery M, Gravdal J, Hendrix P, et al. (1978) Just sign here. *South Dakota J Med* 31(5):33–37
- Fletcher JC (1973) Realities of patient consent to medical research. *Stud Hastings Center* 1(1):39–40
- Flynn LM (1997) Statement. Issues concerning informed consent and protections of human subjects in research: hearings before the Subcommittee on Human Resources of the House Committee on Government Reform and Oversight, 105th Congress
- Folstein MF, Folstein SE, McHugh RR (1975) Mini-mental state. *J Psychiatr Res* 12:189–198
- Garnett RW (1996) Why informed consent? Human experimentation and the ethics of autonomy. *Catholic Lawyer* 36:455–511
- Goodwin JS, Goodwin JM, Garry PJ (1983) Association between nutritional status and cognitive functioning in a healthy elderly population. *J Am Med Assoc* 249(21):2917–2921
- Gray B (1975) *Human subjects in medical experimentation: a sociological study of the conduct and regulation of clinical research*. Wiley, New York
- Grisso T, Appelbaum P (1998) *Assessing competence to consent to treatment: a guide for physicians and other health professionals*. Oxford University Press, New York
- Hansen L, Salmon DP, Galasko D, Masliah E, Katzman R, DeTeresa R et al. (1990) The Lewy body variant of Alzheimer's disease: a clinical and pathological entity. *Neurology* 40:1–8
- Hassar M, Weintraub M (1976) "Uninformed" consent and the wealthy volunteer: an analysis of patient volunteers in a clinical trial of a new anti-inflammatory drug. *Clin Pharmacol Therapeut* 20:379–386
- Hebert LE, Scherr PA, Bienias JL, Bennett DA, Evans DA (2003) Alzheimer disease in the US population: prevalence estimates using the 2000 census. *Arch Neurol* 60:1119–1122
- High DM, Whitehouse PJ, Post SG, Berg L (1994) Guidelines for addressing ethical and legal issues in Alzheimer disease research: a position statement. *Alzheimer's Dis Assoc Disord* 8 (suppl 4):66–74
- Himes CL, Wagner GG, Wolf DA, Aykan H, Dougherty DD (2000) Nursing home entry in Germany and the United States. *J Cross-Cultural Gerontol* 15:99–118
- Howard JM, De Mets D, The BHAT Research Group (1981) How informed is informed consent? *Cont Clin Trials* 2:287–303
- Kahn RL, Goldfarb AI, Pollack M, Peck A (1960) Brief objective measures for the determination of mental status in the aged. *Am J Psychiat* 117:326–329
- Kapp M (1998) Decisional capacity, older human research subjects, and IRBs: beyond forms and guidelines. *Stanford Law Policy Rev* 9:359–365
- Kennedy GJ (2000) *Geriatric mental health care: a treatment guide for health professionals*. Guilford Press, New York
- Keyserlingk EW, Glass K, Kogan S, Gauthier S (1995) Proposed guidelines for the participation of persons with dementia as research subjects. *Perspect Biol Med* 38:319–361
- Klepper H, Roty M (1999) Personal identity, advance directives, and genetic testing for Alzheimer disease. *Genet Test* 3:99–106
- Lakshmanan M, Mion L, Frengley J (1986) Effective low-dose tricyclic and antidepressant treatment for depressed geriatric patients: a double blind study. *J Am Geriatr Soc* 34:421–426
- LeBlang TR, Kirchner JL (1996) Informed consent and Alzheimer disease research: institutional review board policies and practices. In: Becker R, Giacobini E (eds) *Alzheimer's disease from molecular biology to therapy*. Birkhauser, Boston, pp. 529–534
- Levine RJ (1988) *Ethics and regulation of clinical research*. Yale University Press, New Haven, CT
- Loue S (2001) Elder abuse and neglect in medicine and law: the need for reform. *J Legal Med* 22:159–209
- Lubasch AH (1982) Trial ruled in 1953 death case. *NY Times* September 14, pA-14
- Manders M, de Groot CPGM, van Staveren WA, et al. (2004) Effectiveness of nutritional supplements on cognitive functioning in elderly persons: a systematic review. *J Gerontol Ser A: Biol Sci Med Sci* 59:M1041–M1049
- Manning CC (1993) The Medicare Alzheimer's demonstration. *Elder Law J* 1:113–137
- Markesbery WR (1998) *Neuropathology of dementing disorders*. Oxford University Press, New York
- Masliah E, Miller A, Terry RD (1993) The synaptic organization of the neocortex in Alzheimer's disease. *Med Hypotheses* 41:334–340
- McCullum AT, Schwartz AH (1969) Pediatric research hospitalization: its meaning to parents. *Pediatric Res* 3:199–204
- Medical Research Council Working Party on Research on the Mentally Incapacitated (1991) *The ethical conduct of research on the mentally incapacitated: report of the Working Party on Research on the Mentally Incapacitated*. MRC Ethics Series. Medical Research Council, London
- Meisel A, Roth LH, Lidz CW (1977) Toward a model of the legal doctrine of informed consent. *Am J Psychiatry* 134:285–289
- Molloy DW, Alemayehu E, Roberts R (1991) A standardized Mini-Mental State Examination (MMSE). *Am J Psychiatry* 148:102–105
- Morrow G, Gootnick J, Schmale A (1978) A simple technique for increasing cancer patients' knowledge of informed consent to treatment. *Cancer* 42:793–799
- National Bioethics Advisory Commission (2001) *Ethical and policy issues in research involving human participants*, vol. 1. U.S. Government Printing Office, Rockville, MD
- National Institutes of Health (2005) *Certificates of confidentiality Kiosk*. Available at <http://grants1.nih.gov/grants/policy/coc/index.htm> (last accessed February 7, 2005)
- National Institutes of Health Clinical Center (1987) *Policy and communications bulletin: consent process in research involving impaired human subjects*. No. 87-4. Department of Health and Human Services, Rockville, MD
- Oscar-Berman M, Evert DL (1997) Alcoholic Korsakoff's syndrome. In: Nussbaum PD (ed) *Handbook of neuropsychology and aging*. Plenum Press, New York, pp. 201–215

- Park LC, Slaughter RS, Covi L, Kniffin HG Jr (1966) The subjective experience of the research patient: an investigation of psychiatric outpatients' reactions to the research treatment situation. *J Nervous Mental Dis* 143:199–206
- Park LC, Covi L, Uhlenhuth EH (1967) Effects of informed consent on research patients and study results. *J Nervous Mental Dis* 145 (5):349–357
- Petersen RC, Stevens JC, Ganguli M, Tangalos EG, Cummings JL, De Kosky ST (2001) Practice parameter: early detection of dementia: mild cognitive impairment (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 56: 1133–1142
- Post SG (1995) Alzheimer disease and the "then" self. *Kennedy Inst Ethics J* 4:307–321
- Riecken HW, Ravich R (1982) Informed consent to biomedical research in Veterans Administration hospitals. *J Am Med Assoc* 248(3):344–348
- Roman GC (1991) The epidemiology of vascular dementia. In: Hartmann A, Kuschinsky W, Hoyer S (eds) *Cerebral ischemia and dementia*. Springer, Berlin, pp. 9–15
- Rothman DJ (1991) *Strangers at the bedside: a history of how law and bioethics transformed medical decision making*. Basic Books, New York
- Sachs GA (1994) Advance Consent for dementia research. *Alzheimer Dis Associated Disord* 8:19–27
- Sachs G, Cassel C (1989) Ethical aspects of dementia. *Neurol Clin* 7:845–858
- Sachs GA, Stocking CB, Stern R, Cox DM, Hougham G, Sachs RS (1994) Ethical aspects of dementia research: informed consent and proxy consent. *Clin Res* 42:403–412
- Salmon DP, Bondi MW (1997) The neuropsychology of Alzheimer's disease. In: Nussbaum PD (ed) *Handbook of neuropsychology and aging*. Plenum Press, New York, pp. 141–158
- Scott v. Casey (1983) 562 F. Supp. 475 (N.D. Ga.)
- Solomon PR, Hirschhoff A, Kelly B, et al. (1998) A 7-minute neurocognitive screening battery highly sensitive to Alzheimer's disease. *Arch Neurol* 55:349–355
- Stahelin HB, Monsch AU, Spiegel R (1997) Early diagnosis of dementia via a two-step screening and diagnostic procedure. *Int Psychogeriatr* 9:123–130
- Tatara T (1995) *An Analysis of State Laws Addressing Elder Abuse, Neglect, and Exploitation*. National Center on Elder Abuse, Washington, DC
- Uhlenhuth EH, Park LC (1964) The influence of medication (imipramine) and doctor in relieving depressed psychoneurotic outpatients. *J Psychiatric Res* 2:101–122
- United States Census Bureau (2001a) *The 65 years and over population: 2000*. Census 2000 Brief. United States Census Bureau, Washington, DC
- United States Census Bureau (2001b) *Statistical brief: sixty-five plus in the United States*. United States Census Bureau, Washington, DC. Available at <http://www.census.gov/population/socdemo/statbriefs/agebrief.html> (last accessed November 9, 2004)
- Unverzagt FW, Gao S, Baiyewu O, et al. (2001) Prevalence of cognitive impairment: data from the Indianapolis Study of Health and Aging. *Neurology* 57(9):1655–1662
- Usman MA (1997) Frontotemporal dementia. In: Nussbaum PD (ed) *Handbook of neuropsychology and aging*. Plenum Press, New York, pp. 159–175
- Valenti v. Prudden (1977) 58 A.D.2d 956, 397 N.Y.S.2d 181
- Williams RL, Rieckmann KH, Trenholme GM, Frischer H, Carson PE (1977) The use of a test to determine that consent is informed. *Military Med* 142:542–545



Abdominal Pain

Clifford D. Packer

Abdominal pain is a common problem for people in all age groups, and leads to frequent visits to physicians' offices, emergency rooms, and hospitals. Causes of abdominal pain are manifold, and can range from trivial to acutely life-threatening. Evaluation of acute abdominal pain is one of the most challenging tasks a physician can face. In the elderly, diagnosis can be even more difficult because the causes, signs, and symptoms of abdominal pain are often different than in young and middle-aged patients.

Abdominal pain may have many anatomic causes, from skin (herpes zoster or "shingles"), muscle (abdominal muscle strains), inflammation of the lining of the abdominal cavity (peritonitis), diseased internal organs in the abdomen (gastritis, peptic ulcer disease, pancreatitis, appendicitis, diverticulitis, cholecystitis), to the blood vessels that pass through the abdomen or supply the abdominal organs (abdominal aortic dissection and mesenteric artery thrombosis). Rarely, abdominal pain can be caused by metabolic diseases such as diabetic ketoacidosis.

Pain from many of these conditions may be referred to other areas such as the back, neck, scapula, flank, or groin, and the pattern of radiation can be an important diagnostic clue. Gall bladder colic, for instance, causes right upper abdominal pain that typically radiates to a point just below the right scapula. The upper abdominal pain of pancreatitis often radiates to the midback. In early appendicitis, the pain is usually mid-abdominal and then migrates over time to the right lower abdomen. In addition, the quality of abdominal pain (e.g., sharp, dull, colicky, or constant) and the accompanying symptoms (e.g., nausea, vomiting, fever, diarrhea, constipation, and blood in the stool) must be considered. Patients should also be asked what makes the pain better or worse; for instance, antacids will often give prompt but temporary relief of pain from peptic ulcer disease, esophagitis, or gastroesophageal reflux. Patients with peritonitis, or generalized abdominal pain due to perforation, feel better when they lie completely still; those with pancreatitis usually prefer to sit upright.

Abdominal colic (or "colicky" pain) is important to recognize because many of its causes are serious and can require surgical treatment. This pain is caused by stretching or distention of a hollow tube due to

obstruction, and worsens as the involuntary bowel contractions increase to overcome the obstruction. Examples include obstruction of the bile ducts or the neck of the gallbladder by gallstones, blockage of the ureters by kidney stones, and obstruction of the intestines by tumor or adhesions from previous surgery. Colicky pain is acute, agonizing, and builds to spasms of unbearable intensity before gradually easing. Patients with abdominal colic are usually doubled up, writhing in pain, and unable to find a comfortable position, and may have nausea and vomiting. Although the abdominal muscles may be rigid during paroxysms of pain, the abdominal wall softens between attacks and the clinician can palpate the abdomen without undue discomfort.

In contrast, the abdominal muscles are constantly rigid with acute peritonitis, which carries a very high mortality if diagnosis is delayed even for a few hours. Acute peritonitis always requires emergent surgical treatment. It may be caused by perforation of any hollow organ in the abdomen, including the stomach or duodenum from peptic ulcer disease, the gallbladder from cholecystitis, the appendix as a complication of acute appendicitis, or the colon in the case of diverticulitis. It may also be caused by gangrene of the intestines or rupture of an abscess in the liver or spleen. Peritonitis may be generalized or localized; for instance, in most cases of diverticulitis (an inflamed outpouching of the colon) there is a tiny perforation that is quickly walled off by adjacent tissue and leads to only localized peritoneal irritation, usually in the left lower abdomen. On the other hand, perforation of the appendix or of a peptic ulcer may lead very quickly to generalized peritonitis, with abdominal rigidity, vomiting, quiet bowel sounds, and unstable vital signs. An important sign of peritonitis is free air seen under the diaphragms on an upright abdominal x-ray, caused by air from the gut leaking into the abdominal cavity.

Abdominal x-rays are an extremely important part of the rapid abdominal pain workup. In addition to free air, they can show kidney or gallbladder stones, air-fluid levels, and dilated loops suggesting bowel obstruction, "thumbprinting" of the colonic wall with mesenteric ischemia, and vascular calcifications outlining an aortic aneurysm.

Laboratory testing is essential for patients with abdominal pain. A high white blood cell count usually indicates infection or inflammation, and a drop in hematocrit might be due to blood loss from gastrointestinal hemorrhage. Abnormal liver function

tests can be useful in diagnosing hepatitis and biliary tract disease. Amylase and lipase are elevated in pancreatitis, and urinalysis in a patient with colicky flank pain from kidney stones usually shows red blood cells. In addition, all women of childbearing age with abdominal pain (regardless of the menstrual and sexual history) should have a urine or serum pregnancy test, because ectopic pregnancy is a life-threatening condition, and the history can be unreliable for a variety of reasons.

Computed tomography (CT) scanning is now the standard in evaluating patients with suspected appendicitis, diverticulitis, pancreatitis, intra-abdominal abscess, and kidney stones. Ultrasound is a better and less expensive test for initial evaluation of the gallbladder and biliary tract. Gallstones, dilated bile ducts, and thickening of the gallbladder wall or fluid collecting around the gallbladder are all easily visualized with ultrasound. In addition, ultrasound is better than CT in ruling out ovarian torsion (twisting) as a source of pelvic pain in women. The hepatobiliary iminodiacetic acid (HIDA) scan, a nuclear medicine test, can detect gallbladder inflammation even in the absence of gallstones (acalculous cholecystitis), and can help differentiate this disorder from pancreatitis.

Elderly patients with abdominal pain have high rates of morbidity and mortality. Recently, investigators at George Washington University prospectively followed 360 patients above the age of 60 who presented to an emergency department with abdominal pain. They found that nearly 60% were hospitalized, 20% underwent operative or invasive procedures, 10% had return emergency department visits, and 5% died within 2 weeks. Leading causes of pain were nonspecific (14.8%), urinary tract infection (8.6%), bowel obstruction (8%), gastroenteritis (6.8%), and diverticulitis (6.5%). The emergency department and final diagnoses matched 82% of the time—in contrast with other studies that have shown emergency department misdiagnosis in up to 40% of elderly patients with abdominal pain.

Diagnosis is difficult in the elderly because they often present with vague symptoms and nonspecific findings on examination; for example, elderly, debilitated patients with acute peritonitis often do not have generalized abdominal rigidity. In addition, they are less likely to have fever and leukocytosis, even with serious conditions such as diverticulitis or cholecystitis. Furthermore, the underlying chronic diseases of the elderly complicate both diagnosis and treatment.

Patients with diabetes mellitus may not have the typical patterns of pain radiation, and may be unable to mount an adequate immune response to infection. Patients with cardiovascular disease (especially atrial fibrillation) are more prone to mesenteric artery thrombosis and consequent ischemic colitis, which can be extremely difficult to diagnose and treat. About 5–10% may also have abdominal aortic aneurysms, which can dissect or rupture. Pneumonia, myocardial infarction, pericarditis, and pulmonary embolism can all cause upper abdominal pain. In addition, 30–50% of elderly patients have gallstones, and 50% have diverticulosis, so the risk for complications of these conditions is particularly high. Many elderly patients have had prior abdominal surgery, which increases the risk for bowel obstruction from surgical adhesions. This combination of high risk, serious underlying illnesses, nonspecific symptoms, and frequent lack of fever and leukocytosis greatly increases the danger of misdiagnosis.

Classically, the diagnosis of acute cholecystitis (acute inflammation of the gallbladder) requires the triad of right upper abdominal pain, fever, and leukocytosis. Unfortunately, 25% of elderly patients with acute cholecystitis have no pain, and less than 50% have fever, vomiting, or leukocytosis. A similarly low percentage of elderly patients with acute appendicitis have the classic fever, leukocytosis, and right lower quadrant pain. It follows that complications due to delayed diagnosis—perforation and abscess—are twice as common in the elderly. In fact, one-quarter of all emergency abdominal surgeries are performed in people above the age of 80. Surgical mortality in the above-75 age group is double that of the middle-aged, largely due to serious underlying or complicating conditions such as pneumonia, emphysema, congestive heart failure, myocardial infarction, and pulmonary embolism.

A careful and meticulous medical history and physical examination will suggest the cause of abdominal pain in most patients, even the elderly, and will usually lead to the specific tests needed to make a diagnosis. In no other medical condition is the skill and judgment of the physician more important and timely diagnosis more critical.

Related Topics

➤ [Bowel obstruction](#), ➤ [Pancreatitis](#)

Suggested Readings

- Lewis LM, Banet GA, Blanda M, Hustey FM, Meldon SW, Gerson LW (2005) Etiology and clinical course of abdominal pain in senior patients: a prospective, multicenter study. *J Gerontol A Biol Med Sci* 60(8):1071–1076
- Marco CA, Schoenfeld CN, Keyl PM (1998) Abdominal pain in geriatric emergency patients variables associated with adverse outcomes. *Acad Emerg Med* 5:1163–1168
- Silen W (ed) (1991) *Cope's early diagnosis of the acute abdomen*, 18th ed. Oxford University Press, New York
- Silen W (2005) Abdominal pain. In: Kasper D et al (ed) *Harrison's principles of internal medicine*, 16th ed. McGraw-Hill, New York

Abstract Thinking

Jennifer Niskala Apps

Abstract thinking refers to a cognitive concept involving higher-order, or complex, thoughts. To be able to think in an abstract manner implies that one is able to draw conclusions or illustrate relationships among concepts in a manner beyond what is obvious. Often the terms “abstract thought” and “concept formation” are used interchangeably. In the past, the term “fluid intelligence” has been used to refer to the ability to reason. The generation of concepts, or abstract ideas, indicates an ability to progress beyond concrete thinking. The concrete interpretation of a concept involves a focus on the salient, obvious characteristics. Progressing beyond the tangible characteristics in order to conceptualize theoretical relationships between items or processes involves abstract thought.

Abstract thinking occurs conceptually, categorically, and generally. Conceptual relationships are developed in order to explain the theoretical basis behind why one idea or item is related to another. Categorical abstract thought includes the recognition that broader theoretical categories apply to the relationships between things, over and above the concrete and tangible characteristics that may seem similar. Generalized abstract thought includes the ability to conceptualize a statement, event, or item in a manner providing a broader understanding that is not directly relatable to concrete characteristics.

Executive Functions

Executive functions are those aspects of cognitive ability allowing us to plan, organize, shift, and reason through our behaviors. Abstract reasoning, or the application of abstract thought through our behaviors, is a vital component of these important skills. In the past, abstract thinking and concept formation were considered all-encompassing terms for executive abilities. Executive functions are now considered to comprise multiple complex cognitive processes, and numerous subdomains exist. Abstract reasoning remains one important subcomponent of executive functioning. Without an ability to conceptualize beyond the concrete nature of a relationship, additional planning, organizing, and self-regulation of behaviors becomes complicated.

The development of abstract reasoning, in addition to other executive functions, occurs throughout childhood and adolescence, and appears directly related to neurological development of corticofrontal systems. The frontal lobes, particularly dorsofrontal areas and subcortical connections, or more primitive brain regions, play an important role not only in the development of these skills but also in their maintenance over time.

Aging versus Decline

While some mild decline in cognitive functions may be associated with normal aging, significant decline of abstract reasoning skills appears primarily restricted to incidences of problematic aging. All individuals may experience some level of cognitive decline as they age, affecting speed of processing information, as well as some aspects of learning and memory. Language functions remain generally intact through the aging process. Any mild decline in abstract thinking that may be seen in normal aging is almost imperceptible to the individual, and may be related to the general decline in speed of cognitive processing. Due to slower mental speed, concentration may be more difficult, resulting in what can appear in formal testing to be a decrease in abstract thought. Such mediated changes in abstract thinking, related to mild declines in other executive functions, likely do not severely impact daily functioning. When individuals begin to experience declines in social and occupational functioning, such that they demonstrate a decline from

prior levels of functioning, they are likely experiencing more than normal age-related declines.

In the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (2000), the formal diagnosis of dementia, regardless of etiology, includes the “development of multiple cognitive deficits manifested by both (1) memory impairment . . . and (2) one (or more) of the following cognitive disturbances: (a) aphasia (b) apraxia (c) agnosia (d) disturbance in executive functioning.” Executive dysfunction in this diagnosis includes disturbances in “planning, organizing, sequencing, [and] abstracting.” In the discussion of these disturbances, the text specifies that impairments in abstract thinking may be indicated in individuals struggling to process novel situations and cope with novel tasks. Aging individuals can experience dementia for many reasons, including Alzheimer-type dementia, vascular dementia, and numerous other general medical conditions. Prevalence rates of dementia vary depending on the age of the sample being studied. Suggestions indicate that 20–30% of the population at a given time may experience neuropsychological decline without associated significant impairments in social or occupational functioning. Many of these individuals likely experience some decline in executive functioning, including abstract thinking. It remains unclear at this time how many of these people go on to develop a diagnosable syndrome of dementia. It is similarly unclear how many of these individuals experience a decline in abstract thought resulting in functioning impairment.

Assessment

Assessment of abstract thinking, and its possible decline, can take many forms including standardized questionnaires, interviews, bedside assessments, and formal neuropsychological assessments. Consideration of the person’s educational background is an important component of any assessment. Up to a quarter of the variability seen in cognitive functions assessed in older adulthood is directly related to the level of educational experience. Those individuals with lower levels (less than high school) of educational attainment often perform poorly on tasks of executive functioning, including abstract thinking. This may be in part due to lack of exposure to this type of thought, and also may be related to lower levels of ability that are lifelong and not indicative of a decline in functioning.

Formal assessment of abstract thinking can involve both verbal and nonverbal measures. Verbal abstract reasoning is often assessed utilizing proverb and similarity tasks. Proverbs tap an individual’s ability to move from concrete sayings into abstract, metaphorical thought. When using this method to assess an individual’s level of abstract reasoning skills, the proverbs provided must be novel, otherwise responses may be based on rote memory rather than allegorical representations. Asking a person to identify similarities between words assesses his or her ability to identify the broader conceptual relationships among words. This task can be negatively impacted by other neurological and neuropsychological conditions such as aphasia. Visually based abstract reasoning skills are often assessed using category tasks, requiring a person to recognize conceptual categorical relationships among visual pictures. Additionally, pattern tasks can assist in assessing an individual’s ability to identify symbolic relationships among items.

Formal testing of abstract thinking should always be accompanied by a clinical interview of the individual and the family members. The inclusion of family members in the evaluation process is important in order to attempt to identify if an individual has experienced a decline in functioning from prior levels. It may be difficult to interpret what poor performances on some but not all formal tests may imply. Therefore, monitoring an individual’s daily functioning, including the ability to complete complex tasks, understand and resolve new situations as they arise, and demonstrate adequate reasoning skills day-to-day, likely remains the best method for assessing abstract thinking skills.

Related Topics

- ▶ [Alzheimer’s disease](#), ▶ [Cognitive theory of aging](#),
- ▶ [Dementia](#), ▶ [Dementia Advocacy International](#),
- ▶ [Frontal lobe dysfunction](#), ▶ [Memory](#)

Suggested Readings

- American Psychiatric Association (2000) *Diagnostic and statistical manual of mental disorders, 4th ed., Text Revision*. American Psychiatric Association, Washington, DC
- Schönknecht P, Pantel J, Kruse A, Schröder J (2005) Prevalence and natural course of aging-associated cognitive decline in a population-based sample of young-old subjects. *Am J Psychiatry* 162(11):2071–2077

Teri L, McCurry SM, Longsdon RG (1997) Memory, thinking, and aging: what we know about what we know. *West J Med* 167(4):269–275

Suggested Resources

Alzheimer's Disease Education&Referral Center (ADEAR). www.alzheimers.org/index.html
 Administration on Aging (AOA). www.aoa.gov/eldfam/eldfam.asp
 National Council on Aging (NCOA), article referencing dementia and Alzheimer's type. www.ncoa.org/content.cfm?sectionID=109&detail=65

Access to Health Care

Beth E. Quill

Access to health care has dominated the health policy scene for several decades. In the early 1990s national legislation, “universal access” to health care was introduced by former president, Clinton, and the Congress as a way to provide health security for all Americans. Lively debates were generated and the topic commanded national attention. The effort, although unsuccessful, has kept the problem of health care access on the public agenda.

Access to care generally refers to the timely use of personal health services to achieve the best possible outcomes. Initially, the premise was access to physicians and hospitals. Recently the analysis of health care access has required accounting for a variety of providers, services, and facilities. In addition, access describes the actual use of health services and factors that facilitate or impede health care.

Aday (2001) and Anderson (1996) describe six types of access:

1. Potential access refers to health care system characteristics that influence the use of services.
2. Realized access is the actual use of health services.
3. Equitable access is the use of health services determined by demographic characteristics and need.
4. Inequitable access refers to the use of health services that is determined by social characters and available resources.

5. Effective access is the use of health services that improves health status or satisfaction.
6. Efficient access minimizes the cost of health care services and maximizes health status or satisfaction.

Thus, each type of access to care is influenced by a number of characteristics and events. In an effort to understand the influences on access to health care, numerous studies have examined the barriers to care in specific populations.

Personal and Family Barriers

Acceptability Services must be desirable and viewed as acceptable to the patient/client and family. Physical setting, demeanor, and scope of services must all be acceptable. A recent study of barriers to health care for elderly noted that the most common barrier was the physician's lack of responsiveness to their concerns (33%).

Language and Literacy Patients/clients experience significant barriers when important information is complex and not in their native language. Complicated systems such as application for Medicaid present perceived and real barriers in literacy and native language. The lack of providers who speak the language and are from the same culture as the populations they serve further exacerbates language barriers.

Culture Health care providers and facilities that do not understand the cultural expectations and norms of the service populations present obstacles to accessing care. Lack of knowledge about the culture further creates difficulty in achieving compliance with necessary medical treatments. Treatment and lack of adherence to medication for tuberculosis among Hispanic immigrants is one example.

Attitudes, Beliefs The relationship between the provider of services and the patient/client involves mutual respect and understanding. Barriers occur when patients/clients perceive attitudes and beliefs about the nature of their health as negative. This results in lack of compliance that undermines successful treatment outcomes. Negative attitude on the provider's part (homophobia, discomfort of dying patients) toward HIV or AIDS patients is one example.

Humans Behaviors Individual characteristics may serve as barriers to treatment. Patients with physical or emotional disabilities may have difficulty in finding services that meet their needs. Health care providers, on the other hand, behaving in a courteous and respectful manner, are likely to facilitate the engagement of at-risk patients/clients and the elderly.

Education and Income Individuals with lower incomes or education do not access the health care system to the same extent as the more affluent or those with higher education do. Utilization of certain services and quality of care are notably lower for some groups, whereas there is higher utilization (such as emergency rooms) in other populations. With increasing health care costs, more of the population is experiencing “out-of-pocket expenses” as a barrier to obtaining services. This is especially true for the elderly.

Financial Barriers

Insurance Coverage Insurance coverage is the “admission ticket” to health services. Although there is a perception of greater equality regarding health care access for the elderly because of Medicare, financial barriers for this group emerge from lack of sufficient supplementary insurance and out-of-pocket expenses for prescription drugs. Recent changes in Medicare and Medicaid present efforts to “close this gap.” However, premiums, deductibles, and co-pays pose a barrier to access for the elderly, especially for those with low incomes. Patients/clients are reluctant to seek care without adequate insurance, and providers and facilities are reluctant to provide care since services may not be adequately reimbursed.

Reimbursement Levels Low levels of reimbursement for health services by government programs have been a major disincentive for providers and health care facilities, exacerbating existing barriers that vulnerable populations may experience.

Structural Barriers

Availability Access to health services, particularly a regular source of medical care, is contingent upon services being available where and when needed by the service population. Barriers based on availability

occur when services are located only in more urban areas creating barriers for remote rural populations or during hours when the elderly are unable to come for services. At least 11% of the elderly report not seeking care because they did not have a regular source of care.

Transportation Lack of transportation is cited by as many as 23% of the elderly as a barrier to access care. While many elderly rely on family, friends, or public transportation, special accommodations are required to assist those who may be functionally impaired. Although innovative approaches have been developed, they cannot be sustained if services must be paid for by clients who may be socially disadvantaged.

It is clear that groups and individuals at risk may experience multiple barriers in trying to access health care. These are often individuals and groups who are vulnerable and need multiple services. Aday (2001) notes that the principal health needs of vulnerable populations are *physical* (chronically ill and disabled, persons living with HIV or AIDS); *psychological* (mentally ill and disabled, alcohol or substance abusers, suicide- or homicide-prone individuals); and *social* (abusing families, homeless persons, immigrants and refugees). Many of these vulnerable groups have crosscutting health needs such as battered elderly women or substance-abusing elderly. The elderly are at increased risk to experience multiple barriers to accessing care. For example, an elderly woman with diabetes, living alone in a rural area, likely experiences the following barriers: fewer providers in rural areas; co-pays and deductibles with significant out-of-pocket expenses for medication; fear of a physician discovering other medical problems or complications; and transportation that accommodates her functional impairments (mobility, vision).

Access to timely care, immunization, preventive screening, chronic disease management, and dental visit in the elderly are all personal examples of health services that contribute to favorable health outcomes. Thus, measurement of these indicators provides useful clues to how inadequate access to health care yields disparities in health outcomes. For example:

- Persons from poor areas are two-thirds as likely as those in high-income areas to have access to hospital admission and referral services.
- Those with dental insurance make an average of one more visit to the dentist than those without insurance. Medicaid beneficiaries are less likely to

visit a dentist compared to low-income privately insured individuals, and Medicaid reimbursements for dentist visits are notably low.

- Poverty is associated with limited access to preventive, primary, or specialty care, and therefore with poor health outcomes.
- Americans without health insurance are generally sicker and die sooner. In addition, when they receive care, it is likely to be of poorer quality than those with insurance. The Medicare program provides health care for those above 65 years. With an expanding elderly population that has an increased life expectancy, more resources are required to provide adequate care for those with chronic diseases and disabilities, and those who require medication and technological support to maintain their health.

A major barrier to access for the elderly is the gap between coverage by Medicare, Medicaid, and private insurance. Long-term care and prescription drugs are the top “uncovered” benefits. While 65% of those on Medicare have supplemental insurance, out-of-pocket expenses for deductibles, premiums, and co-pays force many elderly to forgo necessary treatment. Recent changes to Medicare provide supplemental prescription drug coverage (Part D). Medicaid beneficiaries will have drug coverage through Part D. More benefits for home and community care for the elderly as well as preventive services will be provided. Both Medicare and Medicaid programs are major components of state and federal budgets with expenditures exceeding the budget. Benefits of both programs are therefore vulnerable to economic changes. Growth in the elderly population and technological medical advances will require policy actions to keep pace with the increased demand in services. Access to health care for the elderly will continue to be a major concern for policymakers and public health practitioners.

Related Topics

- [Health insurance](#), ➤ [Long-term care insurance](#), ➤ [Medicaid](#), ➤ [Medicare](#)

Suggested Readings

Aday LA (2001) *At risk in America: the health of vulnerable populations in the United States*. Jossey-Bass, San Francisco, CA

Anderson RM, Rice TM, Kominski GF (eds) (1996) *Changing the U.S. health care system*. Jossey-Bass, San Francisco, CA

Fitzpatrick AL, Powe NR, Cooper LS, Ives DG, Robbins JA (2004) Barriers to health care access among the elderly. *AJPH* 94(10): 1788–1794

Institute of Medicine (2002) *Unequal treatment: confronting racial and ethnic disparities in health*. National Academy Press, Washington, DC

Millman M (ed) (1993) *Access to health care in America*. National Academy Press, Washington, DC

Accidents

Gail E. Souare

Accidents and unintentional injuries among older adults are a major public health problem that, with the exception of falls, has received relatively little attention compared to their occurrence in other age groups and to other health problems among seniors. Injuries to older adults are costly to the health-care system and often have serious consequences to the individual. Injuries can lead to an irreversible decline in function, institutionalization, and even death.

Many injuries are related to physical changes that accompany the aging process. These include changes in eyesight that reduce depth and color perception, increased susceptibility to glare, and alterations in blood circulation that can result in dizziness and loss of balance. Changes in walking patterns, for example taking shorter and shallower steps, increase the risk of tripping. In addition, reaction times can increase, resulting in a reduced ability to rapidly react to danger. Other changes that may contribute to accidents include decreased cognitive skills and reduction or loss of the senses.

Falls

The most common type of accident in older persons is falling. Persons above 75 have relatively more injury-related deaths than any other age group; people aged 65 through 74 follow close behind. According to the Centers for Disease Control and Prevention (CDC), in 2003 more than 1.8 million older adults (aged 65 and older) were treated in emergency departments for fall-related injuries and more than 421,000 were hospitalized.

Automobile-Related Accidents

The second most common type of injury results from automobile-related accidents. According to the Institute of Transportation Engineers, older drivers are increasingly mobile and most Americans continue to drive as they age, with 75% aged 70 and older reporting that they still drove in 2001, up from 73% in 1995. Per mile driven, elderly drivers (those above 80) are more likely to die in a crash than any other age group. Although older drivers drive far fewer miles than younger drivers, in a crash of the same severity, they are more likely to be injured or to die because of their frailty.

The increase in the number of older drivers killed in traffic accidents is occurring as older Americans form a greater portion of the overall population. The older segment of the population (65 and older) grew nearly twice as fast as the total population between 1990 and 2000, and the number of older Americans will only increase as baby boomers start to turn 65 in 2011. The US Census Bureau estimates that one in five people will be 65 or older by 2030.

Accidental Poisoning and Overdose

When speaking of accidental poisoning, we often think of children, but more unintentional poisoning deaths actually occur among the elderly than among young children. The elderly are at particular risk for misuse of prescribed medication due to the large number of medications they may be required to take, interactions between or among medications, and decreased cognitive abilities to understand the doctor's instructions. Older adults may receive prescriptions from more than one physician and purchase medications from different pharmacies without informing either doctors or pharmacists about the other medications they are taking. Unfortunately, since mixing medications may result in hospitalization and/or death, the problem of mixing prescription medications is underdiagnosed. In addition, some older adults may drink alcohol, which interacts adversely with many medications, particularly with such drugs as barbiturates, sedatives, and tranquilizers, and the combined effects can be deadly.

Burns

Burns are another cause of accidents in the home. These may result from water heaters being set too

high, house fires caused by smoking, unsafe heaters or frayed electrical cords, and scald injuries from hot foods, grease, and cooking liquids. Older persons may be at greater risk for these types of accidents due to decreased cognitive skills and reaction time.

Other Causes of Injury or Accidents

There are many other causes of accidents that affect older persons. During winter months, unventilated heaters may be used causing accidental carbon monoxide poisoning. Older adults may be at greater risk for accidental cuts while using knives or other sharp instruments while preparing meals due to decreased reactions or reduced depth perception. Active older adults are also susceptible to sports injuries, drowning, and other accidents that affect the general population.

Related Topics

▶ Adverse drug reaction, ▶ Driving safety, ▶ Falling

Suggested Resources

- McGurkin N, Liss S (2005) Aging cars, aging drivers: important findings from the National Household Travel Survey. *ITE J* 9. http://www.findarticles.com/p/articles/mi_qa3734/is_200509/ai_n15614527
- Schletty A (1984) Home injuries are no accident! *Aging*. April–May. http://www.findarticles.com/p/articles/mi_m1000/is_1984_April-May/ai_3199306
- Public Health Agency of Canada (2001) Prevention of unintentional injuries among seniors workshop on healthy aging, November 28–30, 2001. http://www.phac-aspc.gc.ca/seniors-aines/pubs/workshop_healthyaging/injury/injury2_e.htm

Acculturation

Anamaria Tejada

When immigrants establish themselves in a new host culture, they start a process of cultural change that allows them to function effectively in the new culture without giving up their own. This process can happen at the group and the individual level. At the group

level, a large number of members of a community immigrate together and their community dynamics are transformed through acculturation. At the individual level, each member of the immigrant community experiences changes in values, behaviors, and competences to adjust to the new culture. Researchers also differentiate between acculturation and assimilation. In acculturation, people incorporate and integrate into the culture of the host community while maintaining aspects of their original culture. In assimilation, people completely blend in the host community, adopting its culture while renouncing their original one. For example, some groups like Jewish and Cuban elders function effectively in mainstream culture while maintaining their language and ethnic and religious values.

Acculturation is a dynamic process and depends on the characteristics of the immigrant, the host community, and the circumstances of the immigration. It involves a series of losses and changes, so it can be stressful. Acculturation is a process mostly related to immigrant communities, but it can also be applied to any minority community that is at different levels of integration to the mainstream culture. With the growing diversity in the aging population, the concept of acculturation becomes relevant for older adults of minority groups, including African Americans, Hispanics, Asians and Pacific Islanders, and Native Americans. These four groups in general struggle with poverty, low education level, more health problems, and multiple challenges like language barriers and lack of legal residency status. These circumstances interfere with the ability of minority elders to fully participate in the community since they are pressed to face more urgent priorities like shelter, health, and income.

It will be important to differentiate three groups of ethnic minority elders depending on their level of acculturation. The first includes native blacks, Hispanics, Asians and Pacific Islanders, as well as American Indians; the second includes elders who belong to these same ethnic groups but who immigrated when they were children or young adults; and the third includes those who immigrated as older persons. Depending on their membership in one of these groups or cohorts, elders will display variations in their attitudes, beliefs, values, and behaviors that have an impact on their health and their access to community resources. Aging itself might have different meanings for men and women and for people from different cultures. They might have different expectations and norms for people at each stage of the life span.

The resources and skills of immigrants will vary depending on how old they were when they immigrated and this will affect how they cope with growing old in America. The current characteristics of minority elders will be determined by the particular process of acculturation that they have gone through since immigration. Highly acculturated or bicultural elders have a better understanding of the language and dominant culture that in turn allows them greater access to social and health resources in the community. They also feel more empowered to advocate for themselves and to request needed services. Elders with lower levels of acculturation experience more barriers to access necessary services and have a higher need for advocacy. However; acculturation to American norms may not be always the ideal; in some situations it may be harmful. For example, changes in diet to high-fat and low-fiber common in American food might create health problems for those acculturating to American lifestyle and make immigrants more susceptible to diabetes, obesity, and heart disease.

Proficiency in the English language might be the most important factor for successful acculturation as it has an overall positive impact on the immigrants' health and well-being. Lack of proficiency is associated with social isolation and limited access to health care and other social services, which in turn diminish the immigrants' sense of self-efficacy and increase distress. Therefore, helping immigrants to learn the language has become a priority for those providing services to this population. It is necessary, however, to deliver those services while considering the specific needs of aging immigrants. For example, it is not helpful to have immigrants of all ages in the same classroom when English as a Second Language classes are offered, because individuals' expectations and abilities to learn will vary significantly. Older adults in the same classroom with younger individuals may feel ashamed and humiliated, which may discourage them from learning.

Older adults who are learning how to function in the new culture and are facing the immediate demands of adjusting to, and learning, a new language might neglect their previous life goals. After this first stage of acculturation, they may be more able to address other issues associated with the immigration experience, such as loss, grief, and the redefinition of their cultural identity. It is important for health care professionals, especially those in the mental health field, to be aware of this process and its challenges. It is also helpful for older adults to remain involved in activities with other members of their own culture. This helps them

maintain their ethnic identity and self-esteem while learning to use their abilities in the new environment.

The integration of social, health, and mental health services in one location could also lower the barriers for minority elders to access those services. This is particularly important in their acculturation process since the mental health and well-being of minority elders is strongly connected to their physical health status. Good physical and mental health is the result of a balance with their faith, spirituality, family, and everyday life.

Related Topics

- ◆ [Asians and Pacific Islanders](#), ◆ [Immigrant health](#),
- ◆ [Latinos](#)

Suggested Readings

- Gelfand D, Yee BWK (1991) Trends and forces: influence of immigration, migration, and acculturation on the fabric of aging in America. *Generations* 15:7–10
- González HM, Haan MN, Hinton L (2001) Acculturation and the prevalence of depression in older Mexican Americans: baseline results of the Sacramento Area Latino Study on Aging. *J Am Geriatr Soc* 49:948–953
- Harris HL (1998) Ethnic minority elders: issues and interventions. *Edu Gerontol* 24:309–323
- Rivas EE, Torres-Gil FM (1991) Politics, diversity, and minority aging. *Generations* 15:47–51

Accumulative Waste Theory of Aging

Jessica Diggs

The accumulative waste theory of aging, also known as the waste accumulation or garbage accumulation theory of aging, proposes that molecules damaged by oxidation and their byproducts (e.g., aged collagen, damaged enzymes), and damaged mitochondria (organelles responsible for cellular energy production) accumulate in postmitotic (nondividing cells) causing

dysfunction, toxicity, aging, and cell death (see Free-Radical Theory of Aging). There are several mechanisms by which garbage accumulation affects cells. The presence of waste products changes the structural organization of the cell. Cellular components are displaced by these waste products and cellular functions such as cell signaling, transport of cellular molecules, and metabolic functions are impeded. Accumulation of waste materials within the cell can also cause damage, secondary to their toxicity, for example by the accumulation of toxic protein oxidation products in the cell or by an increased amount of reactive oxygen species (highly reactive molecules that react with, and damage, cell components) produced by damaged mitochondria.

Postmitotic cells, for example cardiac and skeletal muscle cells as well as nerve cells, are particularly susceptible to the accumulation of damaged cellular components and nondegradable waste products, due to their lack of turnover. Actively dividing cells are capable of “diluting” the amount of damage during cell division. Cells like those of the intestinal tract and blood cells experience rapid turnover, and die or are replaced before waste materials can accumulate to a detrimental level within the cell; in this regard, mitosis and rapid turnover of cells are protective against aging. This mechanism of waste accumulation and protection has been shown in experimental studies, by comparing the waste accumulation in dividing cells with that of nondividing cells.

Lipofuscin

Lipofuscin, composed of brownish yellow oblong granules, is a cellular waste product caused by the peroxidation (free-radical reaction) of proteins with lipid molecules. This waste product appears to play a key role in the accumulative waste process, both by its own accumulation and by associated events (e.g., oxidative damage) that produce a cycle of waste accumulation. Under normal conditions, waste molecules are taken up and degraded by cellular lysosomes (organelles within the cell that contain an acidic material for digestion of foreign and damaged cellular materials). Because of their molecular structure, lipofuscin molecules are not effectively digested within lysosomes, leading to lipofuscin accumulation over time. This results in the reduced ability of the lysosome to perform its normal functions, both due to ineffective use

of lysosomal enzymes as well as by causing dysfunction of the proton pump (acid pump like those present in the stomach) necessary for lysosomes to create an internal environment capable of digestion. Lipofuscin molecules also contain a small percentage of metals like iron. Accumulation and concentration of iron in the lysosome can contribute to free-radical reactions, leading to a vicious cycle resulting in increased lipofuscin accumulation, in addition to increased free-radical damage of other cellular components. Lipofuscin preferentially accumulates in postmitotic cells, accelerating the aging process and level of dysfunction in these cell types, with minimal damage to mitotic cells.

Waste Accumulation and Aging

In general, aging cells have a decreased ability to properly degrade cellular waste products; however, there may be interindividual variation in the efficiency of waste degradation and the amount of lipofuscin accumulation that will occur. One explanation may be variability in an individual's genetic profile that will determine the properties and digestive capabilities of the person's cellular lysosomes. The variation may be reflective of the environment or the health and nutritional status of the person.

Public Health Perspective

Waste accumulation has been the target of antiaging remedies. Methods to increase the functionality of the cellular waste degradation process may show promise for preventing the effects of cellular waste accumulation on cellular aging and cell death. These measures may involve nutritional or enzyme supplementation, to reduce lipofuscin accumulation or to prevent the excess production of free radicals in the cell; however, more research is necessary in the development and testing of these products. As is a common theme in the prevention of cellular damage and aging, every individual (young and old) should strive to live a healthy lifestyle including regular physical activity and endurance training, with a balanced diet, rich in antioxidants and essential nutrients. Even small positive lifestyle modifications have the potential to result in significant improvements in the health, well-being, and longevity of our population.

Related Topics

[▶ Anti-aging remedies](#),
 [▶ Diet](#),
 [▶ Exercise](#),
 [▶ Free-radical theory of aging](#),
 [▶ Nutrition](#),
 [▶ Vitamins](#)

Suggested Readings

- Hayflick L (1994) How and why we age. Ballantine Books, New York
- Klatz R, Goldman B (1996) Stopping the clock: why many of us will live past 100—and enjoy every minute! Keats Publishing, New Canaan, CT
- Stroikin Y, Dalen H, Brunk UT, Terman A (2005) Testing the “garbage” accumulation theory of ageing: mitotic activity protects cells from death induced by inhibition of autophagy. *Biogerontology* 6(1):39–47
- Terman A, Brunk UT (2004) Aging as a catabolic malfunction. *Int J Biochem Cell Biol* 36(12):2365–2375
- Timiras PS (1994) Physiological basis of aging and geriatrics, 2nd ed. CRC Press, Boca Raton, FL

Acquired Immunodeficiency Syndrome (AIDS)

Daniel J. O'Shea

The number of seniors with human immunodeficiency virus (HIV) or acquired immunodeficiency syndrome (AIDS) continues to grow rapidly both through new infections among older adults and the natural aging of adults infected at younger ages. The World Health Organization estimates that the total number of people living with HIV or AIDS worldwide is rapidly approaching 50 million. In some countries, seniors aged 50 and above comprise between 5% and 11% of the HIV-positive population. However, many more seniors are *affected* by this pandemic while providing care to infected family members and at the same time losing potential sources for their own support.

In the United States, an estimated 1.1 million people were living with HIV or AIDS at the end of 2003. In 2004 alone 10% of all reported AIDS cases and 15% of all HIV or AIDS cases diagnosed and reported were 50 years and above, with a quarter of these above 60 years.

The incidence rates are higher among older women than older men, with persons of color at particular risk. As in other countries, many noninfected seniors are also challenged to become caregivers for infected children, other family members, or friends, or to care for grandchildren or other relatives orphaned by AIDS. Dramatic advances in understanding the natural history of HIV disease and developing life-saving HIV treatments within the past 10 years have reduced death rates and slowed progression to end-stage AIDS, but have not eradicated the virus from those infected. The result is a growing epidemic that is relentlessly aging. Even so, little research has historically focused on seniors living with HIV and AIDS.

What Is AIDS?

AIDS is a medical diagnosis by a physician of a set of symptoms or conditions based on specific criteria established by the Centers for Disease Control and Prevention (CDC). This includes infection with HIV *and* either the presence of one or more defined AIDS indicator diseases or other indicators of a suppressed immune system based on certain blood tests (CD4+ counts). The “opportunistic” diseases associated with AIDS occur following the depression of an individual’s immune system, allowing susceptibility to unusual infections or malignancies.

AIDS, the end stage of HIV disease, is caused by the infection and spread of HIV within the body. A positive HIV test result alone does not mean that a person has AIDS, but only that HIV infection has occurred. HIV destroys CD4+T blood cells, which are crucial to the normal function of the human immune system. Most HIV-infected people carry the virus for years before the immune system is damaged enough for AIDS to develop. There is a direct correlation between the amount of HIV in the blood, the decline in CD4+T cell numbers, and the onset of AIDS. Progression from initial HIV infection to AIDS may take 10 years or more, but varies greatly depending on many factors including a person’s health status and health-related behaviors. Reducing the amount of virus in the body with anti-HIV drugs can slow down the rate at which HIV weakens and destroys the immune system.

Although the natural history of HIV infection in adults is well documented, the impact of age on the outcome of HIV infection is still being investigated.

HIV appears in some studies to progress more rapidly in seniors than in those infected at a younger age, with survival rates in inverse proportion to age at infection or diagnosis. The natural process of immune system breakdown and the onset of other comorbidities with aging are likely contributing factors.

HIV Transmission

HIV can be transmitted through blood, semen (including preseminal fluid or “precum”), vaginal fluid, or breast milk. The most common modes are: sexual intercourse (anal, vaginal, or oral sex) with an HIV-infected person; sharing needles, syringes, or injection equipment with an injecting drug user (IDU) infected with HIV; and from HIV-infected women to babies before or during birth, or through breast-feeding after birth. HIV can also be transmitted through transfusions of infected blood or blood-clotting factors, but routine screening of all donated blood since 1985 has made this risk extremely low. Some health care workers have become infected after being stuck with needles containing HIV-infected blood.

Transmission of HIV can be influenced by several factors, including characteristics of the HIV-infected host, the recipient, and the quantity and infectivity of the virus. Having a sexually transmitted disease (STD) can increase a person’s risk of becoming infected with HIV. In addition, if an HIV-infected person is infected with another STD, that person is three to five times more likely to transmit HIV through sexual contact. HIV cannot be transmitted from casual (i.e., hugging or shaking hands) or surface (i.e., toilet seats) contact, or from insect bites. Intact, healthy skin is an excellent barrier against HIV and other viruses and bacteria.

HIV Testing

Testing for HIV is the only way to determine whether someone is infected with HIV. Many infected individuals do not have symptoms for many years. The tests commonly used detect antibodies produced by the body to fight HIV. Most people develop detectable antibodies within 3 months after infection, with the average at 25 days; in rare cases, it can take up to 6 months. HIV testing and counseling provides an opportunity for infected seniors to find out that

they are infected and gain access to medical treatment that may help to delay disease progression; for those not infected, counseling offers an opportunity for prevention education.

Many seniors in care are not routinely screened for HIV. They are less likely than younger individuals to talk about their sex lives or drug use with their doctors, and their doctors may be less likely to ask or talk with them about risky behaviors or HIV.

Preventing HIV Transmission

Abstaining from any behavior that carries risk of acquiring HIV (e.g., sexual intercourse or using and injecting drugs) is the most effective way to avoid HIV, but not always the most realistic (for recommendations on safer sex activities, see Safer Sex). For IDUs, the following steps are recommended to reduce risk:

- Never reuse or “share” syringes, water, or drug preparation equipment.
- Only use syringes from a reliable source (i.e., pharmacies or needle exchange programs).
- Use a new, sterile syringe to prepare and inject drugs.
- Use sterile water to prepare drugs if possible; otherwise, use clean water from a reliable source (i.e., fresh tap water).
- Use a new or disinfected container (“cooker”) and a new filter (“cotton”) to prepare drugs.
- Clean the injection site prior to injection with a new alcohol swab.
- Safely dispose of syringes after one use; if new, sterile syringes and other drug preparation and injection equipment are not available, boil previously used equipment in water or disinfect with bleach before reuse.

Older people have specific health challenges related to aging (Alzheimer’s disease, osteoporosis, etc.) and may not be aware of the risks of HIV infection or how to protect themselves. Informed awareness of risk is essential to making positive decisions to prevent HIV infection, but, despite increasing prevalence, few prevention efforts or materials have been specifically tailored or targeted for this age group. Health-care providers rarely consider seniors to be at risk, assuming they are not sexually active or, if they are, they know how to avoid infection.

Care and Treatment

Early medical treatment and a healthy lifestyle can help an individual with HIV stay well, delay the onset of AIDS, and prevent life-threatening conditions. Over 20 antiretroviral drugs are available in the United States to fight HIV disease by breaking into CD4 T cells and interrupting one of the stages of the HIV replication cycle. Recommendations for treatment continue to evolve rapidly as new medications are developed and additional data from clinical trials are presented. With clinical care for HIV and AIDS advancing at a breathtaking speed, any treatment protocols described here would be quickly outdated (current treatment guidelines are available on the US Department of Health and Human Services HIV/AIDS Information Internet website: <http://www.aidsinfo.nih.gov/>).

Although specific HIV treatment guidelines have been created for children, pregnant women, and other populations, no specific recommendations exist for older adults. This presents a challenge for physicians treating patients with other age-related illnesses. As people age, other co-occurring illnesses become more common. Alzheimer’s disease, arthritis, diabetes, high blood pressure (hypertension), heart disease, depression, dementia and other mental health issues, high cholesterol and triglycerides (hyperlipidemia), osteoporosis, various forms of cancer, and vision and hearing loss affect millions of older adults each year, with many of these sharing common symptoms with HIV and/or AIDS. Lack of discussion about risk factors and HIV-related symptoms can lead to misdiagnosis or a delayed diagnosis of HIV and a potentially critical lag in beginning anti-HIV treatment. Older people often take a variety of medications to deal with their health problems, and many interact negatively with anti-HIV drugs. Some HIV medications may even increase the risk of diabetes, high blood pressure, or osteoporosis. These complications make it difficult to choose appropriate and effective anti-HIV drugs.

Increasing costs of all these medications and related care will continue to be a problem for most Americans, especially those aging with HIV. Funding for the safety nets of Medicaid and the Ryan White CARE Act will likely continue to erode while the rollout of the new Medicare drug benefit presents additional uncertainties and confusion, potentially increasing cost and limiting options and access for vulnerable seniors and people with HIV or AIDS.

Social and Psychosocial Challenges

Many social and psychosocial issues, including homosexuality, drug use, mental illness, racism, homelessness, and poverty, are linked inextricably to HIV or AIDS by association with the communities the disease has heavily impacted. In addition, older adults also face ageism, that is, discrimination based on negative attitudes toward aging and older people.

Social support—emotional and practical assistance provided by family members and friends—is a particularly important resource for people as they age. Social support boosts psychological well-being and can reduce the number and intensity of physical symptoms related to HIV. Unfortunately, as people get older, their networks shrink: friends die, and friends or family may move away or fail to provide needed support. Some may choose to isolate themselves from their social network due to real or perceived stigma related to HIV disease; others may do so to ensure an appropriate environment in which to get healthy or stay in substance abuse recovery.

Related Topics

- ▶ Depression, ▶ Harm reduction, ▶ Safer sex,
- ▶ Sexually transmitted diseases, ▶ Substance use

Suggested Readings

Centers for Disease Control and Prevention (2005) HIV/AIDS surveillance report. 16:1–46

Suggested Resources

The AIDS InfoNet, New Mexico AIDS Education and Training Center, University of New Mexico School of Medicine: Older People and HIV (2005) Albuquerque, NM, April 30, 2005. <http://www.aidsinfonet.org/articles.php?articleID = 616>

Centers for Disease Control and Prevention (2005) Frequently asked questions on HIV and AIDS. Atlanta, GA, October 15, 2005. <http://www.cdc.gov/hiv/pubs/faqs.htm>

Krales E (2004) Is it AIDS or is it aging? Considerations for aging with HIV. *Body Positive* (online), December 2004. <http://www.thebody.com/bp/dec04/aging.html>

National Institute on Aging Age Page: HIV, AIDS and Older People (2004) Gaithersburg, MD (June 2004). <http://www.niapublications.org/engagepages/aids.asp>

Shippy A (2004) HIV and aging. *ACRIA (AIDS Community Research Initiative of America) Update* (online), 13(3). http://www.acria.org/treatment/treatment_edu_summerupdate2004_aging.html

Whitfield L (2004) AIDS goes gray. *City Limits Monthly* (online), (February 2004). <http://www.citylimits.org/content/articles/articleView.cfm?articlenumber = 1088>

Activities of Daily Living

Patrick K. Murray

Activities of daily living (ADLs) are a key link in the description of the relationship between human disease and the ability of an individual to perform normal physical and social activities. While models of this relationship are still being debated, the concept that diseases may cause impairments, which may in turn cause disability, is generally accepted. Disability is generally measured in terms of an individual's ability to perform ADLs.

ADLs are the tasks that are required for a person to be able to live in the community. Basic ADLs include eating, dressing, bathing, transferring, toileting, and mobility. When a person is unable to perform one or more of these basic activities, he or she will generally require daily support from a caregiver to live in the community. Instrumental ADLs include housework, cooking, shopping, management of finances, use of the telephone, and transporting oneself outside the home. When a person is unable to perform one or more instrumental ADLs, he or she will generally require assistance to live in the community, but on a less than daily basis.

The measurement of ADLs or functional ability has been an important research activity over the past 20 years. Scales have been developed that describe the level of dependency in either basic or instrumental ADLs. Most of these scales are ordinal in nature. Recent advances in the development of some of these scales allow for an interval type of measurement to be described. Such interval measures, however, require the ADLs to be categorized into more than one domain, e.g., physical activity and cognitive skills.

Measurement of ADLs is important in clinical care of older persons. Geriatric assessment programs have used ADL instruments both to identify changes in

condition that require intervention and to monitor the success of interventions implemented. In inpatient rehabilitation settings, the initial ADL status is evaluated and progress toward independence tracked on a regular basis. The resources available to the person to meet the dependencies identified coupled with measurement of ADL progress assist the rehabilitation professionals and the family in determining the safety of discharge from the rehabilitation setting.

Measurement of ADL levels is important in evaluating the efficiency of rehabilitation programs. Evaluators examine the improvement in ADL scores and the number of days receiving services to determine efficiency. These efficiency scores will vary based on the etiologic cause of the dependency. For example, ADL improvements are achieved much more quickly after a hip replacement than after a spinal cord injury.

Another important use of ADL evaluation is as a component in determining reimbursement for care. In the nursing home setting, studies have demonstrated that a key determinant of a patient's need for nursing and nursing assistant care is the functional ability as measured by ADLs. The nursing home reimbursement system employed by many states and the federal government, the Resource Utilization Groups, uses the ADL instrument imbedded in the federally mandated resident assessment instrument as an important element in determining reimbursement for care. In the inpatient rehabilitation setting, the reimbursement system employed by Medicare, the Functional Related Groups, uses the ADL score, etiology of the dependency, age, and comorbidity to determine reimbursement for care.

Dependency as defined by inability to perform one or more basic or instrumental ADLs has declined from 25% in 1984 to 19% in 1999 in the US population above 65 years according to national surveys of the health status. However, dependency is highly related to age, with 10% of persons aged 65–74 being dependent and this rate increasing to 60% of persons above 85 years. This decline in dependency over time has been ascribed to improvements in medical care, changes in health behavior (less smoking, better diets), development of assistive devices, economic affluence, decreased exposure to disease, and improved social supports. The decline in dependency is important for social planning concerning the needs of the growing elderly population.

Related Topics

[▶ Assisted living](#),
 [▶ Disability](#),
 [▶ Medicare](#),
 [▶ Nursing home](#),
 [▶ Rehabilitation](#)

Suggested Readings

Wolf DA, Hunt K, Knickman J (2005) Perspectives on the recent decline in disability at older ages. *Milbank Q* 83(3):365–395
 World Health Organization (2001) International classification of functioning, disability, and health. World Health Organization, Geneva, Switzerland

Activity Theory of Aging

Jessica Diggs

Introduction

According to the activity theory of aging (also referred to as the implicit theory of aging, normal theory of aging, and lay theory of aging), there is a positive relationship between a person's level of activity and life satisfaction, which in turn increases how positively a person views himself or herself (self-concept) and improves adjustment in later life. Although these two theories are not mutually exclusive, activity theory is often contrasted with disengagement theory. Proposed by Cummings and Henry in 1961, disengagement theory describes social disengagement as an adaptive response to aging in which elderly persons relinquish roles while maintaining a sense of self-worth. This voluntary surrender of activities is thought to permit the orderly transfer of power from older to younger generations and is beneficial for both the aging individual and society.

Activity theory was introduced by Havighurst and colleagues in 1961 and is rooted in symbolic interactionist theory. According to symbolic interactionism, a person's identity or self-concept is defined in part by interactions with others and in part by the environment. These interactions can impact on behavior, thought patterns, and the aging process. In their statement of activity theory, Havighurst and colleagues

assert that older individuals have the same psychological and social needs as middle-aged people and that the social withdrawal that characterizes old age is contrary to the needs of the aging individual. When social withdrawal or role loss occurs, whether by retirement, widowhood, or loss of ability to participate in past activities, the aging person may experience a loss of personal identity and well-being, low-self esteem, shame, or isolation. According to this theory, a person most likely to age successfully would continue to be active through middle age and beyond, by taking on productive roles in society and replacing roles that were lost as they aged. Productive roles might include membership in organizations, volunteering, or participation in social groups or activities.

Further study of activity theory has shown that activity is associated with morale and that people who are most active are happier at all stages of life. While it has been shown that the quantity of activity is important in achieving life satisfaction, the type and quality of activity may also play a role. Sustained intimate interpersonal activity or activity of an informal nature may be more beneficial by increasing the opportunities for reinforcement of the individual's positive self-concept.

Applying Activity Theory to Aging Individuals

Remaining active beyond middle age and finding replacements for lost roles and social positions is one solution for maintaining life satisfaction; however, critics of this theory would state that achieving this may be difficult. Aging persons may be limited in their ability to continue many activities due to physical or cognitive decline or disability. They may face age discrimination when seeking employment, may lack self-esteem or interpersonal skills, or may not have the social or financial resources to seek alternative activities. Finding new mates may not be easy or desirable for those who have been widowed. It may also be difficult to acquire new skills in a continuously changing, technology-driven environment. Early retirement planning, support of family members, and the development of social programs to involve elders in meaningful roles might lead to greater opportunities for aging people to maintain active lifestyles.

Limitations of Activity Theory

Critics also highlight that activity theory lacks consideration about other factors that may influence the relationship between activity and life satisfaction such as personality traits, socioeconomic status, and lifestyle characteristics. Given the heterogeneity of aging people, it is important to take these other factors into account, because while involvement in many social activities may be beneficial to one person, another may prefer solitary activities due to personality differences. People with limited financial resources might be overburdened financially by participation in certain activities, which may limit the satisfaction they gain from participation. There are also many other individual and cultural factors that will dictate which activities would be most appropriate and lead to the most satisfaction for any given person.

Researchers have shown that while in general activity can be beneficial, the activity must be meaningful to the individual; engaging in activity that is not meaningful to the participant can actually lead to negative consequences. Studies have also found that a sense of subjective well-being can result from an individual solely having a perception of being socially integrated, independent of the actual level of social integration. Given that the benefits of activity are a function of individual perception and preferences, there is no one formula for all, and individuals must therefore choose to participate in the activities that they feel benefit them most.

Public Health Perspective

Public health professionals are likely one of the largest proponents of activity theory, especially when considering health-promoting activities, since these activities are specifically targeted to improve health and can have a significant impact on well-being beyond that of life satisfaction. While gaining the benefits of social interaction, members of health education groups or support groups can gain valuable knowledge to assist them in managing their health and in improving their health behavior. Regular exercise or other physical activity, in addition to promoting general well-being, can also have a host of physical benefits from improving cardiovascular health to improving bone density. Regular physical activity can also help to improve muscle mass,

strength, flexibility, and balance, and to prevent injury. Engaging in such activities can have the additional benefit of preventing premature mortality from diseases such as hypertension and may reduce a person's dependence on pharmaceutical treatments for illnesses such as diabetes or high cholesterol.

Related Topics

[▶ Altruism and volunteerism](#), [▶ Continuity theory of aging](#), [▶ Exchange theory of aging](#), [▶ Exercise](#), [▶ Identity](#), [▶ Role loss](#), [▶ Self-esteem](#)

Suggested Readings

- Hooyman NR, Kiyak HA (1999) Social gerontology: a multidisciplinary perspective, 5th ed. Allyn & Bacon, Boston, MA
- Knapp MR (1977) The activity theory of aging: an examination in the English context. *Gerontologist* 17(6):553–559
- Lemon BW, Bengtson VL, Peterson JA (1972) An exploration of the activity theory of aging: activity types and life satisfaction among in-movers to a retirement community. *J Gerontol* 27(4): 511–523
- Maddox GL (1987) *The encyclopedia of aging*. Springer, New York
- Roy FH, Russell CH (1992) *The encyclopedia of aging and the elderly*. Facts on File, New York

Acupuncture

Douglas Flagg

Acupuncture is a medical treatment that emerged from the naturalist school of thought in China over 2,000 years ago. Its practice continues to be modified and adapted, in light of modern thought and medical knowledge. Acupuncture is one part of a complete Chinese medical system based on the production and flow of Qi (pronounced “chi”), which may be loosely described as vital energy. Qi circulates through channels called meridians as well as organs in an orderly fashion, and it is the disruption in the production and flow of Qi that results in disease and pain. As a system of medicine quite different than the Western system, acupuncture has its own distinctive language.

In this system references to organs and their function and influence may be thought of as metaphorical when compared with the Western definitions of organ function.

Traditional acupuncture treatment consists of the insertion of thin sterile needles at specific locations along the meridians. The acupuncturist determines the exact locations by making a careful assessment of the patient and the problem being treated. This assessment involves questioning, observing the patient, examining the pulse and tongue, and locating areas of tenderness through palpation. In essence, a history and physical exam, similar to that done in Western medicine, is performed but with a different emphasis. Treatments are thus individualized, such that the same Western diagnosis may be treated quite differently in different patients.

In Western countries, acupuncture has been primarily used to treat pain, but is increasingly receiving attention for treatment of other conditions. Due to the nature of the individualized treatments, and difficulty in defining an appropriate placebo, acupuncture treatments do not lend themselves well to the constraints of controlled clinical studies, leading many Western trained physicians to doubt or underestimate their effectiveness. Recent studies have demonstrated that “sham” needling, in which a point that is not thought to be effective for a given condition is needled, provides a benefit over nontreatment. This in turn would dilute the significance of a benefit in the true acupuncture wing of a study. Additionally, for the purpose of study, treatments are often formulaic as opposed to the individualized ones usually given clinically. Thus the literature contains very few well-designed, controlled clinical studies of acupuncture as it is actually practiced, and the methods of those that are available are open to debate. Despite these limitations, efforts to clarify the role of acupuncture are receiving more attention. A consensus panel of the National Institutes of Health has concluded that acupuncture is probably effective for postoperative and chemotherapy-induced nausea as well as postoperative dental pain. It was further stated that acupuncture might be an acceptable alternative treatment for a number of other conditions including headache, menstrual cramps, low back pain, osteoarthritis, carpal tunnel syndrome, addiction, stroke rehabilitation, tennis elbow, fibromyalgia, myofascial pain, and asthma. Recent studies in major medical journals have suggested benefit in

osteoarthritis of the knee, low back pain, and migraine headaches.

During an acupuncture treatment, needles are inserted at various points along a meridian. This usually involves the use of both local and distal points. A local point is a point at, or near, the location where the discomfort or pain is present. Distal points, which are frequently around the wrists and ankles, are chosen for their traditional effects and are distant from the location of pain. Acupuncture needles are extremely thin and solid, unlike the hollow needles used to draw blood.

Although treatments involve minimal discomfort, an aching or radiating sensation may be noted. This phenomenon of “De Qi” is often sought by the practitioner and is thought by many to be important for a treatment to be effective. Needles may then be manipulated manually or stimulated by low-level electricity. A smoldering herb may also be used to warm the needles in the technique known as moxibustion. As acupuncture has evolved, multiple different styles and approaches have emerged. One such approach involves the use of “reflex microsystems.” Reflex microsystems are localized areas of the body that have representations of the entire body within them. The most commonly used microsystem is the ear. Thus, for example, treatment of the ear can have effects on the entire body. Other microsystems commonly used include the scalp and the hand. These are frequently stimulated in conjunction with other acupuncture treatments. In addition to the use of needles, stimulation of acupuncture points with lasers, magnets, and pressure show considerable promise.

A treatment may last up to 45 minutes and the patient not uncommonly experiences a sense of relaxed well-being following a treatment. Transient fatigue or euphoria is a less common effect. Other side effects may include bruising and pain at the needle insertion site, and a transient aggravation of the underlying problem. A mild increase in symptoms is often seen followed by improvement in the treated condition. Fainting, while not common, may occur, especially during a first treatment, but future treatments can usually be continued with caution. Serious complications are exceedingly rare, but could include bleeding, infection, and puncture of an organ. While one treatment may on occasion produce dramatic results, acupuncture is not magic, and it is not unusual for 8–12 treatments to be required. Periodic treatments may be necessary to maintain a response.

Acupuncture is appropriately used in conjunction with Western medicine and recommendations to discontinue other treatments should be regarded with suspicion. Acupuncture practitioners may be medical doctors who have received further training in acupuncture, or licensed acupuncturists who have undergone extensive training. Further study should help to elucidate more clearly the role of acupuncture. For now it can be said that acupuncture has been shown to be safe and effective for a number of different conditions.

Related Topics

➤ [Back pain](#), ➤ [Complementary and alternative health practices](#)

Suggested Readings

Helms J (1995) *Acupuncture energetics: a clinical approach for physicians*. Medical Acupuncture Publishers, Berkeley, CA
 Kaptchuk TJ (2000) *The web that has no weaver: understanding Chinese medicine*, 2nd ed. Contemporary Books, Chicago, IL

Suggested Resources

National Institutes of Health (1997) *Acupuncture*. NIH Consensus Statement (online), November 3–5, 15:1–34. <http://consensus.nih.gov/1997/1997Acupuncture107html.htm>

Adaptation

Karen J. Berte · Kathleen Patterson

Adaptation can be defined as the act of process of change. With almost one fifth of the US citizenry considered elderly, the issue of adaptation in aging is a central one. Aging is a universal phenomenon that can be quantified in several domains; however, the definition of “successful” aging is often more subjectively defined. Successful aging is a multidimensional and integrative state of being, encompassing the domains of physical, psychological, functional, and social health.

Rather than a discrete event or landmark, aging is a developmental phase on a continuum. The quality of this process of transition and the heterogeneity of outcomes reflect the impact and diversity of each person's personality structure. Likewise, personal history of psychological, physiological, and socioeconomic development affects the various outcomes of aging. Not only past but also current health status and goal selection impacts on outcome.

In an older population without significant mental and/or physical impairment, a useful metamodel of successful aging can be summarized as "selective optimization with compensation." In this model, losses are minimized and gains are maximized. Rather than focusing on declines and losses, strengths are optimized and compensatory mechanisms are emphasized. For example, an aging driver might have once had the goal of traveling with family throughout the United States in a motor home after retirement. However, given diminished levels of sustained energy, decline in visual acuity and reaction time, lack of interest from children and grandchildren, and perhaps loss of a spouse, this goal might be altered. A transformed goal might include briefer trips with friends or other relatives, or an alternative form of transportation. Goals and their achievement contribute to a sense of meaning and purpose in life and are unique to each individual. Selection, or the focus of one's energies and resources on the most compelling goals or interests, is a principle of development across the life span.

An integrative model of successful aging includes accepting oneself, maintaining positive relationships with others, keeping as much autonomy and control of one's life as possible, dealing appropriately with the environment, identifying a purpose in life, and insuring personal growth in salient domains. These become greater challenges when frailty and especially progressive visual degeneration are present. Dealing with these issues is more effective when positive affect is evident.

Hope and optimism enrich the quality of social relationships, increase the personal perception of being in control of one's life, and facilitate use of adaptive coping mechanisms. Moreover, positive affect predicts greater functional independence and mobility and less morbidity and mortality. Research has demonstrated that positive affect is involved in maintaining an internal equilibrium through chemical and neural changes, as is evidenced by the effects on such functions as the immune response. Once again, selectivity

of goals and substitution of more attainable goals come into play. Although most people strive for a sense of internal control over important aspects of their lives and health, perceiving control as external to oneself can also be adaptive in select situations and may enhance the perception of control over chosen goals. Psychological resilience—the capacity to adapt to, and successfully transcend, the multiple challenges and changes across the life span—is a defining feature of healthy and successful aging. One's appraisal of life events and sense of self strongly influence coping style and are central to this resilience.

Aging is no longer viewed in negative terms of loss and decline in function, but rather in the positive sense; aging represents potential development of new abilities and goals through continued education, good nutrition, exercise, involvement with others, and satisfaction with self. Presenescent positive affect predicts greater success in achieving one's goals. Flexibility and plasticity in personality and daily living facilitate successful aging. Diminishing opportunities for autonomy and achievement in the aging population through restrictive or overprotective environments lacking mental and physical stimulation discourages neural plasticity and inhibits optimization. Overall, "old age holds the potentials to be a time when the accumulated knowledge and expertise of a lifetime is invested in the realization of a distilled set of highly meaningful domains and goals."

Related Topics

▶ [Ageism](#), ▶ [Adult development](#), ▶ [Emotions](#), ▶ [Geriatric medicine](#), ▶ [Geriatric psychiatry](#)

Suggested Readings

- Baltes MM, Carstensen LL (2003) The process of successful aging: selection, optimization, and compensation. In: Staudinger UM, Lindenberger U (eds) *Understanding human development: dialogues with lifespan psychology*. Kluwer Academic, Boston, MA
- Ostir GV, Ottenbacher KJ, Markides KS (2004) Onset of frailty in older adults and the protective role of positive affect. *Psychol Aging* 19(3):402–408
- Phelan EA, Anderson LA, LaCroix AZ, Larson EB (2004) Older adults' views of "successful aging": how do they compare with researchers' definitions? *J Am Geriatr Soc* 52:211–216
- Ryff CD (1989) Beyond Ponce de Leon and life satisfaction: new directions in quest of successful aging. *Int J Behav Dev* 12(1): 35–55

- Wahl HW, Becker S, Burmedi D, Schilling O (2004) The role of primary and secondary control in adaptation to age-related vision loss: A study of older adults with macular degeneration. *Psychol Aging* 19(1):235–239
- Weinberg J (1956) *Personal and social adjustment: psychological aspects of aging*. American Psychological Association, Washington, DC

Suggested Resources

- Alliance for Aging Research. <http://www.agingresearch.org>
- National Council on Aging. <http://www.ncoa.org>
- US National Institutes on Health, National Institute on Aging. <http://nia.nih.gov>

Addiction

Ted Parran Jr.

Addiction or “chemical dependence” is clearly a chronic disease of the brain that bears no relationship with morality, education, social class, or ethnicity. It is a primarily genetic illness that clusters fairly heavily in families. Addiction is characterized by the repetitive, intermittent loss of control over the use of a euphoria-producing drug that causes problems in a person’s life. As a consequence, addiction is generally not defined in terms of quantity and frequency of use, but rather in terms of patterns (loss of control) and consequences (repeated problems) of use. The essential problem in addiction is this loss of control, and the resulting bizarre, uncharacteristic, erratic, irresponsible behaviors.

The domains in a person’s life where problems from addiction arise tend to be the following:

1. Early symptoms or dysfunction—self-respect, close love relationships, social relationships
2. Middle symptoms or dysfunction—financial problems, legal problems
3. Late symptoms or dysfunction—work problems, medical or psychiatric problems

Individuals with a diagnosis of addiction or chemical dependence develop and maintain one or more alcohol-related or drug-related problems in their lives, such as family problems, other behavioral consequences, a conviction or charge of driving under the influence (DUI),

or medical complications. The types of problems range from minimal, such as one or two blackouts in young adulthood, followed by family concern about the person’s drinking, to severe, including loss of work, divorce, or loss of other family relationships. The *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV) has specific diagnostic criteria for a diagnosis of addiction outlined in Table 2. Three or more criteria must be met to qualify for a diagnosis.

The societal costs of addictions are overwhelming. Tobacco dependence is the leading preventable cause of death in America, with 430,000 premature deaths per year. Fetal alcohol syndrome is the leading cause of preventable birth defects in our country. Over 70% of domestic violence is addiction-related, and 70% of child abuse and 90% of child sexual abuse are thought to be addiction-related. In the elderly, falls, progression of dementia, and incontinence are commonly associated with, or worsened by, addictive disease. Also, since the process of aging can commonly involve the loss of substantial portions of one’s physical, mental, psychological, or social “reserves,” small functional impairments triggered by addictive disease in the elderly can produce a disproportionately large effect. The economic costs of addiction are estimated at \$80–110 billion per year, and addictions are considered the nation’s number one health problem!

Epidemiology

The prevalence of nontobacco addictive disease in the elderly is quite variable based upon sex and peer group norm, and thus age. Alcohol dependence is clearly the most common, followed by prescription drug abuse. Addiction to other drugs (nonalcohol and nonprescription) in the elderly has always been nearly negligible. However, for generations who “came of age” in the 1960s and later matured into elderly Americans, these rates are expected to increase. Current rates of addiction to alcohol or prescription drugs in older men are in the 10–13% range. In very elderly women (older than 75) the rate is approximately 5% for alcoholism or prescription drug dependence; in younger elderly women (aged 65–75) the rates resemble those of their male counterparts; and among women in the 45–55 age group the rates are the same as for men. The historical lower rates in very elderly women probably reflect a societal or cultural taboo, prevalent when they were young adults, toward the use of alcohol and drugs

by women. The result of this cultural prohibition against use has been a lifelong disproportional high rate of abstinence in this group (very elderly women), and consequently a low rate of addictive disease.

Screening, Intervention, and Treatment of Addiction

Screening Screening for addictive disease in the elderly is surprisingly difficult due to two unrelated phenomena: societal bias and normal aging process complicated by addictive disease. American society has historically believed that addiction was a moral issue, a question of good versus evil, a problem with self-control and will power. These beliefs were especially prevalent when the current elderly were in their formative years. Consequently, the amount of stigma associated with addiction is tremendous, and even more so among the elderly. This leads to underutilization of screening for addictive disease in the elderly by health-care and social service agencies, underreporting of addictive disease by older patients and their families, and greater reluctance to receive treatment by the addicted elderly. In addition, the normal process of aging in our society, especially when exacerbated by addictive disease, tends to be one of gradually increasing isolation and withdrawal from some daily activities (such as full-time employment). This process can contribute to “false negative” results of addiction screening tests or, in other words, screening that fails to detect an addiction problem even when it is present and quite active.

The best screening approach for alcohol or prescription drug dependence in the elderly utilizes information from three general areas: (1) evidence of loss of control over use and adverse consequences (unsuccessful or repeated efforts to cut down on use, comments and concern from loved ones over use, feeling remorse about use); (2) information about quantity and frequency of use beyond the “sensible drinking” guidelines; (3) collateral information from family, friends, or caregivers. Since even small amounts of excessive alcohol or prescription drug use can cause major problems in the elderly, even mild suspicion of a problem should be thoroughly evaluated by a health-care professional.

Intervention and Treatment The treatment of addictive disease in the elderly requires special care due to the frequent co-occurrence of other medical or mental health problems. A full medical evaluation is

necessary, and often detoxification of the problematic substance. Short-term rehabilitation stays on inpatient or residential units are more often necessary for the elderly with addiction issues than with younger clients. Change in housing or supervision of the home environment is more possible and necessary with the elderly than with younger persons. Participation in counseling and self-help meetings appear just as effective in the elderly as they are with other persons recovering from addictive disease.

Related Topics

➤ Alcohol use, ➤ Substance use

Suggested Readings

- Council on Scientific Affairs, American Medical Association (1996) Alcoholism in the elderly. *JAMA* 275:797–801
- Liberto JG, Oslin DW, Ruskin PE (1992) Alcoholism in older persons: a review of the literature. *Hosp Commun Psychiat* 43:975–984
- Rigler SK (2000) Alcoholism in the elderly. *Am Fam Physician* 61(6):1710–1883

Suggested Resources

<http://www.niaaa.nih.gov/>
<http://www.nida.nih.gov/>
www.netwellness.org

Adherence

Martha Sajatovic

In medicine, a major concern with respect to medical care and medical outcomes is patient adherence with prescribed treatments. Treatment adherence refers to behavior in which individuals adhere to a prescribed treatment regimen for an illness. Adherence is most often thought of with respect to adherence with medication regimens, but adherence behaviors can also include other types of care such as office visits or

psychotherapy. Treatment nonadherence is a recognized problem in medicine, accounting for 125,000 deaths annually and 10–25% of hospital and nursing home admissions. Treatment nonadherence is associated with negative consequences such as relapse, disease worsening or progression, need for rehospitalization, or even death.

In recent years, research and understanding of the treatment adherence issues have grown. A key shift within the medical profession has been to conceptualize adherence with treatment as a collaborative process between patients and care providers such that patient and providers are allies who work together to achieve the best possible outcome for the individual who has a medical condition or disorder. In the past, the term “compliance” was commonly used to refer to how closely a patient did or did not follow medical advice. The use of the term “adherence” is now generally preferred over the older term “compliance” as it better communicates the model of collaborative care in which patients are key players in the management of their own illness.

Adherence is a multidetermined, complex phenomenon and is influenced by a number of illness, patient, provider, and system-level factors. Patient demographic factors that appear to be associated with adherence include age, marital status, gender, ethnicity, and educational level. Most studies indicate that patients who are younger, unmarried, male, and with fewer years of education are more likely to be poorly adherent with medications.

Patients’ types and chronicity of illness, as well as types and severity of symptoms, are also associated with treatment adherence. For example, individuals with earlier onset of the disorder have been noted to have more difficulties with adherence. Those with chronic illness, for example diabetes, may have more difficulty adhering to a treatment regimen that encompasses months or years of treatment, compared to briefer, time-limited treatments such as treatment for acute infectious illness. In cases where treatments are highly effective and adherence is closely linked to quality of life (e.g., treatment of migraine headaches), treatment adherence may be better compared to situations in which individuals may be asymptomatic, and treatment effects may not have an immediate impact on the individuals’ quality of life (e.g., treatment of hypertension).

Concurrent substance abuse and comorbid psychiatric disorders appear to strongly influence adher-

ence. A number of investigators have noted that concurrent substance use disorders are associated with poorer adherence explanation for treatment nonadherence. Individuals who do not accept their illness or who have poor insight or understanding of illness may likewise be at high risk for treatment nonadherence. Finally, those with psychiatric illness may be less adherent with treatment compared to those with medical illness—reasons for this are not entirely clear although insight into illness and the stigmatizing effects of mental disorders may be contributing factors.

Other treatment factors such as medication side effects or tolerability may affect adherence. Some studies have noted that poorer adherence is associated with higher reported side effect burden from medications, although this is not uniformly supported in the treatment adherence literature. Other treatments and environmental factors, such as psychosocial support, access to care, and the complexity of the medication regimen, have been reported to be associated with adherence.

Models of health behaviors, such as the Health Belief Model that focus on proximal determinants of adherence, note the influence of the above factors on patients’ perceptions of their susceptibility to the illness, the severity of their illness, the benefits of treatment, and the costs of treatment (side effects, time, monetary outlay). These patient beliefs, in turn, influence adherence behaviors.

An important point in attempting to improve treatment adherence is to insure that the issue is addressed between patients and care providers. Patients may not share with their providers that they are nonadherent with treatment. Alternatively, among some populations such as older individuals with cognitive impairments, the individuals may not be aware themselves that they are missing some or all of prescribed treatments. It is critical that providers be well informed with respect to treatment adherence. Ways that providers can assess treatment adherence for a specific individual under their care include direct questioning of the individual, and involvement of family members or significant others in care planning. Adherence with some medications can be evaluated with blood levels. Continued symptoms or progression of illness may also occur among patients who are not adherent with prescribed treatment.

Once nonadherence is identified, the next steps include identification of possible barriers to treatment adherence and, if possible, removal or lessening of

barriers. For individuals who are nonadherent because they are uninformed about illness and the consequences of nonadherence, education can be beneficial. Generally this is a process that over time can enhance treatment adherence. Printed materials such as brochures or posters can be useful, as can television or Internet sources of information. Support or consumer groups may provide important education regarding the disease and treatment. Finally, in-home training, such as a visiting nurse might provide, can be of great assistance to older adults who are unable to access information in other ways.

Pragmatic strategies to enhance treatment adherence include treatment regimen simplification, “reminders” such as pillboxes, and linking medication taking into routine daily activities such as meals or daily hygiene. Telephone calls or mail reminders can optimize adherence with appointments and prescription refills. Involving family members in constructive ways may further reinforce adherence.

Providers may minimize adherence that is related to side effects by candid discussion of tolerability of adverse effects with patients, including domains that patients may not readily volunteer such as medication-related sexual dysfunction. In some cases, dosage reduction or medication substitution may improve treatment adherence while still optimizing illness management. Older adults who are unable to afford medications may not fill prescriptions or may attempt to “spread out” prescriptions, thus reducing efficacy of medication treatments. In some circumstances individuals who cannot afford medication may be eligible for patient assistance programs. Alternatively, there may be generic formulations or less costly prescription alternatives, which should be considered by care providers as appropriate.

Assessment and optimization of treatment adherence is an on going dynamic process in which patients, families, and care providers can all participate. Adherence attitudes and behaviors can change over time and, particularly in older adults, may be affected by cognitive status and medical disability. Individuals may suddenly become nonadherent with treatment, sometimes with serious consequences. However, close attention to the issue of treatment adherence, and prompt focus on barriers to adherence are likely to improve medical outcomes.

Related Topics

▶ [Doctor–patient relationship](#), ▶ [Medication management](#), ▶ [Patient–provider communication](#)

Suggested Readings

- Becker MH (1990) Theoretical models of adherence and strategies for improving adherence. In: Shumaker SA, Ockene JK (eds) *The handbook of health behavior change*. Springer, New York, pp 411–434
- Smith DL (1989) Compliance packaging: a patient education tool. *Am Pharm NS29(2):42–45, 49–50*

Adult Day Care

Mitzi J. Dearborn

Adult day care programs are community-based group programs that provide daytime services in a protective setting outside of the home. Adult day care includes social and health care services for a population of adults with physical, mental, and/or social disabilities. With the help of adult day care services, chronically disabled individuals are able to continue to live at home. Origins of adult day care include geriatric day programs in Russia in the 1930s and programs in Great Britain post World War II. In the United States, during the deinstitutionalization movement of the 1960s, adult day programs significantly developed in conjunction with federal and state initiatives to contain rising costs of long-term care residential facilities. The term adult day care evolved to be called adult day services (ADS).

Programs and Services

Adult day programs are described by three primary service models: the medical model (21%), the social model with no medical care (37%), and the combination model (42%). The specific services provided may include a combination of health monitoring, social services, personal care services, meals, therapeutic activities, transportation, nursing services, medication management, caregiver support services, rehabilitative

therapy, medical services, overnight care, and/or emergency services. More than 75% of the programs are open at least 5 days a week, with participants attending in a combination of days to meet their needs. Recent national trends in ADS include increased availability of ancillary components, such as personal care, “up and tuck,” weekend or overnight respite, up to 2 weeks of overnight stays, rehabilitation therapy, and/or subacute care. As participants’ and caregivers’ needs change over time, ADS can provide a continuum of care over time and can serve as a connecting link between acute care and nursing home care.

ADS programs have grown significantly during the last 20 years; however, the growth in number still lags behind the need for services. Recently, national trends show increased frequency in for-profit programs. In urban areas, one program may serve one specific market area, such as dementia, multiple sclerosis, or traumatic brain injury. In rural areas, the market size typically is not large enough to focus on a particular market niche. In the last two decades there has been a significant increase in ADS programs that provide dementia services, whereas less than 3% of programs had specialized in dementia care in 1984. Because the number of elderly in the population is continuing to increase, there is additional demand for ADS.

Participants

The average participant age is at least 72, with the average age range at 45–91. Most participants are white, female, and unmarried. Participants have physical, mental, and/or social disabilities, and they prefer to live at home with a family member or friend. The participants’ most frequent living situations are residence with adult child (35%) and residence with spouse (20%). The two most prevalent conditions in ADS participants are dementia and frail elderly (adults above 60 with no dementia but with need for supervision and/or risk for social isolation). Most participants are dependent for at least one activity of daily living (ADL).

A few studies have provided comparative information about private pay versus public pay consumers. Compared with public pay participants, private pay participants were more likely to be white, to have memory losses, and to have cognitive decline within the 90 days prior to starting ADS. Private pay participants tended to have less impairment in ADLs.

Participants’ length of stay in ADS ranges from short term to long term, providing a continuum of care for older adults. Participants’ average length of stay in ADS is 2 years, with a range from a few weeks up to 8 years. The primary reasons for disenrolling from ADS are need for long-term institutional residential placement and death. Nonwhite participants tend to disenroll at higher rates than whites.

Caregivers

Adult day centers offer important respite for caregivers. ADS are particularly useful for family caregivers who work during the day, and these services are less expensive than nursing home placements. ADS programs do not serve as a substitute for nursing home care but provide an important supplement to informal caregiving.

Caregivers in the family often experience emotional and psychological distress. By utilizing ADS over time, caregivers have reduced stress levels and improved psychological well-being. Findings show that there is a demand in the community for ADS, and families do value services highly enough that they will pay out of pocket for services.

Funding

Most ADS facilities are not-for-profit and operate under a parent organization such as a nursing home, religious group, or hospital. Payment from public sources is typically made for 40–50% of participants. Reimbursement provided by public sources may include Medicaid, social service block grants, Medicare monies for rehabilitative services, Department of Aging food program, Veterans Affairs (VA) medical centers, and state general fund monies. Average daily fee was found to be \$46, varying by type of services and location. There is a public pay eligibility gap that frequently impacts individuals with dementia. Some of the public sources require that the ADS facility must provide medical services to receive funding.

The number of private pay consumers using ADS has been increasing. The private pay market is mainly found in middle and upper incomes. Approximately 25–35% of ADS consumers are private pay. In recent years there also has been a growth in the number of private long-term care insurance plans that cover ADS.

Utilization and Essential Components

During 1987–2002 Robert Wood Johnson Foundation funded several major national projects regarding ADS, and they developed teaching centers, website, toll-free hotline, and training modules. Results of these studies yielded extensive data regarding utilization and critical components of ADS facilities. The projects verified active operation of 3,407 adult day centers in the United States in 2002. The service group analysis showed that 56% of 3,141 counties in the United States are underserved. Suggested avenues for better serving and improving this situation included: (1) increasing public awareness in underutilized sites; (2) increasing availability of ADS in areas where there are no services; and (3) increasing knowledge at the ADS provider level regarding predictors of success for ADS programs.

Essential components for success were identified: open a full day Monday through Friday, providing or arranging for participant transport to the program, allowing everyone opportunity to pay and to select appropriate services according to participant and caregiver needs, and including a range of services and revenue streams. The number of hours open per day was a very important predictor of financial success and consumer satisfaction. Programs met customer needs best by having a full day of engaging activities with choices that focus on interest and abilities of participants. The variety of activities accommodated participants' varied backgrounds, preferences, and abilities. ADS must be responsive to the needs and wants of both the participants and caregivers. The need to incorporate a continuum of care services and to create partnerships with other community service providers has been highlighted.

Outcomes and Future Research

The need for rigorous outcome studies has been emphasized in the past few years. Because the number of elderly in the population is continuing to increase, additional demand for ADS is expected. Earlier outcome studies had mixed findings with varied methodological factors such as small sample sizes, diverse program formats, insufficient experimental design, and nongeneralizable populations. The range of outcome topics has included caregiver stress and adaptation, improvement in participant functioning, delayed

institutionalization, and cost–benefit effects. Overall outcomes show that elderly participants are satisfied with ADS, and family caregivers have lower stress levels and better psychological well-being when utilizing ADS over time. Findings show that programs are most effective for dementia caregivers when the services are used consistently over a longer period of time. In many cases participants started ADS later in the progression of the illness and used brief (less than 3 months) periods of service, so caregivers did not obtain full benefit. Studies are being completed regarding cost–benefit analysis for ADS, and results thus far show that benefits of ADS exceed costs.

There are several research directions that will be useful. Important areas of future study include: cost–benefit analysis for decisions about expanding ADS programming into underserved areas, level of effectiveness comparisons between ADS and in-home or other respite care, causal factors regarding why some caregivers wait so long to start using ADS, key components providing optimal culturally sensitive ADS, the extent to which cultural issues and programmatic factors may contribute to nonwhites disenrolling from ADS sooner than whites, and how different services in the continuum of ADS may be more effective at different points in time according to caregivers' situations and participants' stages of illness.

Related Topics

- ▶ [Activities of daily living](#), ▶ [Caregiver burden](#),
- ▶ [Caregiving and caregiver burden](#), ▶ [Dementia](#),
- ▶ [Respite care](#)

Suggested Readings

- Dabelko HI (2004) Individual and environmental factors that influence length of stay in adult day health care programs. *J Gerontol Soc Work* 43(1):83–105
- Gaugler JE, Zarit SH, Townsend A, Stephens MP, Greene R (2003) Evaluating community-based programs for dementia caregivers: the cost implications of adult day services. *J Appl Gerontol* 22(1):118–133
- National Council on the Aging/National Adult Day Services Association (1997) Standards and guidelines for adult day services. National Council on Aging, Washington, DC
- Partners in Caregiving Adult Day Services Program (2003) National study of adult day services, 2001–2002. Wake Forest School of Medicine, Winston-Salem, NC
- Tousignant M, Hebert R, Derosiers J, Hollander MJ (2003) Economic evaluation of a geriatric day hospital: cost–benefit

analysis based on functional autonomy changes. *Age Aging* 32:53–59

Travis S, McAuley W (2000) Private pay clients in adult day services. *Nursing Econ* 18(1):23–29

Woodhead EL, Zarit SH, Braungart ER, Rovine MR, Femia EE (2005) Behavioral and psychological symptoms of dementia: the effects of physical activity at adult day service centers. *Am J Alzh Dis Other Dem* 20(3):171–179

Suggested Resources

Children of Aging Parents Organization; www.caps4caregivers.org
International Association of Homes and Services for the Aging;
www.iahsa.net/

National Adult Day Services Association; www.nadsa.org

Robert Wood Johnson Foundation adult day services news and reports; www.rwjf.org/newsroom and www.rwjf.org/research.

Adult Development

Clare A. Gideon

Historically, human development has focused primarily on describing, explaining, and predicting changes in early childhood. However, recent research efforts have been extended beyond childhood into adulthood as the definition of development has become more inclusive than merely the physiological changes that occur in early life. Yet adulthood encompasses a wide range of ages, starting from 18 and ending at death. Consequently, many researchers study adult development in general age brackets: young adulthood (18–40 years), middle adulthood (40–65 years), and late adulthood (65 years and above), with these distinctions determined by societal landmarks such as graduation from high school and retirement age.

It is widely recognized that development can occur not just in biological processes, but in multiple domains of functioning, including physiological, cognitive, psychological, and social. Nevertheless, the complexity of adult development lies in the observation that changes in these areas do not occur in isolation, but may interact and influence one another. For example, how an individual may adapt to a biological change (e.g., menopause) that occurs much earlier than expected (e.g., age 40) may be strongly influenced by the individual's social

context and cultural expectations (e.g., childbearing should be complete by age 40) or psychological state (e.g., nurturing and maternal feelings).

Most individuals can expect to encounter a number of developmental changes related to their chronological age and biological development. These age changes are influenced by three primary processes: biological, environmental, and psychological. Physiological aging processes, such as menopause, occur at generally predictable age ranges as heritable genes are expressed. Environmental influences, such as social norms and cultural values, influence one's attitude toward taking developmental steps, such as marriage and childbirth, at particular ages. Furthermore, psychological changes may occur in reaction to physical and environmental influences or independently, as an individual's sense of self undergoes developmental transitions.

These three primary processes (biological, environmental, and psychological) influence an adult's development regardless of the year he or she was born; however, some environmental or social events may be unique to a particular culture or generation. An individual's cohort may experience influential social changes (e.g., disease epidemics, economic hardships, or war) that may alter the trajectory or timing of his or her adult development. Physiological, environmental, psychological, generational, and individual processes can all influence adult development to different degrees and may interact with one another to produce more or less pronounced developmental changes. An adult's development may be greatly altered by events that are unique and specific to the individual, such as experiencing a traumatic or life-threatening event. Finally, an adult's development may also be affected by the timing of events, such that "off-time" events (i.e., events that occur significantly earlier or later than expected) may have more pronounced or even reduced developmental impact.

Erik Erikson and Jane Loevinger propose sequential and progressive theories of adult development. Erikson believes that there are eight distinct psychosocial stages of development, each characterized by a different psychological "crisis" at different developmental phases of life. For example, Erikson's psychosocial crisis of generativity versus stagnation generally occurs between the ages of 40 and 65, and is prompted by social demands such as marriage, parenthood, and career. Successful resolution of this stage results in an individual's desire to assist younger generations in

developing and leading productive and fulfilling lives, whereas unresolved crisis results in selfish and self-centered tendencies. For Erikson, each crisis occurs at different phases of life, regardless of successful resolution of earlier crises. Loevinger agrees that stages of development are consecutive and progressive, but believes that an adult must successfully complete a current stage of development in order to advance to the next developmental stage.

In contrast, change theorists agree that significant changes occur over the adult years, but do not view these changes as a progression toward more mature, integrated, or sophisticated ends. George Vaillant and Daniel Levinson present theories of nonlinear change in stages, while Leonard Pearlin presents his theory of adult change without a staged structure. Vaillant agrees with much of Erikson's work, but focuses primarily on internal defense mechanisms, or an individual's typical means of integrating or adapting to life changes. Levinson's theory of adult development, however, focuses heavily on social and cultural influences, defining an individual by the social structure that surrounds him or her. Finally, Pearlin theorizes that an adult's development will be influenced by four main factors, including individual demographic differences (e.g., socioeconomic status), adaptability or variety of coping strategies, efficacy of social support, and type and timing of life events. Consequently, this theory posits that an individual's development is entirely nonlinear and unique.

In summary, researchers study various aspects of human development across the life span and recognize that development continues throughout the life course, not just in early phases of life as previously theorized. Adult development is defined as the patterns of change and continuity that occur in mid and late life and many social scientists have developed a variety of theories to describe, predict, and influence this development. Each theory has value in understanding the nature of adult development as differential emphasis is placed on the primary processes that influence lifelong developmental changes.

Related Topics

◆ Developmental disabilities and aging, ◆ Gerontology, ◆ Psychotherapy, ◆ Psychosomatic disorder

Suggested Readings

- Baltes PB, Reese H, Lipsett L (1980) Lifespan developmental psychology. *Annual Rev Psychol* 31:65–110
- Bee HL (1996) *The journey of adulthood*, 3rd ed. Prentice-Hall, Upper Saddle River, NJ
- Helson R, Kwan VSY, John OP, Jones C (2002) The growing evidence for personality change in adulthood: findings from research with personality inventories. *J Res Personality* 36(4):287–306
- Khaleque A (2003) Attachment and lifespan development: a review of the adult attachment literature. *Psychol Studies* 48(1):28–35
- Lerner RM, Easterbrooks MA, Mistry J (eds) (2003) *Handbook of psychology: developmental psychology*. John Wiley, Hoboken, NJ
- Lachman ME (2004) Development in midlife. *Annual Rev Psychol* 55:305–331
- Staudinger UM, Kunzmann U (2005) Positive adult personality development: adjustment and/or growth? *Eur Psychologist* 10(4):320–329
- Staudinger UM, Pasupathi M (2000) Life-span perspectives on self, personality, and social cognition. Lawrence Erlbaum Associates, Mahwah, NJ
- Whitbourne SK (1986) *The me I know: a study of adult identity*. Springer, New York

Adult Education

Dahlia Fuentes

The 2001 Adult Education and Lifelong Learning Survey revealed that 46% of the adult population in the United States (approximately 92 million adults) participated in one or more types of formal educational activities in the 12 months prior to being surveyed. Although the overall participation rate in formal educational activities was found to be lower among adults above 65 compared with other age groups (22% compared with 41% of those aged 51–65, or 55% of those aged 41–50), there has been a marked increase in the participation of older adults in educational activities over time. This increase can be attributed to a combination of factors, including the changing demographics, needs, and interests of the aging population.

Studies have shown that as life expectancy increases, people are working longer or returning to work after retirement. It is expected that in 2012,

19.1% of the working population will comprise older adults aged 55 and above, up from 11.8% in 1992 and 14.3% in 2002. A recent national WorkTrends survey found that nearly seven out of ten Americans plan to continue to work at least part-time for pay following retirement from their main job. This leads to a growing interest and demand for various types of training and educational activities, including skills in technology. Moreover, the concepts of retirement and learning have evolved over the years, where retirement is no longer a time of nonproductivity and gradual disengagement from life. Older adults participate in various types of educational activities not only to socialize, but also to learn basic or English language skills, earn a college or advanced degree, or acquire knowledge and improve the skills necessary to succeed in the workplace. Many older adults are finding a greater purpose for learning and are engaging in educational activities for enrichment and to improve their overall quality of life.

The growing interest and demand for older adult educational opportunities have been met by a variety of organizations that have supplemented the more traditional providers such as adult education programs at senior centers, libraries, colleges, and universities. Examples of programs that have come up in the last 30 years include Elderhostel, a travel-learning program offering weeklong residencies at educational centers in the United States and abroad; lifelong learning Institutes (LLIs) and institutes for learning in retirement (ILRs), largely managed by the older adult participants who also help develop the curricula, teach, and govern the hundreds of programs connected to universities; a department store-based senior center-type program called Older Adult Service and Information Systems (OASIS) institutes that offers programs in the arts, humanities, wellness, technology, and volunteer services to more than 300,000 seniors nationwide; SeniorNet, a senior-user network with over 240 centers where computer courses are taught by peer members nationwide; and Shepherd's Centers of America, a network of interfaith community-based organizations that provide learning programs through the community service and education centers located in churches and synagogues.

Education programs offered through libraries and senior centers have also evolved to accommodate new interests and needs. Advancing technology has attributed to the development of a variety of programs that help older adults stay connected through the Internet,

enabling older adults to access more information on health and well-being than ever before. Teleconferencing has played a large role in making learning opportunities accessible to frail older adults in a variety of settings, including their home or nursing home.

As more retirees seek meaning and opportunities to enrich their lives, the concept of learning centers has evolved to include expressions such as “sage-ing,” “life-option,” and “wisdom centers,” and there is a greater appreciation and attention being paid to the role of learning in maintaining health and quality of life.

Related Topics

▶ [Education](#)

Suggested Readings

- Kim K, Collins Hagedorn M, Williamson J, Chapman C (2004) Participation in adult education and lifelong learning: 2000–01 (NCES 2004–050). US Department of Education, National Center for Education Statistics, US Government Printing Office, Washington, DC
- Manheimer RJ (1999) The promise and politics of older adult education. *Res Aging* 20:391–414
- Scott R, Neil R, Van Horn CE (2005) A work-filled retirement: workers' changing views on employment and leisure. *Work-Trends Survey* 8.1. <http://www.heldrich.rutgers.edu/Resources/Publication/191/WT16.pdf>
- Toossi M (2004) Labor force projections to 2012: the graying of the U.S. workforce. *Monthly Labor Rev* 127:37–57

Suggested Resources

- Older Adult Services and Information Systems (OASIS) Institutes (2005). www.oasisnet.org

Adult Foster Care

Tambra K. Cain

Seniors aged 55 and above make up approximately 43% of the American population. As the number of American seniors grows, so does the need for living

facilities designed with the senior adult in mind. Adult foster care homes are licensed facilities that provide family setting living arrangements. Adult foster homes may also provide assistance with medication, supervision, and personal care. Adult foster care facilities are also sometimes known as long-term care facilities, assisted living facilities, retirement homes, and nursing homes.

There are generally two types of adult foster care facilities. The first is an in-home family setting. In the family type of adult foster care, the caregiver provides care in his or her home and lives on site. Usually these family placements have only a limited number of residents. The second type is where the caregivers are trained and licensed professionals who do not live on site. These types of facilities range from small to quite large. Adult foster care participants often include not only the elderly but also disabled adults.

In addition to full-time adult foster care, there are adult day care services that usually operate during normal business hours, and a few have extended evening hours. Adult day care services provide much the same type of care as adult foster care facilities, only for shorter periods. Adult day care services typically provide meals, transportation, supervision, recreation, and limited medical and therapeutic services. Adult day care services are a good alternative for the senior adult who desires to remain at home, but needs some assistance. Adult day care services also provide an opportunity for respite to caregivers.

As the senior population continues to grow, adult foster care is becoming increasingly widespread, whether it is full-time residential care or part-time adult day care. Adult foster care services vary widely, from residential facilities with all the options to part-time adult day care facilities.

Related Topics

➤ Adult day care, ➤ Caregiver burden, ➤ Caregiving and caregiver burden, ➤ Respite care, ➤ Senior centers

Suggested Readings

Beisgen BA (2003) *Senior centers: opportunities for successful aging*. Springer, New York

Harris PJ (2002) *The national directory of adult day care centers*, 3rd ed. Health Resources Publishing, Manasquan, NJ

Lieberman T, Consumer Reports (ed) (2000) *Consumer reports complete guide to health services for seniors: what your family needs to know about finding and financing Medicare, assisted living, nursing homes, home care, adult day care; with ratings of Medicare HMOs and supplemental policies*. Three Rivers Press, New York

Newman ES, Sherman SR (1988) *Foster families for adults: a community alternative in long-term care*. Columbia University Press, New York

Tate LA (1988) *Adult day care: a practical guidebook and manual*. Haworth Press, New York

Suggested Resources

The 2000 US Census, November 2005. <http://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf>

Adult Protective Services

Tambra K. Cain

As the elder population grows in America, elder abuse becomes more of a concern. Elder abuse may be either intentional or negligent, and can take many different forms. Some types of elder abuse are physical, emotional, sexual, neglect/abandonment, and financial exploitation.

Self-neglect is also a concern among our senior population. This occurs when an elder neglects his or her own care. It can be failure to take necessary medications, lack of personal hygiene, malnutrition, and dehydration.

In an effort to combat elder abuse and elder self-neglect, adult protective services were formed. All 50 states and the District of Columbia have laws authorizing adult protective services in elder abuse situations. However, these laws vary widely. Some are very restrictive and only apply to older adults living alone; others are quite broad and encompass residential care facilities. The age at which a person qualifies for adult protective services also varies widely. Another difference is that some states have enacted mandatory reporting laws, while other states allow permissive reporting.

The Older Americans Act enacted in 1965 by President Lyndon B. Johnson was the first national law to provide protection for older adults. It remained essentially the same until 2000, when the Older Americans Act Amendments were signed into law. The amendments broadened the scope of the Act and added a provision creating the National Family Caregiver Support Program, in order to recognize the valuable role that caregivers play in the support of our older population.

Adult protective services provide a wide variety of services. Usually adult protective services workers are the first responders to an incident of abuse. The adult protective services worker can investigate allegations of abuse, assist the older adults in developing a safety plan, arrange for emergency shelter, and provide ongoing service.

Victims of elder abuse are sometimes unwilling to seek help, or to report abuse, especially if the abuser is a necessary caregiver or close family member. Pride and dignity are also factors that might lead to an unwillingness to seek assistance. In this situation, the adult protective services worker must accept the refusal of the abuse victim, if he or she has the capacity to understand the circumstances.

Related Topics

▶ [Elder abuse and neglect](#), ▶ [Financial abuse](#), ▶ [Older Americans Act](#), ▶ [Sexual abuse](#), ▶ [Sexual assault](#)

Suggested Readings

Camille P (1996) *Getting older, getting fleeced: the national shame of financial elder abuse and how to avoid it*. Fithian Press, Santa Barbara, CA

Pillemer KA, Wolfe RS (1989) *Helping elderly victims: the reality of elder abuse*. Columbia University Press, New York

Wolf RS (1986) *Elder abuse: conflict in the family*. Auburn House, Dover, MA

Suggested Resources

The National Center on Elder Abuse (NCEA) Official Website, November 2005. <http://www.elderabusecenter.org>

The 2000 US Census, November 2005. <http://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf>

Advance Directives

Marshall B. Kapp

Over the last three decades, much attention has been focused on advance or prospective health care planning as a way for individuals to maintain some degree of control over their future medical treatment even if they eventually become physically and/or mentally incapable of making and expressing important decisions about their own care. Proponents of advance care planning also claim that it may help individuals and their families avoid court involvement in medical treatment decisions (the 2005 Florida litigation melodrama involving Teresa Shiavo that was a model of the sort of court experience to be avoided), conserve limited health care resources (a significant public health concern) in a way that is consistent with patient autonomy or self-determination, and reduce the emotional or psychological stress on family and friends in difficult crisis situations. These goals are especially important for the older population. It must be noted, however, that a growing number of health care practitioners and observers have expressed skepticism, based on disappointing experience, regarding the ability of advance directives to effectively achieve these objectives.

There are two main legal mechanisms available for use in prospective (i.e., before-the-fact) health care planning. One is the proxy directive, usually in the form of a durable power of attorney (DPOA); the other is the instruction directive, ordinarily termed living will, health care declaration, or natural death declaration. In the United States, these legal mechanisms have their foundations in various statutes enacted by state legislatures. A number of state statutes are modeled on the Uniform Health Care Decisions Act adopted by the National Conference of Commissioners on Uniform State Laws in 1993. In some countries (e.g., Great Britain), advance directives have been recognized by the courts even though they have not been codified in statutory form. Advance directives may be utilized by then-competent individuals either to limit future medical treatments or, conversely, to demand the provision of specific interventions in the future.

Many state advance directive statutes have tried to draw distinctions between artificial methods of feeding and hydration on one hand, and other types of life-sustaining medical treatments (such as ventilators, antibiotics, and dialysis) on the other. Specifically, a

number of statutes try to make it harder procedurally for families or other decision makers of patients incapable of making decisions to refuse or withdraw artificial feeding or hydration than to refuse or withdraw other forms of life-sustaining medical treatment. Some groups contend that these legal provisions are necessary to protect highly vulnerable, dependent patients from unfair undertreatment and medical neglect. It is likely, however, that advance directive statutes that discriminate on the basis of the kind of medical treatment being refused by the patient (or surrogate) are both unconstitutional under the 14th Amendment Equal Protection clause and violative of the federal Americans With Disabilities Act.

Consistently, courts and state legislatures have made it clear that state advance directive statutes are not intended to be the only means by which patients may exercise the right to make future decisions about medical treatment. For example, a patient might convey issues regarding future medical treatment orally to the physician during an office visit, with the physician documenting the patient's words in the medical chart. When that patient subsequently becomes unable to make personal medical decisions, the patient's oral instructions are just as legally valid as would be a written document executed in compliance with all the statutory formalities contained in the state's advance directive statute.

There is a continually growing body of evidence that, quite often, patients' previously stated wishes concerning life-sustaining medical treatment are not respected and implemented by families and/or health care providers. In reality, critically ill patients frequently receive more aggressive medical treatment than they earlier had said they would want.

State advance directive statutes specifically excuse a health care provider who decides, for reasons of personal conscience, not to carry out the explicitly stated treatment preferences of a patient or surrogate, as long as that provider does not impede efforts to have the patient transferred to the care of a different provider who is willing to respect the patient's advance directive. In the same vein, courts have declined to hold health care providers liable for monetary damages for failure to follow a patient's or surrogate's instructions to withdraw or withhold particular forms of treatment, on the grounds that providing life-prolonging intervention cannot cause the sort of injury or harm for which the tort system is designed to provide compensation.

Related Topics

▶ Durable power of attorney, ▶ Informed consent, ▶ Living will, ▶ Patients' rights

Suggested Readings

- Gillick MR (2004) Advance care planning. *N Engl J Med* 350(1):7–8
- Hardin SB, Yusafaly YA (2004) Difficult end-of-life treatment decisions: do other factors trump advance directives? *Arch Intern Med* 164(14):1531–1533
- Kahana B, Dan A, Kahana E, Kercher K (2004) The personal and social context of planning for end-of-life care. *J Am Geriatr Soc* 52(7):1163–1167
- Kass-Bartelmes BL, Highes R, Rutherford MK (2003) Advance care planning: preferences for care at the end of life. *AHRQ Pub. No. 03—0018*. Agency for Healthcare Research and Quality, Rockville, MD
- Lo B, Steinbrook R (2004) Resuscitating advance directives. *Arch Intern Med* 164(14):1501–1506
- Pearlman RA, Starks H, Cain KC, Cole WG (2005) Improvements in advance care planning in the Veterans Affairs system. *Arch Intern Med* 165(6):667–674

Suggested Resources

www.abanet.org/aging
www.caringinfo.org

Adverse Drug Reactions

Matthew A. Fuller

Adverse drug reactions (ADRs) are undesirable effects of medications that occur at a high rate in older adults for a variety of reasons. In the elderly, changes occur in how the body affects medications, known as pharmacokinetics, and how a drug affects the body, known as pharmacodynamics. Both of these processes influence the potency and duration of a medication as well as unintended effects.

Aging produces changes in the body's composition of fat, water, and muscle; this causes differences in pharmacokinetics—the way drugs are distributed throughout the body, metabolized, and excreted. Changes in drug distribution occur because certain medications

prefer to remain in the body's fat stores (lipophilic) while others prefer to seek water-containing areas of the body (hydrophilic). As one ages, the area or volume in which drugs distribute decreases, potentially leading to increased effects of hydrophilic drugs due to higher blood concentrations. These differences become important as they may result in ADRs when dosing drugs in the older adult.

Examples of drugs that are affected by this change in volume of distribution include digoxin, lithium, theophylline, and morphine. These commonly used medications need to be dosed lower in the older adult to avoid potential ADRs. Coinciding with this decrease in volume of distribution is a decrease in lean body mass and an increase in total body fat. These body changes may lead to accumulation and increased effects of lipophilic drugs. Examples of lipophilic drugs include diazepam, haloperidol, amitriptyline, and verapamil. These medications will also require dosage adjustments when used in the older adult.

The liver is the body's main organ for drug metabolism and changes in several ways during aging, resulting in increased drug effect and adverse reaction potential. First, there is a decrease in size or mass of the liver and this may slow metabolism. Second, blood flow through the liver is also decreased, leading to a decreased clearance or removal of drugs from the body, for example with lidocaine, estrogens, and propranolol. Third, a specific cellular function of the liver called phase I metabolism (oxidation) is decreased. Examples of drugs that undergo phase I metabolism are diazepam, ibuprofen, diphenhydramine, and warfarin.

Drug excretion is also impacted in the older adult. Drug excretion through the kidney is decreased secondary to an age-related decline in function. The decline in kidney (renal) function results in increased drug concentrations and potential for ADRs. Many drugs are impacted by declining renal function and require dosage adjustment. Classes of drugs that are affected include analgesics, psychotropics, cardiovascular medications, antibiotics, and other miscellaneous medications.

In addition to pharmacokinetic changes that occur with aging, pharmacodynamic parameters are also impacted. Older adults display an increased sensitivity to drugs that act on the central nervous system such as benzodiazepines, antipsychotics, antidepressants, opiate analgesics, barbiturates, and drugs with intrinsic anticholinergic properties. The effects of these drugs

are increased and may lead to adverse effects such as dizziness, confusion, or falls. In addition, an increased sensitivity to fluid medicines (diuretics) may lead to an increased risk of decreased blood pressure (orthostasis), resulting in increased fall and injuries. Dosages of these medications will need to be individually adjusted to maximize the desired therapeutic effect while minimizing potential adverse effects.

While a decline in renal function may result in pharmacokinetic changes in certain medications, the kidneys are also affected by age-related decrements in aldosterone and renin. The result is a greater risk of high potassium that may lead to heart rhythm disturbances such as heart block or sudden death. Drugs commonly used in older adults that may accentuate this include the nonsteroidal anti-inflammatory drugs (NSAIDs) ibuprofen and naprosyn, and angiotensin-converting enzyme (ACE) inhibitors lisinopril or captopril. Additional pharmacodynamic changes include an increased sensitivity of coagulation systems. This results in a greater risk of bleeding with warfarin in older adults. The use of warfarin requires careful dose titration and monitoring, especially as one ages and sensitivity to its blood-thinning effects are enhanced.

A decline in mental (cognitive) function occurs with aging. While many factors may be involved in cognitive function decline, drugs are often identified as the causative factor. A very large number of medications have been implicated. Drugs with anticholinergic effects are well known for producing cognitive impairment in older adults. Other classes of medications that have been implicated include analgesics, sedative-hypnotics, cardiovascular and respiratory drugs, gastrointestinal drugs, and antibiotic and antiviral drugs.

Unfortunately, ADRs sometimes go undetected because symptoms may mimic problems associated with older age. ADRs may also be misinterpreted as a medical condition resulting in the addition of other drugs to treat the condition. For example, an antipsychotic agent may produce adverse effects prompting the provider to initiate a medication to treat this adverse reaction, leading to additional therapy when a simple dose reduction may have mitigated the reaction.

Antibiotics, anticoagulants, digoxin, diuretics, hypoglycemic drugs, antineoplastic drugs, and NSAIDs are responsible for 60% of ADRs leading to hospital admission and 70% of ADRs occurring during

hospitalization; therefore, special attention should be paid to the use of these medications in the older adult.

There is a direct correlation between the number of drugs taken and the risk of ADRs. In addition, for patients who had ADRs, the length of hospital stay was increased by 2–3 days and hospital costs were increased by \$3244–4655 compared with patients who did not have ADRs. Fortunately, there is evidence suggesting that many ADRs are preventable.

ADRs are especially common in older adults. This population exhibits physiological changes associated with aging that impact pharmacokinetic and pharmacodynamic attributes. Awareness of these changes, careful evaluation of medication regimens, and use of medications only when indicated and at the lowest effective dose will aid in the prevention of ADRs that produce morbidity and mortality.

Related Topics

• Drug interactions, • Polypharmacy

Suggested Readings

- Cooper JW (1999) Adverse drug reactions-related hospitalizations of nursing facility patients. *South Med J* 92:485–490
- Routledge PA, O'Mahony MS, Woodhouse KW (2004) Adverse drug reactions in elderly patients. *Br J Clin Pharmacol* 57: 121–126
- Suh DC, Woodall B, Shin SK, Hermes-De Santis ER (2000) Clinical and economic impact of adverse drug reactions in hospitalized patients. *Ann Pharmacother* 34:1373–1379
- Veebof LJ, Stewart RE, Meyboom-de Jong B, Haaijer-Ruskamp FM (1999) Adverse drugs reactions and polypharmacy in the elderly in general practice. *Eur J Clin Pharmacol* 55:533–536

Affirmative Action

Michael P. Ruiz

Affirmative action, which has also been known as “equal opportunity,” is a term used to describe a policy created to ensure that individuals who fall into a protected class have equal opportunity or access to a

position or program. While age discrimination in employment is prohibited under the Age Discrimination in Employment Act (ADEA), the elderly are not generally considered a “protected class” for purposes of affirmative action. Consequently, whether older persons may benefit from an affirmative action program depends upon whether the policymaker is using a broad interpretation of “protected class” that includes all groups protected against discrimination by federal legislation.

The phrase “affirmative action” is thought to have first appeared in an order issued in 1961 by the then president of the United States, John F. Kennedy. In addition to creating the Committee on Equal Employment Opportunity, Executive Order 10925 mandated that projects financed with federal funds “take affirmative action” to ensure that applicants “are employed without regard to their race, creed, color, or national origin.”

After the passage of the Civil Rights Act of 1964, President Lyndon Johnson issued. This order superseded Executive Order 10925, and helped to clarify the meaning of “affirmative action” and added an important rule-making provision. Specifically, Order 11246 (1) defined what “action” an employer must take including employment, upgrading, demotion, transfer, recruitment, termination, compensation, and training; (2) required the heads of departments in the executive branch of the federal government to establish and maintain a program of equal employment opportunity; (3) required federal contractors to file compliance reports; (4) abolished the Committee on Equal Employment Opportunity and placed enforcement of affirmative action under the US Department of Labor; and (5) required the Secretary of Labor to implement “rules and regulations” to enforce the Order.

In 1966, the Department of Labor created the Office of Federal Contract Compliance Programs to administer Order 11246, which continues to exist today. In 1967, Order 11246 was amended to cover discrimination on the basis of gender. In 1968, the Office of Federal Contract Compliance began issuing “rules and regulations” to enforce Order 11246.

In 1970, President Richard Nixon’s secretary of the US Department of Labor issued Order No. 4, a rule to enforce Order 11246. Order No. 4 is arguably the most important development in affirmative action policy and framed the issues of the debate over affirmative action that still exist today. Under Order No. 4, federal

contractors with 50 or more employees are required to develop a written affirmative action plan aimed to achieve prompt and full utilization of minorities and women in all areas of the covered workforce. The plan must include an analysis of areas in which the contractor is deficient in the utilization of minority groups and how they plan to correct this deficiency. The Order further requires contractors to make special efforts to recruit, employ, and promote qualified persons who are members of groups that have been “excluded,” “underutilized,” or “underrepresented.” These groups are defined as “protected classes.” The phrase “protected class” would later be expanded to include women.

Amendments to Order No. 4 notwithstanding, there is an ongoing debate over whether the federal government should require contractors and recipients of federal funds to take “affirmative action” and what kinds of “affirmative action” should be taken. Phrases like “affirmative action,” “equal opportunity,” “protected classes,” “underutilized,” and “underrepresented” continue to be defined by the legislative, executive, and judicial branches of government at both the state and federal levels.

The debate over affirmative action has moved beyond employment into other areas, especially access to higher education. In response to movements for and against affirmative action, state governments have begun to redefine affirmative action policies covering employment and education through laws, referenda, and even their state constitutions. This debate has also given rise to an entire new area of law and employment. Most recipients of federal funds have an equal opportunity compliance office to monitor changes in the law and their institutional affirmative action policies.

Related Topics

🔗 [Ageism](#), 🔗 [Discrimination](#)

Suggested Resources

United States Equal Employment Opportunity Commission. www.eeoc.gov

Title 41, Chapter 60, Code of Federal Regulations. www.gpoaccess.gov/cfr/index.html

United States Department of Labor: www.dol.gov

African Americans

Shelley A. Francis

Knowledge is better than riches.

African proverb

American Red Cross. “African American HIV/AIDS Prevention Curriculum, 1998.”

African Americans or black people are those who have origins dating back to black racial groups on the African continent. According to the 2000 US Census, people who identify as African Americans constitute approximately 12% of the US population, representing almost 35 million people. According to the Census, by the year 2035 there will be more than 50 million African American individuals in the United States, comprising 14.3% of the total population.

African Americans have a long history in the United States. Some African American families have been in the United States for many generations, whereas others are recent immigrants from places such as Africa, the Caribbean, and Canada. Health disparities between African Americans and other racial groups are very pronounced and are apparent in life expectancy, cancer, human immunodeficiency virus (HIV) or acquired immunodeficiency syndrome (AIDS), heart disease, and other measures of health status. In regard to life expectancy, in 1999 the average American could expect to live 76.9 years, whereas the average African American could only expect to live 71.4 years. Factors contributing to health outcomes among African Americans include discrimination, lack of awareness and knowledge about health issues, cultural barriers, lack of health insurance, and difficult or nonaccess to medical care. This chapter focuses on a variety of health issues that are prevalent among African Americans above 50. We focus on health issues that are not frequently discussed but have a significant impact on this population.

It is a well-known fact that the American population is aging. This ideology is often referred to in the media as the “graying of America.” The percentage of the US population that is 65 or older will rise from the current 12% to 20% by 2030. In terms of real numbers, African Americans are the third largest minority group in this country, following people of Latino descent. There are approximately 3 million African Americans aged 65 and above, and by 2050, it is projected that this number will increase to 8.6 million.

Health Insurance

Access to health care continues to be an important issue contributing to the health status of older African Americans. Many vulnerable older, urban adults disproportionately receive care from academic medical institutions typically located in urban centers. These medical institutions tend to offer high-quality care, improved outcomes, potentially greater expertise, and more technology. However, numerous older adults with inadequate or no health insurance are less likely to receive consistent primary care and preventive services and management of chronic diseases. Studies have found that older African Americans receive fewer preventive services than older whites, and that the least affluent receive fewer preventive services than the more affluent do. For example, older African Americans are less likely to receive influenza vaccinations than whites are. The federally funded Medicare program assists those with limited health insurance by providing hospitalization, medical care, and some related health services for seniors above 65 and younger people with disabilities. Therefore, people between the ages of 50 and 64 without health insurance may have no regular source of medical care. Even the Medicare program has limitations. Studies have found that many African American Medicare beneficiaries aged 65 and older are more than twice as likely as elderly white beneficiaries to report that they could not afford to fill at least one prescription in the last year, according to a new study by the Center for Studying Health System Change (HSC). Older African American beneficiaries are more likely to be poor and to lack supplemental insurance. They are also more likely to live with certain chronic conditions such as heart disease, high blood pressure, and diabetes that generally require prescription drug treatment. However, recent changes to the Medicare program may reduce the prescription drug gap between white and African American seniors. In 2003 the federal government revamped the Medicare to add prescription drug coverage, which will provide protection for people who have very high drug costs.

Alzheimer's Disease

There is a growing public health epidemic among African Americans referred to as the “silent epidemic” of Alzheimer's disease. Alzheimer's disease is a progressive brain disorder that gradually destroys a

person's memory and ability to learn, reason, make judgments, communicate, and carry out daily activities. As Alzheimer's progresses, individuals may also experience changes in personality and behavior, such as anxiety, suspiciousness, or agitation, as well as delusions or hallucinations. Alzheimer's is the most common form of dementia—a group of conditions that all gradually destroy brain cells and lead to progressive decline in mental function. Recent data from the Cardiovascular Health Study indicate that vascular disease is a much more common cause of dementia than previously thought. African Americans have a 60% higher risk of type 2 diabetes—a condition that contributes directly to vascular disease.

According to the Alzheimer's Association, findings from recent empirical studies have found that Alzheimer's is more prevalent among African Americans than among whites: estimates range from 14% to almost 100% higher; there is a greater familial risk of Alzheimer's in African Americans; and genetic and environmental factors may work differently to cause Alzheimer's disease in African Americans. Data from longitudinal studies also suggest that high cholesterol and high blood pressure may be significant risk factors. Data indicate that persons with a history of either high blood pressure or high cholesterol levels are twice as likely to get Alzheimer's disease, whereas individuals with both risk factors are four times as likely to become demented. African Americans tend to be diagnosed at a later stage of Alzheimer's disease, limiting the effectiveness of treatments that depend on early intervention. Furthermore, African Americans are often underrepresented in current clinical trials of potential treatments, particularly in trials conducted by drug companies. This phenomenon may be in part due to a level of distrust that many African Americans have toward the medical establishment. Although numerous lessons have been learned from the Tuskegee Syphilis Study, the memory of this study may be ever present in older African Americans and may contribute to their reluctance to participate in clinical trials, and lack of awareness of available treatments may also be a contributing factor. The implications from these recent empirical studies are profound for African Americans among whom vascular disease and other risk factors are disproportionately present. Effective strategies for primary and secondary preventions include cholesterol-lowering drugs, antihypertensive medication, exercise, and diet modification. These clinical strategies as well as the use of culturally specific media

campaigns that may serve to inform African Americans about signs, symptoms, and treatment for Alzheimer's disease should be emphasized.

Sexual Health

We are all sexual beings from the time that we are born until we move beyond this life. Although the male and female reproductive systems go through various changes during the life course, people above 50 should not let changes to their body or their age stand in the way of having a healthy and active sex life. As a result of the physiological and psychological changes, people above 50 may not fully embrace safer sex. For instance, women who may have experienced menopause may not feel that they have to worry about pregnancy and contraception. Although they may not need contraception, they do need to think about how to protect themselves from sexually transmitted infections (STIs). Despite myths and stereotypes, many seniors are sexually active and some are drug users; therefore, their behaviors can put them at risk for HIV infection. While men who have sex with men form the largest group of AIDS cases in the above-50 population, the number of cases in women infected heterosexually has been rising at a higher rate and comprises a greater percentage in the 60 and older population. In many cases, health care and service providers as well as older adults themselves do not realize that seniors are at the same risk as other populations; furthermore, professionals are often reluctant to discuss or question matters of sexuality with aging patients or clients.

African Americans are especially disproportionately affected by STIs including HIV. Numerous studies have found that African American women are disproportionately affected by HIV. Dr. Tonji Durant of the Centers for Disease Control and Prevention examined data from 33 states and found that of 156,000 new cases of HIV infection between 2001 and 2004, 51% were in non-Hispanic blacks although blacks only made up 13% of the population in those states. These findings emphasize that HIV and AIDS pose a significant threat to the African American community.

Rates of HIV infection in seniors are especially difficult to determine because older people are not routinely tested. Many older people are first diagnosed with HIV at a late stage of infection, and often become ill with AIDS-related complications and die sooner than their younger counterparts; these deaths can be

attributed to original misdiagnoses and immune systems that naturally weaken with age. In addition, sexually active seniors are unlikely to consistently use condoms during sex because of a generational mindset and unfamiliarity with HIV or STI prevention methods. Research indicates that HIV will become more prevalent among older adults in the coming years, and will continue to disproportionately affect urban communities. Already, 11–15% of Americans diagnosed with HIV are at least 50 years old. As many as 49% of men above 50 with AIDS and 70% of women above 50 with AIDS are black or Latino. According to the National Association on HIV over Fifty (NAHOF), the number of cases is expected to increase as people live longer due to triple combination drug therapy. Between 1991 and 1996, AIDS cases in the above-50 population rose more than twice as fast as those among younger adults. Older individuals with HIV infection or AIDS are usually invisible, isolated, and often ignored.

When developing preventive strategies for African Americans above 50, public health professionals must consider that older people face stigma in regard to HIV and AIDS: ageism and infection with a sexually transmitted or IV-drug-transmitted disease. Because of this stigma it may be difficult for seniors including women to disclose their HIV status to their family, friends, and community as well as discuss HIV and AIDS questions with their health-care provider. Furthermore, due to the general lack of HIV and AIDS awareness among elders, this segment of the population for the most part has been omitted from research, clinical trials, and prevention and intervention programs. It is critical that programs are developed and implemented that will address the needs of older adults in order to inform them about HIV and AIDS transmission and prevention. Outreach programs should provide basic information about safer sex, drug-using practices, and negotiation skills in relationship to aging. In addition, more research needs to examine seniors' sexual and drug-using behaviors in order to determine HIV progression and treatments for the above-50 population. Health-care providers must also be educated on all levels on how to talk with senior clients about their sexual health and HIV and AIDS prevention. In addition, social marketing and media campaigns should focus on raising awareness of HIV and AIDS not only among younger populations but also among older populations while promoting respect and validation for them.

Related Topics

[▶ Access to health care](#), [▶ Acquired immunodeficiency syndrome](#), [▶ Ageism](#), [▶ Alzheimer's disease](#), [▶ Dementia](#), [▶ Diabetes](#), [▶ Discrimination](#), [▶ Health insurance](#), [▶ Hypertension](#), [▶ Race](#), [▶ Safer sex](#), [▶ Stigma](#)

Suggested Readings

Galea S, Vlahov D (eds) (2005) Handbook of urban health: populations, methods, and practice. Springer Science, New York

La Veist T (2002) Race, ethnicity, and health: a public health reader. Jossey-Bass, San Francisco, CA

Suggested Resources

http://alz.org/Resource/Diversity/downloads/AA_OUT-tipswithcitations.pdf (accessed February 8, 2006)
<http://www.aarp.org> (accessed February 8, 2006)
<http://www.caps.ucsf.edu/over50.html> (accessed February 8, 2006)
<http://www.cdc.gov/omh/Populations/BAA/BAA.htm> (accessed February 7, 2006)
<http://www.hivoverfifty.org/tip.html> (accessed February 7, 2006)
 National Institute on Aging: www.NIHSeniorHealth.gov (accessed February 7, 2006)

Age-Related Macular Degeneration

Craig A. Lemley · Judy E. Kim

Age-related macular degeneration (AMD) is a progressive disorder of the retina and underlying tissues due to the aging process of the eye. The macula is the central portion of the retina and has the highest concentration of photoreceptors, providing the area of highest visual acuity in our field of vision. In AMD, the macula is preferentially affected. Thus, people with advanced AMD lose their high-resolution central vision affecting the ability to read or drive, but they usually retain useful peripheral vision that allows for ambulation.

In early AMD, ophthalmoscopic evaluation reveals yellow deposits, termed drusen, located below the

retina and underlying retinal pigmented epithelium (RPE). Drusen are initially asymptomatic, but increasing number and size of drusen are associated with pigmentary change and localized detachment of the RPE. Progression can lead to atrophy of the retina, RPE, and underlying choriocapillaris. Central macular involvement causes vision loss. This form is known as dry (or nonexudative) AMD, and it often occurs gradually over many years. Dry AMD may be categorized as mild, intermediate, or advanced based on the number and size of drusen or the size and location of atrophic changes.

In the wet (or exudative) form of AMD, severe vision changes can occur suddenly. Membranes of abnormal new blood vessels termed choroidal neovascular membranes (CNVM) grow from the choriocapillaris and leak serous fluid, exudate, or blood into the sub-RPE or subretinal space. This often leads to end-stage macular scarring with fibrosis. Wet AMD often occurs from advanced cases of dry AMD but can sometimes occur with few signs of AMD.

Epidemiology

A recent meta-analysis by the Eye Diseases Prevalence Research Group (EDPRG) estimated US prevalence by pooling data from almost 30,000 individuals in a number of international population-based studies. The data were related to the 2000 US Census. The estimated US prevalence of intermediate AMD, namely those with large drusen only, was 3.97% in those aged 55–59 but increased to 23.56% in those above 80. Prevalence of advanced AMD, including both dry and wet forms, was 0.39% in those aged 55–59 and 11.77% in those above 80. More than half of the individuals with advanced AMD had wet forms. The prevalence of advanced AMD increased with each 5-year age increment over 50 years, but rose most substantially after age 70.

A population-based census performed in Beaver Dam, Wisconsin, investigated 10-year incidence and progression. Individuals aged 55–64 had a 10.7% risk of advancing to early AMD in 10 years, whereas those above 75 had a 36.7% chance of similar advancement. Incidence and risk of progression to advanced AMD over 10 years was 1.0% in those aged 55–64 and 9.5% in those above 75.

According to EDPRG data (Friedman et al. 2004), the total number of individuals in the United States with advanced AMD was estimated to be 1.75 million

in 2000. The number of American individuals with advanced AMD is projected to be almost 3 million in 2020.

Risk Factors

Increased age is strongly associated with increased prevalence, incidence, and progression of AMD. Those with white European background also have increased chance of vision loss from advanced AMD compared to those of African or Hispanic ancestry. In the meta-analysis by the EDPRG, a white male above 80 is over 7.5 times more likely to have advanced AMD than a black male of the same age. Smoking has also been associated with vision loss from both dry and wet AMD in multiple studies. Hereditary factors also appear to play a role in AMD but the relative role of genetic and environmental factors remains unclear.

Other risk factors show mixed results. For example, an increased prevalence of AMD in women over men was seen in some studies, but not in others, after controlling for age. Other factors such as increased exposure to sunlight, obesity, cardiovascular disease, hypertension, hypercholesterolemia, and alcohol intake have been inconsistently associated with AMD. Additionally, inflammation and mediators such as complement factor H are suspected to play a role in AMD, an area of active investigation.

Symptoms, Detection, and Diagnosis

Early AMD changes are often asymptomatic. The first symptoms may be blurriness or difficulty reading. Patients may develop a central blurry or blind spot (termed scotomas) as atrophy progresses. With wet AMD, patients may notice that straight lines appear distorted or wavy (termed metamorphopsia).

It is not uncommon for patients with advanced AMD in one eye to remain asymptomatic until both eyes are affected, since the better eye can accommodate for the contralateral vision changes. An Amsler grid, which resembles a checkerboard with a dot in the center, is an excellent tool to detect scotomas or metamorphopsia. A patient monitors his or her central vision by looking at the dot with one eye open and noting any missing lines or distortion on the grid.

AMD is diagnosed by a full ophthalmologic examination. Dilated funduscopy examination is required

to detect characteristic AMD findings. If wet AMD is suspected on examination, a fluorescein angiogram can be performed in the clinic to detect leakage of CNVM and assess for appropriateness of treatment. Because most available treatments stabilize rather than improve vision, the most important factor in AMD is early detection.

Treatment

The primary goal has been to prevent or halt vision loss and progression to advanced stages of AMD. A study sponsored by the National Institutes of Health (Age-Related Eye Disease Study Group [AREDS]) investigated the effect of taking high doses of zinc, vitamin C, vitamin E, and beta-carotene on AMD progression. Individuals with moderate AMD who took the supplements had a modest but statistically significant reduction in progression to severe vision loss compared with those who took placebo. A formulation of vitamins and minerals based on AREDS is often recommended for those with moderate AMD. Those with no AMD, early AMD, or advanced AMD in both eyes did not benefit from this formulation compared with those who took placebo.

The majority of current treatments act to arrest the growth of CNVM in wet AMD. A multicentered trial of the Macular Photocoagulation Study Group investigated thermal laser to ablate CNVM. There was a statistically significant benefit of treatment over observation but it still had a 50% recurrence rate over 3 years. Although patients benefited in the long run, lesions treated directly under the central macula produced immediate, treatment-related scotomas and visual acuity loss since the thermal laser destroys retina along with the underlying CNVM. Thus, treatment is now generally restricted to lesions away from the center of the macula.

Photodynamic therapy (PDT) is one of the modalities for treating CNVM under the center of the macula. This treatment involves injecting the patient with verteporfin, a photosensitive drug, and applying a nonthermal laser to the CNV lesion. The laser activates the drug, creating free radicals that preferentially damage endothelial cells of the CNVM. This treatment is performed at 3-month intervals until leakage from the CNVM ceases or advancement precludes further treatment. The Treatment of Age Related Macular Degeneration with Photodynamic Therapy

Study Group and Verteporfin in Photodynamic Therapy Study Group studies established a reduction of vision loss over placebo for some forms of CNVM. Few patients improve vision and many forms of CNVM do not meet criteria for benefiting from PDT. Recently, combining intravitreal steroid injection with PDT has shown a visual benefit and a reduction in need for retreatment. Intravitreal steroid injection, however, does add potential morbidities such as intraocular pressure elevation, traumatic lens injury, cataract, retinal detachment, and infection.

Recent advances have been made in treating CNVM with antiangiogenic factors. Pegaptanib sodium (Macugen) was recently approved to treat wet AMD. It is a synthetic oligonucleotide that binds to, and deactivates, vascular endothelial growth factor (VEGF), which is implicated in CNVM growth. It is injected into the vitreous cavity of the eye at 6-week intervals. Clinical trials showed a reduction of severe vision loss when compared to sham injections 1 year after initiating treatment. Adverse events such as lens injury, retinal detachment, and infection were low (<2%). Other anti-VEGF therapies in various stages of development and clinical trials have also shown benefits in wet AMD. In addition, various drug delivery methods including systemic, periocular, intravitreal, and sustained drug delivery are being actively researched.

Even with current treatment, AMD can lead to severe loss of central vision and difficulty with everyday tasks. Evaluation and treatment by low vision specialists is key in helping patients with AMD improve their visual function. Optimal spectacle correction and visual aids such as magnifiers and handheld telescopes can be helpful in regaining function. Other high-magnification aids such as close-circuit televisions can allow some end-stage patients to regain the ability to read books or newsprint.

AMD is an extremely active area of research, with new treatment modalities and advancements being reported frequently. The not-too-distant future presents much hope for new therapies or combination therapies that may improve the outcome for many people who will develop this devastating disease.

Related Topics

▶ Perception, ▶ Vision

Suggested Readings

- Age-Related Eye Disease Study Research Group (2001) A randomized, placebo-controlled, clinical trial of high-dose supplementation with vitamins C and E, beta-carotene, and zinc for age-related macular degeneration and vision loss: AREDS report no. 8. *Arch Ophthalmol* 119:1417–1436
- Friedman DS, O'Colmain BJ, Munoz B, et al (2004) Prevalence of age-related macular degeneration in the United States. *Arch Ophthalmol* 122(4):564–572
- Gragoudas ES, Adamis AP, Cunningham ET Jr, Feinsod M, Guyer DR, VEGF Inhibition Study in Ocular Neovascularization Clinical Trial Group (2004) Pegaptanib for neovascular age-related macular degeneration. *N Engl J Med* 351(27):2805–2816
- Macular Photocoagulation Study Group (1994) Persistent and recurrent neovascularization after laser photocoagulation for subfoveal choroidal neovascularization of age-related macular degeneration. *Arch Ophthalmol* 112(4):489–499
- Regillo CD, Brown GC, Flynn HW Jr (eds) (1999) *Vitreoretinal disease: the essentials*. Georg Thieme, New York
- Ryan SJ (ed) (2006) *Retina*, 4th ed. Mosby, St. Louis, MO
- Spaide RF, Sorenson J, Maranan L (2005) Photodynamic therapy with verteporfin combined with intravitreal injection of triamcinolone acetonide for choroidal neovascularization. *Ophthalmology* 112(2):301–304
- Treatment of Age-Related Macular Degeneration with Photodynamic Therapy (TAP) Study Group (1999). Photodynamic therapy of subfoveal choroidal neovascularization in age-related macular degeneration with verteporfin: one-year results of 2 randomized clinical trials. *Arch Ophthalmol* 117: 1329–1345
- Verteporfin in Photodynamic Therapy Study Group (2001) Verteporfin therapy of subfoveal choroidal neovascularization in age-related macular degeneration: two-year results of a randomized clinical trial including lesions with occult with no classic choroidal neovascularization: verteporfin in photodynamic therapy report 2. *Am J Ophthalmol* 131(5):541–560

Suggested Resources

- National Eye Institute. http://www.nei.nih.gov/health/maculardegen/armd_facts.asp#1

Ageism

Teresa Trogdon Anderson

“Ageism” refers to stereotyping, holding prejudicial views, or discriminating against individuals or groups based on chronological age. Ageism is a term most commonly used in relation to elders or older

populations, but may pertain to negative attitudes toward other ages as well (e.g., adolescents). In contrast with other cultures in which aging is associated with wisdom and depth of experience, elders in this country may be seen as nonproductive, burdensome, and diminished in comparison with younger individuals.

A variety of social benchmarks are used in perceiving age, and the line that divides the “young” from the “old” in a particular context may seem arbitrary. Retirement from the workforce, for instance, often connotes elder status in the United States. However, membership in the American Association for Retired Persons may begin as early as age 50, while eligibility for Social Security retirement benefits begins at 62, 65, or 67 years. People aged 65 or older may be designated as “senior citizens” in many communities, receiving discounts in restaurants, movie theaters, and stores. However, in the medical literature, advanced chronological age is now categorized into two groups: the younger old (aged 51–75) and the older old (aged 76 and older).

Because of public health and medical advances, the expected human life span has increased over the last century. Indeed, each of us is likely to experience the social phenomenon of being viewed as elderly during the course of our lives. The composition of the United States has shifted, with 70 million individuals on the threshold of age 65 (“baby boomers”) and an additional 33 million above 65. The emergence of such large numbers of people in their seventh decade of life, and beyond, and the increasingly recognized diversity of roles and activities of these individuals have challenged ageist assumptions in our society.

Studies of elders have demonstrated that chronological age does not determine health or well-being, and that there is tremendous heterogeneity in the lifestyles of elders. Encouraging data suggest that much can be done to improve symptoms and functional limitations of older adults—as well as their personal satisfaction and quality of life—even in the context of serious health concerns. In addition, adults who have sustained lifestyles that include regular exercise, healthy weight, and abstinence from tobacco have much less likelihood of developing chronic conditions such as heart disease, stroke, or diabetes by age 65, according to data from the Centers for Disease Control (CDC). Finally, negative stereotypes that portray elders as unwilling to learn new information or to use information technology are being reversed through

empirical findings. One study in Idaho found that older adults were no less likely, and sometimes more likely, to use health information resources such as a health or self-care book, a toll-free telephone advice line, or a computer for health information.

Ageist attitudes may nevertheless adversely affect the health care of elders. The top three causes of death in the United States among older adults are heart disease, cancer, and stroke; these illness processes are optimally managed by early detection and treatment, and yet these services may be underutilized due to an incorrect belief that such interventions have limited value for elders. Preventive health measures such as vaccines and cholesterol testing may not routinely be offered to elder patients. Depression may not be considered as the cause of poor sleep or weight loss and may therefore be misdiagnosed or treated inappropriately. Hearing loss is common in the above-65 age group, but screening and intervention may not be practiced routinely. Medical research has tended to exclude elders in clinical trials; therefore, treatments offered to younger adults for such problems as heart disease or cancer may not be offered to the old. Conversely, medications tested on younger patients may be prescribed to older adults without due consideration of potential adverse effects.

There is growing concern at a national level that aging populations will cause skyrocketing health care costs. A 2001 report showed that there was decreasing support among the general population for expanding programs for elders and increasing support for cutting costs and benefits. This is consistent with one researcher’s observation that ageism is “a deep and profound prejudice against the elderly which is found to some degree in all of us.” For these reasons, ageism is increasingly recognized as a health disparity issue of great significance for this country, now and in the future.

Related Topics

- [Baby boomers](#), ➤ [National Council on Aging](#),
- [Quality of life](#), ➤ [Retirement](#), ➤ [Stigma](#)

Suggested Readings

- Butler RN (2002) *Why survive? Being old in America*. Johns Hopkins University Press, Baltimore, MD

Friedan B (1993) *The fountain of age*. Simon & Schuster, New York
Wagner LS, Wagner TH (2003) The effect of age on the use of health and self-care information: confronting the stereotype. *The Gerontologist* 43(3):318–324

Suggested Resources

Alliance for Aging Research (2003) *Ageism: how healthcare fails the elderly*. <http://agingresearch.org>

Centers for Disease Control and Prevention (2004) *The state of aging and health in America*. <http://www.cdc.gov/aging>

Centers for Disease Control and Prevention (2005) *Healthy aging at a glance*. <http://www.cdc.gov/aging/>

Alcohol Use

Michelle M. Cornette · Benjamin D'Angelo

Barry et al. (2001) have devised a classification system for varying degrees of alcohol use. They define abstinence as no ingestion of alcohol in the previous year, low-risk drinking as “drinking, which does not lead to problems,” and at-risk drinking as “alcohol use which does not yet cause problems, but may lead to adverse consequences for the drinker or others.” Problem drinking has been defined as “alcohol consumption to a degree that has resulted in negative medical, psychological, or social consequences,” whereas alcohol dependence typically involves the sense that one’s drinking is “out of control,” preoccupation with acquiring alcohol, continued use despite negative consequences, and tolerance and/or withdrawal.

Research does indicate that problem drinking is a significant issue for older adults, contradicting the common belief that problem drinking is an issue only for younger adults that tends to resolve as functional responsibilities increase. Estimates of the prevalence of alcohol abuse and dependence for the population in general indicate that the 1-year occurrence of these problems is about 1 in 10 persons. Estimates of problem drinking among older adults range from 1% to 15%. Research suggests that prevalence of alcoholism among those seeking treatment for medical or mental health issues ranges from 15% to 58%. Research has suggested that African American, Hispanic, and Asian older adults experience similar or lower rates of alcohol abuse and dependence relative to Caucasian older

adults, with higher rates among men than among women, and that the prevalence of problem drinking increases with increased acculturation, approaching rates in the United States. Research suggests that women develop alcohol-related diseases more quickly than men, and that among older adults with problem drinking behaviors, a greater proportion of women than of men began their problem drinking as older adults. Older adult women problem drinkers are four times more likely than adult men to experience comorbid depression. Research indicates that genetic risk accounts for about 60% of the variability in problem drinking. A consistent trend across the life span is that people with concurrent mental illness are at increased risk for alcohol and other drug-related problems. Alcohol use reflecting an attempt to cope with symptoms of anxiety (e.g., self-medicating) is not uncommon. Age-related decline in liver functioning and overall physical health can affect how the body processes alcohol; thus, a person drinking the same amount of alcohol as when he or she was younger could begin to experience negative sequelae as an older adult that they had not experienced previously. Risk factors for late-life onset of alcohol use or problem drinking include stressful life events such as unemployment, physical illness, and interpersonal loss. The role of socioeconomic status is less clear, although in one study it was determined that older adult residents of public housing possess higher current rates of substance use disorders than a general epidemiological sample. Although the disinhibiting and sedating effects of alcohol may seem to provide temporary relief from life stressors, longer-term, chronic use has been found to increase life stress.

Negative Health Sequelae of Problem Drinking

Problem drinking can both contribute to the development of chronic medical conditions and exacerbate preexisting problems. For example, chronic alcohol use can cause certain cancers, liver cirrhosis, cardiomyopathy, hypertension, immune system disorders, and brain damage. Among women, problem drinking can lead to increased risk of osteopenia, and research has suggested that excessive daily alcohol consumption increases the risk of breast cancer among women. Alcohol consumption further affects blood sugar levels in those with diabetes, and can also exacerbate high blood pressure and ulcers. Research has indicated that

problem drinking is a contributing factor in 21–24% of cases of dementia, a disorder seen primarily in older adults. Negative sequelae of problem drinking on physical health can also be exacerbated by physical health issues frequently occurring in older adulthood. A related concern is that chronic alcohol abuse can make identification of physical health conditions more difficult. For example, alcohol causes changes in the heart and blood vessels, which can minimize pain that might otherwise signal a heart attack. As some degree of cognitive and psychomotor slowing is normal when adults move into older age, older adults are more vulnerable to some of the effects of alcohol on cognition, memory, judgment, coordination, and reaction time. Alcohol can contribute to risk for falls and hip fractures among older adults, as well as to risk for occupational and motor vehicle accidents, each of which independently increases risk for fractures and hematomas (bruising or blood-collection in the brain). Alcohol use has further been associated with sleep difficulties. Because the average adult above 65 is prescribed at least two medications per day, concerns regarding alcohol–medication interactions are significant. The National Institute on Aging cites several examples of dangerous drug–alcohol interactions. For example, alcohol can exacerbate risk for hemorrhaging in the stomach and intestines with aspirin, for drowsiness with antihistamines, and for liver damage with acetaminophen. Finally, the effects of alcohol can be compounded when consumed with medications that have high alcohol content, such as cough syrups and laxatives.

Positive Health Sequelae of Moderate Drinking

While the case has been made for the negative health effects of excessive drinking, some positive effects have been associated with moderate drinking. Research has suggested that moderate alcohol consumption may have a protective effect against cardiovascular illness, ischemic strokes, cancer, and vascular dementias. It has also suggested that moderate alcohol use (less than one drink per day) has been associated with fewer falls, improved mobility, improved physical functioning, and higher bone mineral density among postmenopausal women.

Assessment and Treatment

Symptoms of alcohol abuse and dependence can be more difficult to identify in older adults for several reasons. First, symptoms of alcohol abuse can mask as physical or mental decline, which can accompany aging. For example, confusion and memory loss secondary to alcohol consumption might be mistaken for symptoms of Alzheimer’s disease. Second, older adults are less likely to seek help for mental health and substance abuse issues than their younger cohorts, though some research suggests that older problem drinkers who do seek treatment are benefitted as much as younger alcohol abusers are.

Traditional Treatment Approaches

Although relatively little is known about the efficacy of traditional treatment paradigms for older adults, alcohol abuse treatment approaches utilized across the life span include 12-step help programs, detoxification, cognitive–behavioral psychotherapy, motivational enhancement, family therapy, Al-anon, and aftercare programs that link individuals with important community resources. In terms of pharmacotherapy, naltrexone has been found to be effective and safe among older adults. Other medications that may hold promise based on their demonstrated efficacy among younger adults include acamprosate and a number of the selective serotonin reuptake inhibitors. Disulfiram has been deemed effective in younger adults, though its use has been limited in older adults due to the higher prevalence of heart and liver disease in this population. Research has revealed that traditional alcohol treatment is effective for about one of three individuals who seek treatment across the life span. Unfortunately, the most common pattern demonstrated for people with alcohol problems is one of alteration between periods of abstinence, asymptomatic drinking, and problematic drinking regardless of whether treatment is provided. Further, less than one of three people with an alcohol problem seek professional help for their problem, and data suggest that older adults are even less likely to seek treatment for mental health issues; thus, there appears to be a calling for innovative treatments in order to address this important public health concern.

Harm Reduction

Harm reduction refers to a set of diverse programs that share a key distinguishing feature: reduction of harmful consequences of drug use while users continue use. Harm reduction was designed to alleviate perceived flaws in traditional substance abuse treatment programs, such as a heavy reliance on a patient's willingness to accept lifelong abstinence as the ultimate goal of treatment, and an inability to treat people who are ambivalent about their drug use. Harm reduction proponents argue that the concept of denial, predominant in other models of treatment, should be replaced with an appreciation of ambivalence. Addiction and drug use are viewed as existing on a continuum of severity, rather than dichotomizing addiction in terms of "using" versus "sober." The identified benefits of moderate alcohol consumption provide further support for a harm reduction or "controlled drinking" approach to treatment. However, harm reduction interventions remain controversial and continue to be the subject of scrutiny in terms of their efficacy.

Recommendations

Is it possible for older adults to drink safely? The National Institute on Alcohol Abuse and Alcoholism (NIAAA) recommends that older adults (especially those above 65) who choose to drink have no more than one drink a day, noting that alcohol consumption to this moderate degree is usually not associated with health risks, but rather may be associated with some health benefits. However, alcohol consumption risk varies depending on an individual's age, gender, medical status and what other medications he or she is taking. Individuals are advised to discuss alcohol consumption with their own health care provider.

Related Topics

➤ [Substance use and chemical dependence abuse](#)

Suggested Readings

Barry KL, Oslin DW, Blow FC (2001) Alcohol problems in older adults: prevention and management. Springer, New York

Denning P (2000) Harm reduction psychotherapy: an alternative approach to addictions. Guilford Press, New York

Donovan DM, Marlatt GA (2005) Assessment of addictive behaviors, 2nd ed. Guilford Press, New York

Galanter M, Kleber HD (2004) Textbook of substance abuse treatment, 3rd ed. American Psychiatric Publishing, Washington, DC

Gomberg E (2003) Treatment for alcohol related problems: special populations: research opportunities. *Recent Dev Alcoholism* 16:313–333

Marlatt GA, Donovan DM (2005) Relapse prevention: maintenance strategies in the treatment of addictive behavior. Guilford Press, New York

Suggested Resources

Al-Anon/Alateen. <http://www.al-anon.alateen.org/>

National Center for Health Statistics. <http://www.cdc.gov/nchs/fastats/alcohol.htm>

National Institute on Alcohol Abuse and Alcoholism. <http://www.niaaa.nih.gov/>

US Department of Health and Human Services and Substance Abuse and Mental Health Services Administration (SAMSHA) Clearinghouse for Drug and Alcohol Information. <http://www.health.org/>

Alopecia

Robert S. Haber

More than 100 million Americans currently experience hair loss, and there are dozens of distinct causes and at least 300 medications that are the culprits. While a detailed discussion of each is outside the scope of this entry from the standpoint of the normal aging process, the relevant hair loss etiologies include male pattern hair loss (MPHL), female pattern hair loss (FPHL), telogen effluvium (hair loss due to a traumatic event), and senescent alopecia (hair loss due to aging). Hair loss is a cause of great distress for both men and women, producing significant psychosocial discomfort, and studies reveal that balding men are looked upon more negatively than nonbalding men. Few physical attributes are more associated with aging than hair loss, and unfortunately along with the lost hair it may be presumed that virility, strength, and attractiveness are lost as well.

Male Pattern Hair Loss

This condition is also commonly referred to as androgenetic alopecia, and represents an inherited condition in which progressive hair thinning occurs due to the actions of androgens on susceptible hair follicles. The androgen most closely implicated in the expression of MPHL is dihydrotestosterone (DHT).

Onset can be as early as the teenage years, with prevalence between 50% and 98% by age 50. Current understanding of the genetics of MPHL implicates both maternal and paternal ancestry, and can involve either an autosomal dominant and/or a polygenic inheritance pattern.

Typically, men experience elevation of the hairline, deepening of the temporal recessions, thinning of the crown, and eventual thinning and loss of hair from the front and top of the head. Many variations of hair loss occur, as diagrammed in the widely published Hamilton–Norwood hair loss scale.

Treatment consists of the topical medication minoxidil, and the systemic medication finasteride. Both medications work best to prevent ongoing hair loss; therefore, individuals with hair loss should be encouraged to begin treatment as soon as hair thinning is noted. Topical minoxidil is a nonspecific biologic response modifier with an unknown mechanism of action in hair growth. Men should use the 5% topical minoxidil solution twice daily to maximize efficacy. Finasteride, dosed at 1 mg daily, reduces serum prostate-specific antigen (PSA) levels by 30–50%; therefore, men above 40 are advised to have their PSA levels doubled for interpretation (PSA is measured as part of cancer screening in men). Long-term finasteride use may reduce a man's risk of developing prostate cancer. Current data should be reviewed with a specialist.

Female Pattern Hair Loss

The exact mechanism of FPHL has yet to be elucidated, but since nonandrogenetic (non-male-hormone) pathways are likely to predominate, the older term of female androgenetic alopecia should no longer be used. FPHL can present as early as in the teens, or be delayed until much later in life. For most women, the history is one of gradual thinning over many years. Typically, FPHL presents with a retained frontal hairline, and frontal or diffuse thinning of the vertex and

crown (top of the head). Unlike MPHL, a significant number of women also experience thinning in the occipital zone (back of the head). Although many women with this disorder believe they are unique, in fact, MPHL may have an incidence as high as 86% by age 50. Women go to great lengths to conceal hair thinning, thus contributing to the belief that the condition is not common.

Treatment for FPHL consists of the topical medication minoxidil, and the systemic medication spironolactone. Women should use the 2% topical minoxidil solution, not the 5% topical solution, to minimize side effects, particularly inflammation and hypertrichosis. For maximum efficacy, the medication should be used twice daily.

Spironolactone is a potassium-sparing diuretic (water pill) with antiandrogen properties that has also demonstrated some effectiveness for FPHL. As its antiandrogenic properties are weak, high dosages of 100–200 mg/day and long-term therapy will be necessary to see any clinical benefit. Stabilization of hair loss is more likely than an increase in hair density. Spironolactone can produce menstrual irregularities and feminization of a male fetus, so oral contraceptives must be used by women of childbearing potential. As hyperkalemia can also occur, baseline and monthly monitoring of electrolytes is an important preventive measure.

Telogen Effluvium

In this condition, diffuse hair loss occurs, often preceded by a significant stress such as fever, childbirth, illness, psychological stress, or other disease state. In most cases, full hair regrowth can be seen, but a chronic form of the condition exists, and a careful clinical and laboratory investigation is warranted. Prompt identification of treatable conditions including endocrine abnormalities, anemia, nutritional deficits, and other systemic illnesses will improve the prognosis.

Senescent Alopecia

Also termed senile alopecia, this is a relatively new hair loss category that recognizes the inevitable effects of the aging process on the hair follicle independent of any other factors. In this condition, both men and women experience slowly progressive hair loss in a

nonpatterned distribution, generally after the seventh decade. There is no scalp inflammation, and the hairs are simply reduced in number and size. It may be that depletion of the stem cell reservoir required for hair follicle regeneration produces this condition.

Related Topics

• [Body image](#), • [Hair care](#), • [Skin disorders](#)

Suggested Readings

- Haber RS (2004) Pharmacologic management of pattern hair loss. *Facial Plast Surg Clin N Am* 12:181–189
- Kaufman KD (2002) Androgens and alopecia. *Mol Cell Endocrinol* 198:89–95
- Norwood OT (2001) Incidence of female androgenetic alopecia (female pattern alopecia). *Dermatol Surg* 27:53–54
- Olsen EA (2003) *Disorders of hair growth: diagnosis and treatment*, 2nd ed. McGraw-Hill, New York
- Olsen EA (2001) Female pattern hair loss. *J Am Acad Dermatol* 45 (Suppl):S70–S80

Altruism and Volunteerism

Stephen G. Post

Altruism is behavior that is primarily “other-regarding,” in contrast to self-centered or egoistic. Although the agent of altruism may benefit indirectly from altruism in so far as he or she experiences contentment and fulfillment in doing good for others, this does not diminish from the authenticity of altruistic motivation because neither reciprocal nor reputational gain is sought.

There are five reasons for benefits to older adults who engage in altruistic behavior: enhanced social integration; distraction from the agent’s own problems; enhanced meaningfulness; increased perception of self-efficacy and competence; and improved mood or more physically active lifestyle. Adult altruism (i.e., voluntary behavior that is “motivated by concern for the welfare of the other, rather than by anticipation of rewards”) has been associated with improved morale,

self-esteem, positive affect, and well-being. The links between altruism and mental and physical health have been studied.

Mental Health

Well-being consists of feeling hopeful, happy, and good about oneself, as well as energetic and connected to others. An early study compared retirees above 65 who volunteered with those who did not. Volunteers scored significantly higher in life satisfaction and will to live, and had fewer symptoms of depression, anxiety, and somatization. Because there were no differences in demographic or other background variables between the groups, the researchers concluded that volunteer activity helped explain these mental health benefits. The nonvolunteers did spend more days in the hospital and were taking more medications, which may have prevented them from volunteering. However, the mental health benefits persisted after controlling for disability.

Physical Health

A review of existing studies indicates that research on the effect of kindness and volunteerism on health may have begun in 1956, when a team of researchers from Cornell University School of Medicine began monitoring 427 married women with children under the hypothesis that housewives with more children would be under greater stress and die earlier than women with fewer children. Surprisingly, they found that number of children, education, class, and work status did not affect longevity. After observing these women for 30 years, however, it was found that 52% of those who did not belong to a volunteer organization had experienced a major illness compared with 36% of those who did belong to one.

Another study examined the hypothesis that older volunteers benefit in terms of health in addition to well-being. With the help of data from a nationally representative sample, the study estimated the effects of volunteering on the rate of mortality among persons 65 and older. The data are representative of the non-institutionalized US population aged 25 and older; the response rate was 67% of sampled individuals and 68% for sampled households. Data were collected

over three waves: 1986 ($N = 3,617$); 1989 ($N = 2,867$); 1994 ($N = 2,348$). Face-to-face interviews were conducted in the respondents' homes. From mid-1986 through March 1994, deaths were ascertained through tracking and interview processes and via the National Death Index. Respondents were asked whether they had volunteered in the past year through a religious, educational, political, senior citizen, or other organization. Respondents who had volunteered were asked how much time they had devoted to volunteerism. Controlled analysis indicated that the protective effects of volunteering were "strongest among those volunteering for one organization or for less than forty hours," and among those who lacked other social supports. Moderate amounts of volunteerism were associated with lowered risk of death. Indeed, simply adding the volunteering role was protective. One need not volunteer to a great extent to have benefits, and too much volunteering to the point of strain "incurs just enough detriments to offset the potential beneficial effects of the activity."

On a cross-cultural level, researchers at the University of Michigan studied a sample of 2,153 older adults in Japan, examining the relationships between religion, providing help to others, and health. They found that those who provided more assistance to others were significantly more likely to indicate that their physical health was better. The authors concluded that the relationship between religion and better health could be at least partly explained by the increased likelihood of religious persons helping others.

Another 5-year study involved 423 older couples. Each couple was asked what type of practical support they provided for friends or relatives, if they could count on help from others when needed, and what type of emotional support they gave each other. A total of 134 people died over the 5 years. After adjusting for a variety of factors—including age, gender, and physical and emotional health—the researchers found an association between reduced risk of dying and giving help, but no association between receiving help and reduced risk of death. A researcher at the University of Michigan's Institute for Social Research concluded that those who provided no instrumental or emotional support to others were more than twice as likely to die in the 5 years as people who helped spouses, friends, relatives, and neighbors. Despite concerns that the longevity effects might be due to a healthier individual's greater ability to provide help, the results

remained the same after the researchers controlled for functional health, health satisfaction, health behaviors, age, income, education level, and other possible confounders. The researchers concluded: "If giving, rather than receiving, promotes longevity, then interventions that are currently designed to help people feel supported may need to be redesigned so that the emphasis is on what people do to help others."

Implications

Altruism results in deeper and more positive social integration, distraction from personal problems and the anxiety of self-preoccupation, and enhanced meaning. Research on the benefits of doing good could spark a movement in public health that focuses on civic engagement and helping behavior within communities. Therefore, much of public health is rightly focused on environmental toxins and the control of epidemics. Yet a positive vision of public health must nurture benevolent affect and helping behavior.

Related Topics

▶ Gender role, ▶ Geriatric psychiatry, ▶ Identity, ▶ Life expectancy, ▶ Mortality

Suggested Readings

- Brown S, Nesse RM, Vonokur AD, Smith DM (2003) Providing social support may be more beneficial than receiving it: results from a prospective study of mortality. *Psychol Sci* 14(4):320–327
- Hunter KI, Linn MW (1980–81) Psychosocial differences between elderly volunteers and non-volunteers. *Int J Aging Hum Dev* 12(3):205–213
- Krause N, Ingersoll-Dayton B, Liang J, Sugisawa H (1999) Religion, social support, and health among the Japanese elderly. *J Health Social Behav* 40:405–421
- Midlarsky E (1991) Helping as coping. *Prosocial Behav: Rev Pers Social Psychol* 12:238–264
- Midlarsky E, Kahana E (1994) *Altruism in later life*. Sage Publications, Thousand Oaks, CA
- Moen P, Dempster-McCain D, Williams RM (1993) Successful aging. *Am J Sociol* 97:1612–1632
- Musick MA, Herzog AR, House JS (1999) Volunteering and mortality among older adults: findings from a national sample. *J Gerontol: Social Sci* 54B 3:S173–S180
- Post SG (ed) (2007) *Altruism and health*. Oxford University Press, New York

Alzheimer's Disease

Mustafa K. Warsi · Helen C. Kales

The dementia syndrome refers to a group of symptoms related to a sustained decrease in intellectual function from previous levels. Memory decline is always a part of this syndrome along with combinations of other impairments such as problems with judgment, language, recognition, or performing tasks. Personality change can also occur as a component. There are multiple causes of the dementia syndrome, with more than 60 disorders that are associated with dementia. Alzheimer's disease is the most common form of dementia and represents up to 75% of cases. It is characterized by a gradual onset and a progressive cognitive function decline. The condition is named after Alois Alzheimer who in 1907 described the clinical progression of a 51-year-old woman with a 4.5-year course of a sustained loss of intellectual function from her previous levels.

The risk of Alzheimer's is age-related, with the risk above 65 at about 5–8% and the risk above 85 increasing to 25–50%. With the advent of better health care and the “baby boomer” population growing older, the 65 and above subset of the population is growing at a fast pace. Currently 4 million individuals are above 65. By 2030 this number is expected to double. Epidemiological studies show that 10% of the US population above 65 and 40% of those aged 80 and above meet criteria for the diagnosis of Alzheimer's. Currently, Alzheimer's affects four million individuals in the United States and 16 million worldwide. There has been debate in the past about the prevalence being higher in women. However, follow-up studies in the United States did not support this hypothesis and have shown no difference with respect to gender.

Alzheimer's disease is a devastating illness, which not only affects the cognition of the individual but also increases caregiver burden. Over \$100 billion a year is spent on individuals with Alzheimer's. Most patients with Alzheimer's still live at home. The average nationwide cost of living in a nursing home is \$42,000 a year, which is not covered by third-party insurers. The average lifetime cost for an individual can exceed \$174,000. With figures like these, it is not surprising that research is going on at an extraordinary pace. A search in the National Institutes of Health Alzheimer's database (Medline/ Pubmed) in December 2005 of the term

“Alzheimer's dementia” brought up 36,425 current research citations. Although there is still no cure for Alzheimer's, available medications help to slow disease progression.

Other risk factors for developing Alzheimer's disease include Down's syndrome, a history of head injury, and a family history of dementia. Epidemiological studies have related low educational level and socioeconomic as well as marital status as other possible risk factors. While the risk for Alzheimer's appears inherited in some cases, in others there is no family history. The cause of Alzheimer's is not known, but is currently thought to be related to the genetically determined overproduction of abnormal brain proteins (“beta-amyloid”) or abnormal brain protein processing and deposition. Microscopically, the brains of Alzheimer's sufferers show abnormal “plaques” and neurofibrillary “tangles.” The impact of Alzheimer's on brain chemistry is a prominent degeneration of systems involving the neurotransmitter “acetylcholine,” which is critical to intact cognitive function, although other neurotransmitters are also involved. Low levels of acetylcholine within synapses of neurons cause cholinergic neuron death. Acetylcholinesterase inhibitor medications work to interrupt this pathway. However, neither plaques nor tangles are exclusive to Alzheimer's and can be seen in other conditions such as Down's syndrome, and to a certain extent, in normal aging.

The clinical picture of a typical Alzheimer's patient describes a gradual decline that may not have been noted by family members until difficulties became obvious several years after onset (e.g., getting lost while driving, leaving the stove burners on). The course is a slow progressive one, with memory loss being the first indicator. Language, motor, and sensory losses follow, often several years later. Some people with Alzheimer's show personality changes and symptoms of irritability early in the course of disease that can worsen as the illness becomes more manifest. The illness progresses to eventual death about 8–10 years after initial diagnosis.

It is important to note that memory loss is essential to make the diagnosis of Alzheimer's disease, but this disorder cannot be diagnosed with memory loss alone. According to the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, criteria for dementia of the Alzheimer's type (DAT) specify that the individual must have a memory impairment and one of the following four cognitive disturbances: (1) language disturbance (difficulty with word comprehension or

expression); (2) inability to perform a motor task despite having no motor deficits (e.g., difficulty with bathing or dressing); (3) inability to recognize items despite having no sensory (hearing or visual) deficits; or (4) deficits in carrying out more complex tasks involving planning, abstraction, and organizing (e.g., difficulty with driving or cooking). There is no single test to determine if a person has Alzheimer's disease. The diagnosis is made by a physician reviewing a detailed history of the person and the results of several tests such as a complete physical and neurological examination including a mental status evaluation, a psychiatric assessment, and laboratory tests (including blood count and chemistries, vitamin B12, folate and thyroid hormone levels, and often computed tomography [CT] or magnetic resonance imaging [MRI] of the brain). Neuropsychological testing may also be done to test memory, reasoning, writing, vision–motor coordination, and the ability to express ideas. Once this is completed, a diagnosis of “probable” Alzheimer's disease can be made by the process of elimination. A definite diagnosis of Alzheimer's dementia is impossible without confirmation by postmortem (after death) examination of the brain.

Other causes of dementia that should be excluded are vascular causes such as a stroke, dementia secondary to Parkinson's syndrome, dementia secondary to Huntington's disease, human immunodeficiency virus (HIV), head trauma, Pick's disease, Creutzfeldt–Jakob disease, and neurosyphilis to name a few. Laboratory testing can detect medical problems (anemia, thyroid problems, vitamin deficiencies, etc.) that can cause confusion or cognitive impairment. As depression can cause cognitive impairment and coexist with dementia, a psychiatric assessment is important to rule out the presence of mood disorders. It may also be helpful to conduct a separate interview of the caregiver to gain additional perspective on the person's functioning.

At this time, there is no medical treatment to cure or stop the progression of Alzheimer's disease, though the US Food and Drug Administration (FDA)-approved medications may temporarily improve or stabilize memory and thinking skills in some people. Ultimately, it is thought that actual disease modification in DAT will occur from preventing accumulation of abnormal brain protein (beta-amyloid). There are two classes of drugs that are currently approved to treat the cognitive symptoms of Alzheimer's: the cholinesterase inhibitors (donepezil, rivastigmine,

galantamine) and memantine. Cholinesterase inhibitors are indicated for mild to moderate dementia. These drugs are generally well tolerated, and common side effects include nausea, vomiting, and diarrhea. The body soon develops tolerance to these side effects. It must be emphasized that these medications do not treat Alzheimer's disease or change mortality rates, but rather only delay the progression of disease. “Turning the clock back by 6 months” is a common term used by clinicians to describe the effects of these medications. In about 20% of patients, deterioration may be delayed for about a year. Some anecdotal reports also suggest improvement of disturbed behaviors with these medications. Donepezil has a once-a-day regimen, whereas rivastigmine and galantamine are to be given twice a day. Galantamine should not be used in patients with kidney or liver problems. Memantine is a newer medication available to stabilize symptoms of moderate to severe Alzheimer's. It acts as an *N*-methyl-*D*-aspartate (NMDA) receptor antagonist, which has been shown to limit glutamate-induced toxicity to brain cells. Memantine may protect cells against excess glutamate by partially blocking NMDA receptors. This medication has good tolerability and is dosed twice a day. Therefore, it is increasingly being used as an adjunct to cholinesterase inhibitors in the management of moderate to severe Alzheimer's disease.

Vitamin E may also reduce the rate of decline in patients with Alzheimer's. It is an antioxidant that has been thought to inhibit the inflammatory effects of plaque formation, thus helping the brain defend itself against the effects of oxidative damage. A prior study examining the use of vitamin E in Alzheimer's disease and time to nursing home placement showed promising results; however, a recent reanalysis of this study (which corrected for differences in patient groups in the earlier study) revealed no benefits and an added risk of side effects. People who take blood-thinners may not be able to take vitamin E, or will need to be monitored closely by a physician. Other medications such as selegiline, nonsteroidal anti-inflammatory drugs, and statins have been tested for Alzheimer's disease, but as yet the evidence for benefit is not clear.

Herbal remedies and other dietary supplements have been promoted as effective treatments for Alzheimer's disease and related disorders. However, claims about the safety and effectiveness of these products are based largely on individual testimonials, traditional use, and a rather small body of scientific research.

The rigorous scientific research required by the US FDA for the approval of a prescription medication is not required by law for the marketing of dietary supplements. Given this lack of FDA oversight, concerns with such alternative therapies include: (1) unknown effectiveness and safety; (2) unknown purity of such substances; (3) lack of routine monitoring of side effects; and (4) the possibility of serious interactions with prescribed medications. *Ginkgo biloba* is a plant extract containing several compounds that may have positive effects on cells within the brain and the body; it has been promoted as having both antioxidant and anti-inflammatory properties, and effects in protecting cell membranes and in regulating neurotransmitter function. *Ginkgo* has been used for centuries in traditional Chinese medicine and is currently used in Europe to alleviate cognitive symptoms associated with some neurological conditions. Results from some studies show that *Ginkgo* may help some individuals with Alzheimer's disease, but further research is needed to determine the exact mechanisms by which it works in the body. Few side effects are associated with the use of *Ginkgo*, but it is known to reduce the ability of blood to clot, potentially leading to more serious conditions such as internal bleeding. This risk may increase if it is taken in combination with other blood-thinning drugs (e.g., aspirin and warfarin). A current multicenter trial with about 3,000 participants is investigating whether *Ginkgo* may help prevent or delay the onset of Alzheimer's disease or vascular dementia.

Pharmacological treatment of Alzheimer's also often involves treatment of the behavioral and psychological symptoms of dementia (BPSD) that occur at least to some degree in many people with the disease. In the early stages of Alzheimer's, people may experience personality changes such as irritability, anxiety, or depression. In later stages, BPSD may occur such as sleep disturbances, agitation (physical or verbal aggression, restlessness, pacing, yelling), delusions (firmly held beliefs in things that are not real), or hallucinations (seeing or hearing things that are not there). Many families find the BPSD to be the most challenging and distressing effects of Alzheimer's disease. BPSD are often the determining factor in a family's decision to place a loved one in long-term residential care. For individuals living in long-term care facilities, BPSD often have tremendous impact on the care they receive and on quality of life. People with Alzheimer's exhibiting BPSD should receive a thorough medical evaluation, especially when symptoms occur suddenly.

Treatment depends upon the types of behavior the person is experiencing as well as a careful determination of the possible causes of the change in behavior. Symptoms may reflect an underlying infection or medical illness; for example, the pain or discomfort caused by pneumonia or a urinary tract infection or the side effects of some prescription and over-the-counter medications can cause "delirium" (an acute change in mental status). People experiencing delirium may manifest many different BPSD (agitation, paranoia, hallucinations), which resolve when the medical cause of delirium is properly treated. With proper treatment and intervention, significant reduction or stabilization of BPSD can often be achieved.

There are two different types of treatments for BPSD: nondrug interventions and prescription medications. Nondrug interventions (e.g., simplifying the person's environment, tasks, and routines; allowing adequate rest between stimulating events; using labels to cue or remind the person; equipping doors and gates with safety locks; and using lighting to reduce confusion and restlessness at night) should be tried first. Steps to managing agitation include: (1) identifying the behavior; (2) understanding its cause; and (3) adapting the caregiving environment to remedy the situation. Often the trigger may be a change in the person's environment (change in caregiver or living arrangements, hospitalization, etc). It is not helpful, and often may worsen the BPSD, to argue, disagree, or confront the person who is confused, agitated, or paranoid; a far better way for caregivers to intervene is to redirect the affected individual's attention to another topic or activity.

Medications should target specific symptoms (hallucinations, paranoia, depression) so their effects can be monitored. In general, it is best to start with a low dose of a single drug. People with dementia are susceptible to serious side effects, including a slightly increased risk of death from antipsychotic medications. Risk and potential benefits of a drug should be carefully analyzed for any individual. Medications should be tailored to both the individual patient and the accompanying constellation of symptoms and may include: neuroleptics or antipsychotics (used to treat hallucinations, paranoia, or delusions); antidepressants (used to treat depression and anxiety); anticonvulsants (used for mood stabilization and for agitation); and trazodone or Desyrel (used for sleep difficulties and for agitation). Benzodiazepines (diazepam or Valium, alprazolam or Xanax, lorazepam or Ativan, etc.) should

generally be avoided or minimized due to concern of side effects (worsened cognition, falls) and especially of “paradoxical disinhibition” (reaction of agitation or worsened behaviors as opposed to the desired calming effect).

In treating individuals with Alzheimer’s disease, it is common practice to include the caregiver and family. Alzheimer’s affects entire families, especially as the disease progresses and affected individuals become more dependent upon their primary caregivers. Caregivers often experience feelings of depression, anxiety, stress, and helplessness that need to be assessed by a clinician, and referred as appropriate. Many of these symptoms can be alleviated by appropriate treatment.

Related Topics

[▶ Caregiving and caregiver burden](#),
 [▶ Delirium](#),
 [▶ Dementia Advocacy International](#),
 [▶ Disruptive behaviors](#),
 [▶ Frontal lobe dysfunction](#),
 [▶ Long-term care](#),
 [▶ Pseudodementia](#)

Suggested Readings

- Clark CM (2005) Clinical manifestations and diagnostic evaluation of patients with Alzheimer’s disease. In: Clark CM, Trojanowski JQ (eds) *Neurodegenerative dementias: clinical features and pathological mechanisms*. McGraw-Hill, New York, pp 95–114
- Delagarza V (2003) Pharmacologic treatment of Alzheimer’s dementia: an update on Alzheimer’s dementia. *Am Fam Physician* 68(7):1365–1372
- Ernst E, Pittler MH (1999) *Ginkgo biloba* for dementia: a systemic review of double-blind, placebo-controlled trials. *Clin Drug Invest* 17:301–308
- Richter B, Richter R (2004) Alzheimer’s dementia: epidemiological and statistical Alzheimer’s dementia. In: Richter R, Richter B (eds) *Alzheimer’ dementia. a Physician’s guide to practical management*. Humana Press, Totowa, NJ, pp 51–55
- Tabet N, Birks J, Grimley EJ, Orrel M, Spector A (2003) Vitamin E for Alzheimer’s dementia. *Cochrane Alzheimer’s Dementia Base Sys Rev* CD000442

Suggested Resources

- Alzheimer’s Association (800) 272–3900. www.alz.org
- Alzheimer’s Disease Education and Referral Center (800) 438–4380. www.alzheimers.org
- American Association for Geriatric Psychiatry. www.aagppa.org

Ambiguous Loss

Sana Loue

Ambiguous loss refers to the loss of a loved one who is both simultaneously present and absent. Consequently, the loss is ambiguous and closure appears unattainable.

There are two types of ambiguous loss. In the first type, the loved individual is psychologically present, but physically absent under conditions that make it unclear whether they are dead or alive. This may happen, for instance, when a family member is serving in the armed forces and is reported missing in action, or when family members emigrate to another country, leaving behind relatives who are unable to communicate with them. It may also occur as the result of a natural disaster, when family members are separated from each other and mechanisms of communication are interrupted.

The second type of loss occurs when a loved one is perceived as being physically present, but is psychologically absent. This often happens when a loved one suffers from advanced Alzheimer’s disease or suddenly suffers cognitive impairment as the result of a traumatic injury or the onset of a severe mental illness. This type of ambiguous loss may especially affect older adults, as aging friends and family members develop illnesses that affect their abilities to interact with, and relate to, others.

The uncertainty that surrounds such a loss prevents the individuals who are affected by it from moving forward with their lives because they do not know if the loss is temporary or permanent. Unlike a loss that results from death, individuals who are confronted by an ambiguous loss do not have the same rituals such as a funeral or wake that could potentially provide support and opportunity for validation of their loss. In addition, because of its ambiguous nature, the loss is continuous, resulting in physical and emotional exhaustion.

Individuals who are confronted with an ambiguous loss may feel depressed, helpless, and/or incompetent. Individuals may blame themselves for the situation, even if they had no part in its creation, believing that if they had only said or done something differently, the situation would be better. A variety of strategies have been suggested to help individuals cope with this type of loss and to overcome some of these feelings. The methods include counseling, prayer, and participation in a support group.

Related Topics

[▶ Alzheimer's disease](#),
 [▶ Attachment theory](#),
 [▶ Capacity](#),
 [▶ Caregiver burden](#),
 [▶ Caregiving and caregiver burden](#),
 [▶ Disability](#),
 [▶ Migration](#),
 [▶ Stress](#)

Suggested Readings

Boss P (1999) *Ambiguous loss*. Harvard University Press, Cambridge, MA

Americans with Disabilities Act

Janet L. Lowder · Lisa M. Montoni

The Americans with Disabilities Act (ADA), signed in July 1990, provides individuals with disabilities protections similar to those that prohibit discrimination on the basis of sex, national origin, race, religion, and veteran status. An individual is protected under the ADA if: (1) the ability to perform one or more major life activities (e.g., hearing, sight, self-care, walking, breathing, speaking, or learning) are hampered by a physical or mental condition; (2) if an individual has a record of having such a physical or mental condition; or (3) if an individual is thought of as having such a condition. The ADA is designed to open up employment opportunities, government services, public accommodations, transportation services, and telecommunications to the disabled on an equal-opportunity basis.

The ADA prohibits discrimination against qualified disabled people in private employment-related activities such as hiring, promotion, training, and compensation. A disability cannot be used as a basis for employment-related decisions unless a person's disability poses a direct threat to his own and/or others' health and safety in the performance of a job. Additionally, organizations with 15 or more employees must provide reasonable accommodations to disabled employees and job applicants as those persons request or indicate, except where reasonable accommodations are not feasible or impose a significant expense, or an "undue

hardship," on the employer. Reasonable accommodations may include accessibility modifications to existing facilities, changing work schedules, providing adaptive or modified work equipment, or modifying employment training.

The ADA also obligates federal, state, and local governments, as well as agencies and departments to provide equal access to government employment, programs, and services for persons with disabilities. State and local government entities, just like private employers, are subject to employment and facility access rules. These public entities must also remove discriminatory barriers to the disabled for participation in, and eligibility for, government services. Additionally, government organizations must guarantee "public accessibility" to all persons with disabilities by providing government services in accessible locations, either in the public entity's own facilities or at an alternative off-site location.

The ADA includes "public accommodations" provisions that apply to private companies and other organizations that own or operate facilities open for public access such as movie theaters, restaurants, shopping malls, parks, and museums. Construction of new buildings, and major renovations of existing buildings, must ensure accessibility to disabled persons. A variety of access-minded features must be included such as parking lots with curb cuts and designated "handicapped" parking spaces, elevators, barrier-free facility designs and layouts, accessible bathrooms, tables of wheelchair-appropriate clearance and height, and sufficiently wide doorways. Reasonable accommodations for such public establishments under the ADA go beyond just physical access. Facility owners and operators must also be prepared to provide services such as reading a price tag to a blind customer; retrieving a book from an unreachable shelf for a wheelchair user; and permitting individuals requiring the assistance of service animals, for example trained guide or mobility dogs, to enter restaurants and grocery stores.

Public and private transportation service providers must also refrain from discriminatory behavior against disabled patrons under the ADA. Airlines, taxis, trains, and bus lines must provide an equal, or at least equally effective, level of service as that provided to nondisabled patrons. Telecommunication service providers such as telephone companies must provide access to services for individuals with hearing and/or speech impairments as well.

Related Topics

- [Disability](#), ➤ [Discrimination](#), ➤ [Employment](#),
- [Medicare](#)

Suggested Readings

US Department of Justice, Civil Rights Division, Equal Employment Opportunities Commission (2002) *The Americans with Disabilities Act: a primer for small business*, September 10, 2002

US Department of Justice, Civil Rights Division, Disability Rights Section (2001) *A guide to disability rights laws*, August 2001

US Department of Justice, Civil Rights Division, Equal Employment Opportunities Commission (2002) *Americans with Disabilities Act: questions and answers*, August 23, 2002

Suggested Resources

US Department of Justice (2005) *ADA Home Page*, Washington, DC, November 17. www.ada.gov

American Association of Retired Persons

Thomas E. Bucher

The American Association of Retired Persons (AARP) is a Washington, DC-based nonprofit, nonpartisan organization dedicated to “enriching the experience of aging” for people aged 50 and above. The organization was founded in 1958 by Dr. Ethel Percy Andrus, the first woman high school principal in California and a pioneer in the field of gerontology. It changed its name in recent years because only about half of its 35 million members are fully retired. AARP evolved from the National Retired Teachers Association, founded in 1947 and now an affiliated organization, to respond to the need for affordable health insurance for seniors and to address the problem of age discrimination in society. The organization envisions “a society in which everyone ages with dignity and purpose and in which AARP helps people fulfill their goals and dreams.”

AARP, through its Internal Revenue Code 501 (c)(4) status, has become widely known for advancing the interests of aging populations through lobbying efforts at the state and national levels, working to influence legislation that affects older citizens, particularly Social Security and Medicare. The organization’s signature issue has been to oppose President Bush’s proposal to privatize Social Security, a plan that would allow the creation of private accounts financed through payroll taxes. The organization argues that private accounts drain money out of Social Security, cut benefits, and pass the bill on to future generations. Additionally, AARP worked to influence the Medicare Modernization Act of 2003 with its new Part D, the outpatient prescription drug benefit, with effect from January 1, 2006. Their large membership, combined with higher voting rates among elderly Americans, help to make AARP one of the most powerful advocacy groups in the United States. One critic has even called AARP the “800-lb. gorilla of American politics.”

In addition to their intensive lobbying efforts, AARP offers a broad range of services and benefits to its members. It publishes and distributes educational materials about Social Security, Medicare, and other public policy issues, as well as sponsors community-service programs in such areas as crime prevention, defensive driving, adult education, consumer affairs, retirement planning, and counseling of widowed persons. The organization offers automobile and group health insurance plans, a credit union, pharmacy and travel services, and also negotiates reduced rates for members at various tourist attractions, automobile rental companies, motel and hotel chains, and other establishments. It also strives to inform and educate the members about possible scams targeting the elderly such as predatory lending and refinancing. AARP publishes *Modern Maturity* and *My Generation* magazines, and a members’ bulletin.

Related Topics

- [Medicare](#), ➤ [Social Security](#), ➤ [Social support](#)

Suggested Resources

Modern Maturity
My Generation
www.aarp.org

American Indians and Alaskan Natives

Christina M. Saunders Sturm

The 2000 Census reports a population count of 4.1 million American Indian and Alaskan Natives (AIANs). However, as is now understood to be common among minorities, this number is likely to be an undercount; AIANs who live on reservations are particularly likely to not be counted in the decennial census.

This population is relatively young with a median age of 28.8, 5 years younger than the national median age of 35.4. Approximately 1% of AIANs are 65 and above, a number that is predicted to rise to 3% by 2050. This expected growth in the older AIAN population will be the largest relative increase in any US racial or ethnic group except Asians, and therefore deserves special attention. The age category of 65 and older is used here as the common definition of older in the United States. However, it is important to note that within AIAN communities, elderhood may start at much younger chronological ages and, in fact, some tribes have designated Medicaid eligibility at ages less than 65 under treaty authority. Age is also important in that it has been reported that diseases such as diabetes are showing patterns of prevalence and complications in younger AIANs age groups that are more typical of patients 65 and older.

AIANs have the worst health in the nation, with older AIANs suffering from some of the highest levels of disability and disease. Contrary to the goals of Healthy People 2000, AIANs have not experienced significant improvements in health status indicators (HSIs). Risk factors and health conditions show persistent and even increasing disparities that need to be addressed if elder AIANs, as well their communities at large, are to gain better health and increased life expectancy.

Clear empirical data about older AIANs' health are very limited. The National Center for Health Statistics (NCHS) provides the best data to date, but even here AIANs are often left out of comparative analyses due to insufficient numbers or problematic racial categorization. For example, research has demonstrated that AIANs are frequently (15–20% on average) misassigned to other racial categories in health data, particularly mortality data, resulting in the underestimation

of risk in this population. It is particularly difficult to obtain data on AIANs who do not live on reservations (approximately 60% of the population); these individuals are among the most likely to be misclassified in terms of race in health data documentation. Agencies that collect health data need to have procedures in place to maximize correct racial/ethnic category assignment.

The data that are available indicate that older AIANs suffer disproportionately from a variety of chronic diseases that contribute to their relative poor health. The NCHS reports that the three leading causes of death among older AIANs are diseases of the heart, unintentional injuries, and malignant neoplasm; diabetes is the fourth leading cause of death. However, diabetes is also a chronic disease that can cause significant disability and suffering. AIANs have the highest rate of diabetes in the nation (close to 100% in some subgroups) and one of the highest globally. High rates of obesity, lack of exercise, and smoking are reported in geographically limited studies as well as significant levels of eye and dental problems; the latter is particularly problematic among Alaskan Natives where service delivery can be very difficult. In addition, disability rates are the highest in the nation and it has been reported that qualified AIANs often are not receiving disability benefits to which they are entitled. Life expectancy is approximately 4 years lower than that of the general US population.

A significant contributor to the health problems seen in AIAN communities is access to, as well as quality of, care. AIANs often lack basic health services available to their non-AIAN neighbors. A total of 92% of rural counties in which AIANs are the majority residents are health professional shortage areas (HPSA) compared with 65% nationally. For older AIANs, most of who depend upon the Indian Health Service (IHS), access to geriatric health-care services is even more limited.

The IHS, part of the US Public Health Service since 1955, has played a critical role in providing services to the older AIAN population. It currently serves 1.5 million registered AIANs of all ages in 35 states through IHS hospitals and health centers. These individuals as well as the remaining 2–3 million self-identified AIANs are served by tribally managed services, urban Indian health programs, and general health services not geared specifically toward the AIAN population. Few older AIANs have private

insurance, relying primarily on IHS facilities and providers. Unfortunately, the IHS is chronically underfunded despite the legal obligation of the federal government to provide health services to AIAN peoples. As a clear example of structural inequality, IHS expenditures are 46% less than that of federal employee health benefit plans. The IHS budget is set by appropriation and is consequently subject to annual change and political pressures. The system is also increasingly dependent upon Medicaid reimbursement to fund itself. Because Medicaid eligibility and expenditures are set by the state, access to services and overall funding of the system varies greatly depending upon state residency. In addition, urban Indian health service centers do not qualify for the same level of federal Medicaid matching dollars as do IHS services, so AIANs who use urban service centers may have even fewer services available for certain needs than those who live on reservations.

On the positive side, the IHS and tribal leadership have built a record of successfully collaborating to maximize tribal involvement in meeting the health care needs and improving the health outcomes of the registered AIAN populations. This collaborative work, along with that developing with tribal nations, Indian colleges, and 4-year universities, has been successful at identifying community priorities as well as recruiting and maintaining tribal members in important roles in the system—two key elements of cultural competency in health care. Cultural competency is critical to the delivery of quality health care services; three out of four of the major identified probable causes of disparities in health care identified by the National Healthcare Disparities Report are strongly related to issues of communication and interaction between providers and patients. This effort is complicated in a population that embodies vast internal cultural diversity.

With more than 550 tribes with distinct cultural, genetic, and environmental pressures, it should be unsurprising that there are strong regional differences in risk factors. The Healthy People 2000 Report for 2002 reported rising rates of lung cancer in the AIAN population. However, smoking rates vary greatly. Nez Henderson and colleagues reported in 2005 that 19% of AIAN men living in the Southwest and 10% of Southwest AIAN women were smokers compared with 49% of Northern Plains men and 51% of Northern Plains women. Consequently, local tribal differences are critical to designing and implementing any prevention campaigns or clinical care programs. Close

collaboration and cooperation with tribal leaders and health care providers experienced with working in a particular AIAN community is imperative. Culturally competent care must be based upon close familiarity with, understanding of, and acceptance of, the community or communities in which one is working. Providers must strive to develop strong, collaborative relationships with key stakeholders in the community such as the tribal leadership, existing health care providers, and the older population itself. AIAN communities hold natural gatherings at specific times each year during which AIANs congregate; these gatherings are wonderful opportunities to meet and network with key stakeholders, to engage with the community on its own terms, and to disseminate health promotion and prevention messages to the community at large as well as to elders and their caregivers.

Diversity emerges in more than tribal differences in risk factors and disease patterns. Tribal peoples often have experience with various healing systems and practices. Part of working with any AIAN community is recognizing and accepting that there is likely to be more than one healing system at work. In addition to allopathic providers, there may be traditional and faith-based healers. These healers often take a holistic approach in which spirituality plays a critical role. They may treat everything seen by the allopathic provider as well as diseases and ailments not recognized by Western medicine. Health care providers may view these systems and their representatives as competition and a hindrance to compliance with the allopathic medicine non-AIAN providers typically advocate. However, a more useful approach would be to assess each individual situation, potentially even working collaboratively with a traditional or spiritual healer to provide holistic care to the patient or the community.

Careful attention should be given to individual elders' belief and value systems. Providers need to learn the specific vocabulary, modality, and context through which elders express the signs and symptoms of disease and work together with their patients to elicit ideas about appropriate healing and interventions. A reasonably detailed understanding of the healing systems functioning in their clients' community should help providers work with elders and their families to create an integrative approach that respects the communities' belief systems, provides better health care, creates greater cooperation with medical regimens, and works toward developing and maintaining relationships of trust with elders, their families, and the

greater community. Particularly in a context where trust between communities and bureaucracies has been repeatedly undermined, the establishment of trust between providers, their agencies, and AIAN communities will be a critical component for the successful implementation of public health programs for these elders.

Cultural competency and holism reach beyond the boundaries of tribal membership. The cultural boundaries of class are also important with the disproportionate numbers of AIANs living in poverty in this nation. Many older AIANs do not have retirement benefits and have difficulty navigating the paperwork to enroll in the federal or state programs for which they are eligible. According to the 2000 Census, only 16.8% of AIAN households have members aged 65 and above (compared with 31.3% nationally) and 50.3% have members aged below 18 (compared with 36.5% nationally). However, AIAN communities typically hold strong cultural values that encourage and support families providing for elders in a way that creates an immediate support group in which public health workers and clinicians can pool in to work to an elder's advantage. However, it is important to remember that just because an AIAN elder lives with his or her family, he or she does not automatically have a safe environment in which to live. Given the higher rates of poverty in AIAN communities, families that provide housing and care for an elder can be stretched beyond their limited resources, with elders creating a drain on resources that weakens and threatens the family. Special services may need to be made available to link elders with appropriate social service programs. Web-based resources such as the National Indian Council on Aging may be useful as a starting point but ultimately it is the providers' knowledge of local services and their ability to link up elders and their families with services that could make an important difference.

It is very important that research be conducted to collect and analyze health data on AIANs so that we can understand what is happening in AIAN populations compared with other populations over time. Given the emphasis on evidence-based practice and policymaking, the dearth of hard data on health indicators in the AIAN population is dangerous. AIANs are more often than not a silent nonpresence in the national reports. This makes lobbying for funds and policy changes problematic, to say the least. Data on key health indicators must be systematically collected for all AIANs, registered tribal members or not,

reservation residents or urban dwellers, and it must be made available for analysis. Careful consideration must be made of how race is assigned in health data collection and systems developed to more accurately assign membership to AIANs. The disparity in health status reported by Healthy People 2000 is ongoing and increasing. This fact in combination with the significant impact of obesity, diabetes, heart disease, and disability in this population indicates that there is a great deal of work still to be done to improve the health of AIAN elders. Culturally appropriate, accessible, affordable, quality care, which is designed to meet the special needs of AIAN elders, is sorely needed. Public health providers working with this population may well need to take on an active advocacy role, pushing for higher appropriations, restructured financing, and expanded quality services directed to elder AIANs.

Related Topics

- ▶ Access to health care, ▶ Diabetes, ▶ Disability,
- ▶ Medicaid, ▶ Minority seniors, ▶ Rural health,
- ▶ Smoking

Suggested Readings

- Frias H (2003) Should Indian health care be an entitlement? *IHS Provider* 60:60–64
- Nez Henderson P, Jacobsen C, Beals J, and the AI-SUPERPRP Team (2005) Correlates of smoking among selected Southwest and Northern Plains tribal groups. *Am J Pub Health* 95:867–872
- Paakka E, Stehr-Green P, Becker TM (2005) Measuring the health status gap for American Indians/Alaska natives: getting closer to the truth. *Am J Pub Health* 95:838–843
- Probst JC, Glover CG (2004) Person and place: the compounding effects of race/ethnicity and rurality on health. *AM J Pub Health* 2004:1695–1703

Suggested Resources

- Achieving Cultural Competence: A Guidebook for Providers of Services to Older Americans and Their Families. <http://www.aoa.gov/prof/adddiv/cultural/CC-guidebook.pdf>
- AHRQ 2003 National Healthcare Disparities Report. http://www.qualitytools.ahrq.gov/disparitiesreport/archive/2003/download/download_report.aspx
- Bradsher JE (1996) Disability among racial and ethnic groups. *Disability Abstracts*, No. 10 September 1996. National Institute on Disability and Rehabilitation Research. http://dsc.ucsf.edu/pub_listing.php?_type=abstract

Centers for Disease Control, NCHS, Data Warehouse on Trends in Health and Aging. <http://www.cdc.gov/nchs/agirgact.htm>

Indian Health Service, Trends in Indian Health 1998–1999. <http://www.ihs.gov/PublicInfo/Publications/index.asp>

National Archive of Computerized Data on Aging. <http://www.icpsr.umich.edu/NACDA/>

National Indian Council on Aging. <http://www.nicoa.org/>

US Department of Health and Human Services, Indian Health Service. www.ihs.gov/MedicalPrograms/ElderCare/index.asp

Amputation

Janet M. Blanchard

The word amputation refers to loss of a limb or body part. This is a feared complication of accidents and some medical disorders. Fortunately, the causes that lead up to amputation can, in many instances, be avoided. The major causes of amputation include traumatic injury, ischemic event (loss of blood supply), and metabolic disorders.

Traumatic Amputations

These amputations are caused by accidents, many of which can be avoided—snowblowers and lawn mowers are a prime cause. Everyone realizes they should not put their hands or feet into either machine while they are running—however slips, falls, or accidents using sticks or other objects with a mower or blower running can easily be associated with a traumatic incident that can lead to amputation.

Ischemic Amputations

This type of amputation can occur when arteries to extremities are compromised. A classic example of this is frostbite. When an extremity is exposed to extreme cold, the blood vessels to the extremities constrict. This in turn shuts down the blood supply (oxygen) to the tissues. When the tissue no longer receives oxygen, it dies. The extremity turns black and it either self-amputates or must be surgically removed. The extremities most commonly affected are the hands and

feet, but the ears are also susceptible. The most common cause of ischemia that leads to amputation is smoking. This is an avoidable situation and much attention is being directed toward cessation. The offending constituent of smoke is nicotine, which causes blood vessels to constrict and form plaques. In turn, the vessel narrows and decreases the blood supply to the extremity. Eventually, the blood vessel may close down. A warning sign may be cramping of the calf muscle (claudication) with exercise. The extremity may eventually lose total blood supply and, if not addressed, can lead to amputation. There are state-of-the-art evaluations to help diagnose, and surgical procedures available to treat, this condition.

Metabolic (Diabetic) Amputations

Diabetes is becoming an epidemic in the United States, both in children and adults. Although diabetes can be hereditary, obesity is fast becoming the primary cause. Diabetes causes two problems: (1) damage to the peripheral (end) vessels, which can lead to reduced feeling in the foot (neuropathy)—a phenomenon that is most commonly found in the foot; and (2) damage to the peripheral blood vessels, which in turn decreases the oxygen and necessary nutrients going to the tissues. The combination of these two can lead to tissue breakdown, which is termed an ulcer. A classic example is wearing a shoe that can cause a blister. When a person without diabetes has a blister, it feels very sore and he or she will generally take appropriate steps to alleviate this phenomenon. Diabetics, however, will not feel this, and instead of developing a blister, they will experience tissue breakdown and possible infection. This can lead to gangrene and bone infection. If the damage is severe enough, it can lead to amputation. Approximately 40–60% of all amputations occur in patients with diabetes.

Some of the above phenomena can be avoided by careful control of blood sugar with proper medication, monitoring blood sugar, losing weight, exercising, etc. Education about proper diabetes care is essential, that is, wearing correct shoes, checking the feet on a regular basis, and good skin hygiene. There are many diabetic clinics dedicated to this education. In summary, although some of the factors that lead to eventual amputation are hereditary, many can be avoided with appropriate lifestyle and health-care behaviors.

Related Topics

▶ Accidents, ▶ Diabetes, ▶ Foot care, ▶ Smoking

Suggested Readings

- Apelqvist J, Larsen J (2000) What is the most effective way to reduce incidence of amputation in the diabetic foot? *Diab Metabol Res* 16(Suppl 1):875–883
- Aronov WE (2005) Management of peripheral arterial disease, *Cardiol Rev* 13(2):61–68
- Brem H, Sheehan P, Boulton AJ (2004) Protocol for treatment of diabetic foot ulcers. *Am J Surg* 187(5a):1s–10s
- Poncellet AN (2003) Diabetic polyneuropathy: risk factors, patterns of presentation, diagnosis and treatment. *Geriatrics* 58(6):24–25
- Singh N, Armstrong DG, Lipsky BA (2005) Preventing foot ulcers in patients with diabetes. *JAMA* 293(2):217–228
- Treat-Jacobson D, Walsh ME (2003) Treating patients with peripheral arterial disease and claudication. *J Vasc Nurs* 21(1):5–14
- Ullbrecht JS, Cavanagh PR, Caiputo C (2004) Foot problems in diabetes: an overview. *Clin Infect Dis* 1:39(Suppl 2):873–882

Anemia

Linda Mileti

According to the Centers for Disease Control and Prevention, anemia affects approximately 3.4 million Americans. It is common in women with heavy menstrual periods, pregnancy, persons with chronic diseases, and older age. The exact prevalence in older adults is unclear; however, one study estimates that in persons aged 65 and older, anemia is present in 11% of men and 10% of women. The prevalence rises with increasing age. Among older persons, anemia is associated with greater physical decline, which in turn can lead to increased falls. It is also associated with depression, impaired cognitive function, and in severe cases congestive heart failure.

Anemia is defined as a lower than normal number of red blood cells (RBCs) in the blood, usually measured by a decrease in the amount of hemoglobin. Hemoglobin is an iron-rich protein in RBCs that transports oxygen to the body's muscles and organs. With anemia, the body produces too few healthy RBCs, loses

them, or destroys them. Some examples of underproduction include iron deficiency anemia, vitamin deficiency anemia, anemia of chronic disease, and anemia associated with bone marrow disease. Blood loss is most common with menstrual bleeding and bleeding from the gastrointestinal (GI) tract. Finally, examples of destruction include hemolysis from autoimmune disorders, medications, or sickle cell anemia.

Iron deficiency is the most common form of anemia. The bone marrow needs iron to make hemoglobin. In older adults, common causes of iron deficiency include chronic blood loss from an ulcer, colonic polyp, or colon cancer. A diet poor in iron causes anemia as well.

Deficiencies in vitamin B12 and folate may cause anemia is which the bone marrow makes large, abnormal RBCs. This is seen in patients with intestinal disorders or with malnutrition. Anemia of chronic disease is seen most commonly with cancer, rheumatoid arthritis, other chronic inflammatory disorders, and kidney failure. Bone marrow diseases that cause anemia include leukemia and myelodysplasia, a preleukemic condition. Other cancers of the blood or bone marrow such as multiple myeloma or lymphoma can also cause anemia.

Anemia from blood loss most commonly occurs with heavy menstruation and bleeding from the GI tract such as from an ulcer, polyp, or cancer. One way the body gets iron is by recycling it from RBCs that die. However, with blood loss, iron is lost. Anemia from blood loss often presents as iron deficiency anemia.

Finally, destruction of RBCs can occur with autoimmune disorders, in which the body attacks its own RBCs. Certain medications can cause this as well. Initially the signs and symptoms of anemia can be subtle. As it progresses, individuals may report fatigue, pale skin, dizziness, and shortness of breath. Some, particularly those with coronary artery disease, may feel chest pain. Older persons in particular may experience cognitive impairment such as confusion. If severe, patients may go into congestive heart failure. On physical exam, patients may have pale skin, tachycardia, or low blood pressure. Other findings may include inflammation of the tongue called glossitis and is seen with iron, folate, or vitamin B12 deficiency. Jaundice or an enlarged spleen may be seen with hemolytic anemias. Neurologic abnormalities such as numbness, tingling, or loss of balance may be seen with vitamin B12 deficiency.

The way to diagnose anemia is by doing a thorough history, physical exam, and complete blood count (CBC). The CBC will show the hemoglobin concentration in the blood. It can also give information about the size of the RBCs. For example, with iron deficiency anemia or anemia of chronic disease, the size of the RBCs will be smaller, known as microcytosis. In contrast, with vitamin B12 or folate deficiencies, the RBCs will be larger, known as macrocytosis. Iron studies can be checked as well and, if consistent with iron deficiency anemia, a colonoscopy may be necessary to look for colon cancer or precancerous lesions. A procedure known as an esophagogastroduodenoscopy (EGD) in which a small scope is guided to the stomach may be necessary to look for an ulcer. In some cases, a bone marrow biopsy may be done to diagnose anemias associated with bone marrow disease.

Treatment depends on the cause of the anemia. With iron deficiency, iron supplements can be used. If the iron deficiency is caused by a bleed in the GI tract, further treatment of an ulcer, polyp, or cancer is necessary. Vitamin B12 and folate deficiencies can be treated by improving the diet, taking oral supplements, or treating the intestinal disorder. Anemia of chronic disease and anemias associated with bone marrow diseases may improve by treating the underlying disease. Erythropoietin, a hormone produced by the kidneys that stimulates the bone marrow to produce RBCs, may be injected to help patients with these conditions. With some hemolytic anemias, removal of the spleen may be necessary. Transfusion of RBCs may be necessary to improve the blood pressure, heart rate, or symptoms; however, this should be done after the cause of the anemia is determined. Many types of anemia cannot be prevented. However, making sure of a diet rich in iron, folate, and B12, and careful follow-up with the primary care doctor are helpful.

Related Topics

[▶ Colonoscopy](#),
 [▶ Endoscopy](#),
 [▶ Gastroesophageal reflux disease](#)

Suggested Readings

Beghe C, Wilson A, Ershler WB (2004) Prevalence and outcomes of anemia in geriatrics: a systematic review of the literature. *Am J Med* 116 (Suppl 7A):35–105

Braunwald E et al (eds) (2001) Disorders of hematopoiesis. Harrison's principles of internal medicine. McGraw-Hill, New York
 Lipschitz D (2003) Medical and functional consequences of anemia in the elderly. *J Am Geriatr Soc* 51(Suppl 3):S10–S13
 Woodman R, Ferrucci L, Guralnik J (2005) Anemia in older adults. *Curr Opin Hematol* 12(2):123–128

Anger

Carol I. Tsao

Anger is characterized as an emotional state that assigns blame for some real or perceived wrong and has the adaptive purpose of seeking to correct the wrong and/or prevent its repetition. This definition of anger presupposes that the “perceived wrong” was unjustified and the response (“correction” and/or “prevention”) must be proportionate to the provocation. According to this view, anger is socially important because it attempts to limit the original wrong, thereby potentially reducing the overall damage. Interpersonally, anger holds another accountable for his or her wrongful actions. Optimally, the wrongdoer will come to realize his or her own error and gain an understanding of the angry person’s perspective.

Anger is a common emotion. On average, people report becoming angry once or twice a week. The most frequent targets of anger are intimates, family, or friends. Anger may be expressed in a variety of ways depending on the person and circumstances. Common responses include discussion with the wrongdoer, verbal rebukes, and verbal withdrawal. Angry responses may escalate to include raising one’s voice and physical departure. Among emotionally healthy adults, only rarely does anger result in direct physical battery against the wrongdoer.

Anger needs to be distinguished from hostility. From the perspective of emotion, hostility includes feelings of anger. Hostility, as noted by Barefoot and other behavioral scientists, is associated with other negative feelings as well, usually contempt and disgust. Although hostility may have been instigated by a perceived wrong, the hostile person usually holds preexistent skeptical or cynical beliefs about others. These feelings lead to a different motivation on the part of the hostile person. Whereas the motivation of the angry person is to correct or prevent recurrence of the wrong,

the motivation of the hostile person is to hurt the perceived wrongdoer.

Anger, unlike hostility, may have positive adaptive value. For instance, Averill contended that anger could have a positive impact on health if the angry person acknowledges the anger and uses it in the service of positive action. Patients with cancer have been shown to have a better prognosis if they become angry at their disease and not merely afraid or demoralized. A possible explanation for their superior outcome is that the angry person is more likely to take a proactive role in treatment. On the other hand, Barefoot has suggested that considerable evidence exists to show that chronic hostility has deleterious effects on health. Hostility, the critical component of the so-called type A behavior pattern, increases risk for coronary heart disease. It has also been shown to be related to other forms of cardiovascular disease and early mortality from these disease entities as well. Hostility may impair health through one or more mechanisms. These include cultivation of poorer health habits, increased levels of stress, and decreased social support.

Anger and Aging

Little is known about the links between anger and aging. Some researchers have observed that, in general, older people are less angry than younger people. Schieman's work suggests that among older people, work and family status, social and personal circumstances, and socioemotional orientation may be important variables that determine the amount of anger expressed or experienced. In one of two surveyed populations, he found that married or widowed elders were less angry than divorced or separated elders. In all populations he examined, employed or retired older people were found to be less angry than unemployed people. Schieman also found that fewer persons living in the household, less economic hardship, and less interpersonal conflict were related to less anger on the part of older people. Finally, he found that older people with a greater sense of control or mastery and less sense of shame experienced less anger.

Mastery of anger has been shown to be related to early-life parental permission to experience anger. When young, those who mastered their anger had parents who tolerated and "held" their anger. These parents did not treat their child's anger as something impermissible or something to be eradicated. As a

result, these children grew up to be adults who learned to express their anger by healthily transforming it into play or competition.

Mastery of anger is important to the successful engagement of major life tasks. In early, middle, and late adulthood, the major tasks to be engaged are intimacy, career consolidation, and generativity, respectively. In the Harvard University Study of Adult Development, Vaillant followed longitudinally and interviewed 89 adults, finding that ill and unhappy 70-year-old men were several times more likely to have reported, at age 47, that they expressed anger "either through explosive outbursts or by burying it deep within themselves." In contrast, three quarters of healthy and happy 70-year-old men reported, at age 47, "graceful and attenuated ways of expressing anger."

Related Topics

- ▶ Accidents, ▶ Alcohol use, ▶ Crime, ▶ Emotions,
- ▶ Generativity, ▶ Social stress

Suggested Readings

- Averill JR (1994) Anger. In: Ramachandran VS (ed) *Encyclopedia of human behavior*. Academic Press, San Diego, CA, pp 131–140
- Barefoot JC (2001) Hostility. In: Maddox G (ed) *Encyclopedia of aging*. Springer, New York
- Schieman S (1999) Age and anger. *J Health Soc Behav* 40(3): 273–289
- Vaillant GE (2002) *Aging well*. Little, Brown, & Co., Boston, MA

Angioplasty

Robert Stern · Christopher Allen · Gus Beck

Heart disease has been the leading cause of death in the United States since 1990. Nearly 13 million Americans are afflicted with coronary artery disease (CAD), which causes nearly 30% of deaths in the United States. The total annual cost of CAD, including coronary angioplasty and stenting, coronary artery bypass grafting, medications, and hospitalizations, exceeds \$50 billion. The Centers for Disease Control and Prevention (CDC)

in Atlanta estimates that nearly 61 million Americans (almost one fourth of the population) suffer from disability as a result of CAD. It is also a leading cause of premature, permanent disability among working adults. Key risk factors for CAD include advanced age, male gender, elevated low-density lipoprotein (LDL) cholesterol levels, low high-density lipoprotein (HDL) cholesterol levels, diabetes mellitus, and smoking (Hurst).

Myocardial (heart muscle) ischemia and infarction are the end result of progressive CAD, or blockage of the coronary arteries in the heart. Ischemia produces reversible damage to myocardial cells, whereas infarction is permanent cell death. Both are caused by an imbalance in myocardial oxygen supply and demand. Usually this imbalance is caused by atherosclerotic cholesterol plaques that reduce blood flow to the heart muscle. Survival of heart muscle is dependent on the level and duration of ischemia (Hurst). Restoration of blood flow to the heart is often crucial in limiting overall myocardial damage and preventing death. Therapies to restore heart blood flow include clot-busting medications, coronary artery bypass graft (CABG, open heart surgery), and angiography with angioplasty.

Angiography is a method of utilizing x-ray to visualize blood vessels. The procedure, performed by a cardiologist, involves injecting a contrast medium or x-ray dye into the blood vessels, thus allowing the vessels to be easily visualized. Angioplasty involves attaching a tiny balloon to a catheter, and using angiography to guide the placement of the balloon within a coronary artery blockage. The balloon is then inflated, thus opening the blocked artery. Recently, stents have been inserted into the newly opened artery to help preserve blood flow. Patients are usually sedated or given analgesia at the site of catheter insertion into an artery; however, they remain awake for the procedure. Angioplasty can usually be completed in approximately 30 minutes, and the average hospital stay is less than 2 days. More than two million angioplasties are performed worldwide each year and angiography has become the gold standard for diagnosing CAD.

The main indication for cardiac angiography and angioplasty is angina pectoris or chest pain. Symptoms may include a heavy, crushing pain or pressure behind the sternum or over the heart. The pain may radiate to either of, or both, the arms, usually the left arm. It may

also be felt in the throat, jaw, or less commonly between the shoulder blades. Associated symptoms may also include sweating and shortness of breath. The symptoms are commonly experienced during physical exertion, psychological stress, extreme cold, or a heavy meal, and often resolve in 2–10 minutes. Cardiac angiography and angioplasty are also very effective treatments to open a blocked artery during an acute heart attack.

There are many benefits associated with cardiac angiography and angioplasty. Angiography can be used to diagnose the extent of coronary artery obstruction and help guide cardiac angioplasty or CABG. Cardiac angioplasty also improves survival rates when used during an acute myocardial infarction, or heart attack. Angioplasty is also useful in preventing chest pain and improving physical functioning, with overall success rates as high as 96–99%.

The risks of cardiac angioplasty are similar to any invasive procedure and include infection and bleeding. Additional risks are uncommon and include complete blockage of one of the heart arteries, stroke, arrhythmia, kidney failure, allergic reaction to the x-ray dye, need for immediate bypass surgery, and death. Significant complications are extremely rare and occur in approximately 2% of patients, with death occurring in less than 0.5% of cases (Hurst).

One of the disappointments of cardiac angioplasty is its failure to reduce mortality rates and future heart attacks. While angioplasty has been useful in relieving symptoms associated with heart disease and improving quality of life, other treatments such as medications and open-heart bypass surgery have achieved reductions in mortality. Today, the standard of care dictates that most patients diagnosed with blockages that can be treated by angioplasty techniques will receive a stent (American Heart Association [AHA]/Food and Drug Administration [FDA]). Cardiologists now utilize stents coated with a medication, which helps reduce the possibility of future blockages in that artery. In the future, we can expect further technologies to be used to treat patients who suffer from CAD and help deliver other therapies to the heart arteries and muscle.

Related Topics

➤ [Cardiovascular disease](#), ➤ [Coronary heart disease](#)

Suggested Readings

- Bypass Angioplasty Revascularization Investigation (BARI) Investigators (1996) Comparison of coronary bypass surgery with angioplasty in patients with multivessel disease. *N Engl J Med* 335(4):217–225
- Dundar Y, Hill RA, Bakhai A, Dickson R, Walley T (2004) Angioplasty and stents in coronary artery disease: a systematic review and meta-analysis. *Scand Cardiovasc J* 38(4):195–196
- Scheidt S (2005) Treatment of stable angina: medical and invasive therapy: implications for the elderly. *Am J Geriatr Cardiol* 14(4):183–192; quiz 193–194

Suggested Resources

- Heart Disease. www.cdc.gov/nccdphp/bb_heartdisease/
- Heart Info. www.heartinfo.org/ms/guides/17/main.html
- Percutaneous transluminal coronary angioplasty (PTCA). www.ptca.org

Anti-aging Remedies

David L. Larson

In order to make sound decisions in dealing with the remedies to alter and “control” the aging process, it is important to appreciate the factors that contribute to the aging process. Some of these remedies might be apparent to the most casual observer—do not smoke, stay out of the sun, eat the right foods, and exercise regularly—but others are less intuitive and should be considered. The key to antiaging is not just to live longer but to combine that longevity with good health, so that those extra years can be fully enjoyed. It is as much a matter of attaining and maintaining a good quality of life. Of course, there is no single “magic bullet,” but rather a number of remedies that work together to affect the quality of life lived.

Aging occurs in organ systems, tissues, cells, organelles, and molecules of any living thing. Forces that cause aging in humans can be divided into two general categories: internal and external. Internal forces that cause aging include oxidative stress caused by free radicals (the modern term is “reactive oxygen species” [ROS]), and may be the primary cause of aging. This

free-radical oxidative stress is like the damage from the wind and water erosion on the pyramids, except that it occurs in a far briefer time frame in humans. Internally produced ROS have been found to damage macromolecules like deoxyribonucleic acid (DNA), proteins, and lipids inside cells. These damaged macromolecules may, in some cases, be subsequently removed by the action of antiaging forces (discussed later), or they may irreversibly accumulate, thus constituting aging forces.

Among the external forces that produce aging are unhealthy diet, inappropriate lifestyle, unhealthy social habits, environmental pollution, and stress. Alterations in gene expression are also considered a major cause of cancer and aging by allowing the accumulation of DNA damage and mutations in cells as they reproduce. These internal and external forces can combine to work in a synergistic manner to accelerate the aging process (e.g., an “unfavorable” gene pool from one’s parents in a person who smokes and drinks alcohol excessively will produce premature aging). Likewise, these internal and external forces can work together in a positive way, combining a “favorable” gene pool and healthy personal habits.

Although the gene pool inherited from one’s parents cannot be altered, and most of the time we can do little about the urban environment in which we work and live, there are significant areas that can be controlled and thereby make a real difference in longevity and its life quality.

There are four proven methods of extending life and a fifth that is implied. Some of these have been proven in laboratory animals and then applied to humans, but many have been confirmed by prospective, longitudinal studies in humans. All are reported in peer-reviewed literature and readily accessible in medical journals.

Nutrition

Eating the proper foods is vital to controlling the aging process. Most peoples’ diets are not healthy and substantially contribute to the aging process. Sensible eating includes daily dietary portions of fresh vegetables and fruit, while minimizing the intake of white bread, pasta, rice, and potatoes (a good eating rule is taking these as one would a condiment), and entirely eliminating the intake of any “fast foods,” which contain

animal-based “trans” fats. Fresh fish, poultry, and lean red meat one or two times a week, all in portions that are about the size of the palm of one’s hand, will provide the right amount of protein for healthy living. The ideal diet contains about 25% protein, 50% carbohydrates, and 25% fats. Other healthy foods include olive oil, legumes, nuts, and a glass of wine daily.

Restricting Calories

Caloric restriction and fasting extends life span and decreases overall morbidity and mortality. This works not just by reducing weight but also by decreasing the oxidative stress on the cells, allowing them to survive longer. There is also good evidence that this restriction favorably impacts diabetes, hypertension and stroke, skin disorders, asthma, arthritis, cancer, chronic fatigue syndrome, sleeping disorders, infertility, allergies, and a host of other maladies common to the human condition. The decrease in mortality has been confirmed repeatedly in monkey, mouse, and rat studies. The translation of these findings to the human condition is not a direct correlation, but there are some parallels. Fasting and caloric restriction produces positive biologic effects on energy, protein, and lipid metabolism, as well as impacting the immune, hormonal, and reproductive systems. The mechanisms of this action include diminishing of aging forces by lowering the rate of gene damage and reducing free-radical production while enhancing gene repair, neutralizing free radicals, enhancing immune response, and increasing elimination of damaged cells. Before engaging in fasting it is important that a physician be consulted.

Dietary Supplements

Regarding antiaging drugs and supplements, most labeled foods give a detailed percentage of recommended daily allowances (RDA) contained in the food. These are accurate, but there are many scientists who feel that there should be a supplement to the RDA. Among the most important are antioxidants and fatty acids. Antioxidants are by far the most potent antiaging agents. The theory of free radicals and free-radical scavengers (substances that break the chain of free radicals and disperse it) has evolved as an important

theory of aging. What is known is that antioxidants decrease disease susceptibility and should certainly be part of a healthy antiaging regimen. Among the recommended vitamins and mineral supplements are a standard multivitamin tablet with mineral supplements; vitamin C (1000 mg), which is a strong water-soluble antioxidant; and vitamin E (300 international units), the most significant fat-soluble, chain-breaking antioxidant in human blood. Another supplement agreed upon by most scientists is a daily intake of omega-3 fatty acids found in fish oil. A daily supplement of calcium is particularly useful for women in preventing osteoporosis. There is controversy in this subject and it is therefore important that a person work with a nutritionist and/or a physician to determine what is best and appropriate for individual needs.

Exercise

The relation of physical activity and aging has been well established in longitudinal studies of both men and women, and is considered essential for anyone serious in antiaging efforts. We know that moderate exercise (three times/week), rather than a strenuous workout, improves one’s health and extends healthy quality years to a life span. Regular physical activity positively impacts the body by lowering stress levels, lowering blood pressure, strengthening the heart muscle and improving circulation, burning fat and redistributing it in the body, and increasing the level of endorphins, which induces a greater feeling of happiness, well-being, and self-confidence. Additionally, exercise reduces the level of glucose and cholesterol in blood, improves the respiratory system, and helps maintain healthy levels of calcium in the bones, thereby reducing the effects of osteoporosis.

Mind–Body Relationship

The link between “quality of life” and longevity is harder to prove from a scientific basis, and most of the information we have is more intuitive and deduced by considering the negative effects of poverty, poor dietary habits, and living under excessive amounts of stress. The “mind–body” link will be better understood when there is a better grasp of hormonal control mechanisms. One reasonable conclusion is that we

should pay attention to the need for relaxation, taking time away from work or other activities that predictably cause stress to our body's systems.

There is much that can be done to lengthen and enhance quality of life; some of these are controllable such as developing a healthy lifestyle and minimizing exposure to environmental habits that cause premature aging. Those aging elements inherent in our gene makeup will work synergistically for either a positive or negative effect on aging, primarily based on the choices of one's personal habits. Overall, it is important to make wise decisions based on one's desires, abilities, and needs, combined with professional input from health-care providers.

Related Topics

[▶ Baby boomers](#), [▶ Cellular theory of aging](#), [▶ Continuity theory of aging](#), [▶ Cross-linkage theory of aging](#), [▶ Diet](#), [▶ Early retirement](#), [▶ Exercise](#), [▶ Gerontology](#), [▶ Life expectancy](#), [▶ Nutrition](#)

Suggested Readings

- Blair SN, Kohl HW III, Barlow CE, Paffenbarger RS Jr, Gibbons LW (1995) Changes in physical fitness and all-cause mortality: a prospective study of healthy and unhealthy men. *JAMA* 273:1093–1098
- Hu FB, Stampfe MJ, Manson JE, Grodstein F, Colditz GA, Speizer FE, Willet WC (2000) Trends in the incidence of coronary heart disease and changes in diet and lifestyle in women. *N Engl J Med* 343:530–574
- Kant AK, Schatzkin A, Graubard BI, Schairer C (2000) A prospective study of diet quality and mortality in women. *JAMA* 283:2109–2115
- Koenig HG, Hays JC, Larson DB, George LK, Cohen HJ, McCullough ME, Meador KG, Blazer DG (1999) Does religious attendance prolong survival? A six-year follow-up study of 3,968 older adults. *J Gerontol* 54:M370–M376
- Roizen MF, Stephenson EA (1999) *Real age: are you as young as you can be?* HarperCollins, New York

Suggested Resources

- National Heart, Lung, and Blood Institute, National Institute of Health, NHLBI Health Information Center, 30105 Bethesda, MD. Tel: 20824–0105 (301)592–8573. www.nhlbi.nih.gov
- National Institute on Aging, Building 31, Room 5C27, 41 Center Drive, MSC 2292 Bethesda, MD 20892. Tel: (301) 496–1752. www.nih.gov/nia

Anxiety Disorders

Virginia E. Ayres

The term “anxiety disorders” refers to a category of psychiatric illnesses that are more chronic than substance use or affective (mood) disorders, with 28.8% of the general population having had some type of anxiety disorder in their lifetime. The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)* classifies 12 anxiety disorders: panic disorder without agoraphobia, panic disorder with agoraphobia, agoraphobia without history of panic disorder, specific phobia, social phobia, obsessive–compulsive disorder, posttraumatic stress disorder, generalized anxiety disorder, acute stress disorder, anxiety disorder due to a general medical condition, substance-induced anxiety disorder, and anxiety disorder not otherwise specified.

Although lifetime prevalence rates based on a random community survey for any anxiety disorder in older adults (above 60) range from 10% to 15.3%, anxiety disorders receive less clinical and research attention in this age group than depression or dementia. One reason for this is that anxiety that co-occurs with primary depression is seen as symptomatic of the depression; thus a clear picture of the anxiety may not be achieved and the anxiety may be undertreated. Additionally, medical conditions or drug side effects and substance use (alcohol, stimulants, etc.) may confound the assessment of anxiety. The cost to society is significant as older adults with anxiety disorders report an increase in the use of health services and a decrease in mental well-being and health.

The two most common anxiety disorders in the general population are social phobia (12.1% lifetime prevalence) and simple phobia (12.5% lifetime prevalence). Adults between the ages of 25 and 34 have the highest prevalence rates. In older adults, phobic and generalized anxiety appear most frequently for the first time when compared with other anxiety diagnoses. Women are twice as likely to have any anxiety diagnosis, except social phobia where the ratio is three women to two men. Risk factors for anxiety disorders include lower socioeconomic status, female gender, and living in the northeast region of the United States. Older men (aged 55–85) with anxiety disorders have a higher mortality risk than women. There are no

differences among races. Individuals with anxiety disorders of any age are highly likely to have another coexisting mental disorder, but only a small number actually seek treatment.

Anxiety is a universal feeling that is normal and adaptive in the right circumstances. However, a problem exists when the level of anxiety begins to interfere with functioning or causes considerable emotional distress. In most of the disorders outlined here, the level of anxiety experienced causes the suffering person to seek refuge by avoiding the source of anxiety or by performing some neutralizing behavior until the lifestyle is drastically hampered, or to experience intense anxiety in the face of the source.

Panic attacks are a central feature of several of the anxiety disorders. These are episodes of intense anxiety in which at least 4 of the following 13 symptoms peak very quickly: increased heart rate, sweating, shakiness, short of breath, choking feelings, chest pain, abdominal distress, dizziness, feelings of unreality or detachment from self, fear of losing control or dying, tingling, chills, and hot flushes. Panic-like symptoms are fewer in number than are required for a full-fledged panic attack, but can also include other incapacitating symptoms (e.g., severe headache). Panic attacks or panic-like symptoms can be unexpected, situationally bound, or situationally predisposed. The first type occurs unpredictably, whereas the second occurs in the presence of a trigger, and the third can be in response to some stimulus although at other times attacks do not occur with the same stimulus (e.g., an attack may occur after entering a mall but at other times this may not happen).

A diagnosis of panic disorder with agoraphobia is given when agoraphobia occurs along with unexpected full-fledged panic attacks during a month of concern about one of the following: fears of another attack, the implications of the attack, or a marked change in behavior associated with the attacks. Panic disorder without agoraphobia has the same criteria for diagnosis, except that it occurs in the absence of agoraphobia symptoms. On the other hand, a diagnosis of agoraphobia without history of panic disorder is made when agoraphobia symptoms are related to fears of developing the panic-like symptoms without a history of full-fledged panic attacks. Prevalence rates of panic disorder in older adults range from 0.1% to 1%, with the onset of new cases in old age as rare and symptoms less severe than in younger age groups. Agoraphobia

prevalence rates are estimated at 7.8% in adults above 65. Lifetime prevalence rates for agoraphobia without panic in those aged 60 and older is 1%. Agoraphobia in old age is usually triggered by some type of acute physical illness or traumatic experience.

Specific phobia and social phobia are similar in that the increased anxiety is situationally bound to a specific trigger(s). In specific phobia this can be anything from animals, to storms, to public transportation. Older adults report flying, lightning, and heights most often as a focus of phobia. When these triggers can be easily avoided, functioning is rarely impaired (e.g., fear of buses, but no need to travel by bus). However, when the specific phobia is something occurring in everyday life, the impairment can be considerable, such as fear of tunnels when living in New York City. In social phobia, the anxiety arousal is linked to social interactions and feared negative evaluations by others. Since anyone can speak to one at any time, individuals may experience more of a general anxiety arousal than those with other anxiety disorders. Individuals with this disorder will adopt a range of avoidance behaviors to manage their anxiety, at times with significant consequences (e.g., turning down a promotion that requires more social interaction).

For adults 65 and older, the prevalence rate for any phobic disorder is higher in women (6.1%) than men (2.9%), with overall rates at about 4.8%. One study found social phobia to be less common (1.3%) than specific phobia (2.1%) in older adults. Lifetime prevalence rates for those aged 60 and older are 7.5% for specific phobia and 6.6% for social phobia. There is some evidence that older adults with phobias have more medical and psychiatric problems when compared to control subjects.

Individuals who worry excessively and are unable to control it may be experiencing generalized anxiety disorder (GAD). Associated body symptoms include feeling restless, irritable, and easily fatigued. Sore muscles and sleep disturbance may also accompany the anxiety. The focus of worry is usually everyday things like work, school, or family finances but it is severe enough to cause impairment in functioning or cause significant distress. Prevalence rates of GAD in elderly adults are estimated to range from 2% to 7%, with a lifetime prevalence rate of 3.6% in those aged 60 and older. An epidemiological study indicates that 7% of adults report the onset of GAD above the age of 60. In older adults seeking treatment, 25% reported a GAD

onset above the age of 60. When older adults develop GAD with comorbid depression, which occurs in 25–48% of cases, they report greater symptom severity and suicidal ideation than those with a sole diagnosis of major depression. In these instances the depression is usually treated as the primary problem. Due to the significant overlap of these disorders, researchers continue to investigate whether GAD and depression are separate disorders or a single disorder along a continuum.

Individuals with obsessive–compulsive disorder (OCD) experience recurrent intrusive thoughts or behaviors that are time-consuming enough to impair functioning or cause significant distress. Obsessions are not worries about everyday problems, but instead can be about contamination (touching a public door handle), order (distress when objects are asymmetrical), or aggressive imagery (hurting a child). Attempts are made to ignore these thoughts or to neutralize them with some repeated action (e.g., hand washing). These repeated actions (compulsions) serve to lower the anxiety associated with the unwanted thoughts or impulses. At times this may also take the form of mental acts (e.g., repeating words to oneself or counting). Compulsions can be related to the obsession (e.g., checking that the iron is unplugged in response to fear that the iron was left on and may start a fire) but in other cases, may have nothing to do with them (such as counting backwards from 100 to neutralize fear of hitting someone while driving). Attempts to avoid provoking situations or objects can lead to greater decrease in functioning. Older adults have an OCD prevalence rate of 0.6% in random community surveys to as high as 1.4% for men and 4.7% for women in institutional samples. Lifetime prevalence rates are lower (0.7%) in those aged 60 and older. The onset of obsessive orderliness in old age may indicate the presence of dementia. For some elderly adults, there may be a development of OCD behavior that occurs in the context of a depressive illness.

Posttraumatic stress disorder (PTSD) develops after exposure to some extreme traumatic stressor, which was experienced directly, witnessed, or learned about, that involved either actual or threatened death or injury or threat to physical integrity of others or self. The person's reaction to the event is one of intense horror. Triggers can be anything reminiscent of the original event including similar sounds, smells, dreams, or internal body sensations. Symptoms

include a feeling that one is reexperiencing the event, avoidance of any cues that are related to the original trauma, and increased arousal (e.g., sleep difficulties, irritability) that persist for more than a month. Those who develop PTSD continue to experience a myriad of symptoms long after a typical recovery period. Lifetime prevalence rates for PTSD in those aged 60 and older is 2.5%. There is little research on PTSD in older adults. Available information is conflicting with some studies reporting no qualitative differences between young and old, whereas others challenge those conclusions reporting that older adults experience less severe symptoms overall but more estrangement from others. Acute stress disorder is similar to PTSD but it involves significant dissociative symptoms (e.g., dazed, numb) and the duration is shorter, that is, a minimum of 2 days and a maximum of 4 weeks after the traumatic event occurs.

Anxiety disorder due to a general medical condition and substance-induced anxiety disorder are diagnosed when anxiety symptoms from panic, GAD, or OCD occur in direct relation to a medical condition in the former or, in the latter, as a response to a medication or drug. Pulmonary, neurologic, and cardiovascular medical conditions are the most frequently cited as producing anxiety in older populations. Substances most often associated with increased anxiety symptoms in the elderly are stimulants, alcohol, antidepressants, steroids, and anticholinergic medications. A diagnosis of anxiety disorder not otherwise specified is made when anxiety symptoms are predominant but do not meet criteria for any of the specific disorders listed above.

Hypotheses regarding individual differences in vulnerability to anxiety include genetic, cultural, and personality factors, early childhood experiences, and other learned factors. When assessing anxiety symptoms in elderly adults, it is important to conduct a clinical evaluation that includes a detailed history of medications and substances used along with laboratory tests that can assist with diagnosing underlying medical conditions.

Various pharmacologic and psychologic interventions are available to target specific anxiety symptoms. Numerous medications are available to treat specific anxiety disorders, most notably the selective serotonin reuptake inhibitors (SSRIs), serotonin/norepinephrine uptake inhibitors (SNRIs), monoamine oxidase inhibitors (MAOIs), buspirone, tricyclics, beta-blockers,

carbamazepine, and benzodiazepines. These medications appear to have the same efficacy in both older and younger adults. The newer medications such as the SSRIs (sertraline, paroxetine, fluoxetine, and fluvoxamine) and SNRIs (venlafaxine, also available in extended release) are the most frequently prescribed anxiety medications, replacing benzodiazepines in both young and old. These newer medications are less toxic in overdose, better tolerated, and have a lower risk of anticholinergic and cardiovascular side effects (orthostatic hypotension, tachycardia, confusion, etc.). This is particularly relevant in the treatment of older adults who are more sensitive to physiologic changes.

Benzodiazepines continue to be used as an acute treatment and as an adjunct to other more effective anxiolytics. To reduce the risk of adverse effects in older adults, it is beneficial to use benzodiazepines that have a short half-life and are inactivated by hepatic (liver) metabolism (e.g., lorazepam). Long-term use of benzodiazepines in the elderly is not recommended due to a number of hazardous complications that may arise such as the potential for dependence, drowsiness, respiratory problems, and cognitive and psychomotor impairment that may lead to falls. Clinical trials have shown buspirone to be an alternative to benzodiazepines in the treatment of GAD. Although it can take up to 4 weeks to achieve therapeutic benefit, it appears to be better tolerated in older adults and produces fewer, if any, side effects when given with other medications the older adult may be taking for medical conditions. Despite these benefits, it is not used often in clinical settings, which may be due to a lack of consistent therapeutic response. When prescribing medications to elderly adults, it is important to consider a number of issues such as physiologic changes associated with aging, presence of medical conditions, and other medications being taken at the time. To reduce side effects, it is generally recommended that medications be started out at a low dose and increased gradually over time.

Common psychotherapeutic treatments include exposure-based therapies, behavioral therapy, cognitive restructuring, and relaxation training. Cognitive behavioral therapy (CBT) has been found helpful in the treatment of GAD to a limited degree with elderly adults, although discussion groups and supportive psychotherapy had similar effects. There is also some evidence that CBT is helpful in treating personality disorders (PDs) in the elderly, lowering both anxiety and depressive symptoms.

Related Topics

- ▶ Cognitive behavioral therapy, ▶ Depression, ▶ Emotions, ▶ Psychotherapy, ▶ Stress

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th ed, text revision (DSM-IV-TR). American Psychiatric Association, Washington, DC
- Beck AT, Emery G, Greenberg RI (1985) Anxiety disorders and phobias: a cognitive perspective. Basic Books, New York
- Brown TA, Barlow DH (1992) Comorbidity among anxiety disorders: implications for treatment and DSM-IV. *J Consult Clin Psychol* 60:835–844
- Flint AJ (2004) Anxiety disorders. In: Sadavoy J, Jarvik LF, Grossberg GT et al (eds) *Comprehensive textbook of geriatric psychiatry*, 3rd ed. Norton, New York, pp 687–699
- Kessler RC, Berglund P, Demler O, Jin R, Merikangas R, Walters E (2005) Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Arch Gen Psych* 62:593–602
- Lauderdale SA, Sheikh JI (2003) Anxiety disorders in older adults. *Clin Geriatr Med* 19:721–741
- McLean PD, Woody SR (2001) Anxiety disorders in adults: an evidence-based approach to psychological treatment. Oxford University Press, New York
- Stanley MA, Beck JG, Novy DM, Averill PM, Swann AC, Diefenbach GJ, Hopko DR (2003) Cognitive-behavioral treatment of late-life generalized anxiety disorder. *J Consult Clin Psychol* 71 (2):309–319

Suggested Resources

- American Association for Geriatric Psychiatry. www.aagpgpa.org

Aphasia

Nimish J. Thakore

Aphasia (also known as dysphasia) implies an acquired disorder of speech or language resulting from brain damage (lesion) or pathology. Aphasia must be distinguished from developmental disorders of language (e.g., developmental dyslexia), dysarthria (abnormal articulation with normal content, such as slurred

speech), dysphonia (abnormal vocalization), and mutism (absence of speech). Aphasia can result from a variety of lesions, usually of the left side of the brain (left hemisphere), such as stroke, trauma, tumor, and infection. Aphasia from stroke has been studied the most. Aphasia can also be a manifestation of diffuse degenerative disorders of the brain such as Alzheimer's disease. Primary progressive aphasia represents a distinctive degenerative process in which there is relatively circumscribed loss of language function.

The prevalence of aphasia is unknown. It is estimated that more than one million individuals in the United States suffer from aphasia. The majority of cases result from stroke or head injury. Stroke alone causes more than 80,000 new cases of aphasia annually in the United States. About 20–30% of stroke survivors are left with persistent aphasia. Because the incidence of stroke and Alzheimer's disease rises with age, aphasia is probably more prevalent in older people. Impaired communication from aphasia results in disproportionately severe loss of autonomy, function, quality of life, and self-esteem.

Historically, our understanding of cerebral function has advanced greatly through the study of aphasia. Pierre Paul Broca (1861) is credited with localizing speech to the left hemisphere. More than 95% of right-handed and up to two thirds of left-handed individuals have language function residing in the left hemisphere. Karl Wernicke (1874) developed a model of language, which was subsequently refined by Ludwig Lichtheim (1885). According to this model, speech areas are located in a region of the left hemisphere surrounding the sylvian fissure (perisylvian region). Within this region, a receptive or sensory area (Wernicke's area) in the left upper temporal lobe recognizes speech that is heard or read. The lower frontal lobe contains the expressive or motor area (Broca's area), which works with spoken or written speech. For understanding speech, Wernicke's area communicates with numerous brain areas farther away from the sylvian fissure (association cortex). Association cortex generates thoughts, which are communicated to Broca's area to be expressed as spoken or written speech. Repetition of speech takes place through a direct communication (arcuate fasciculus) between Wernicke and Broca's areas, and does not need to involve the association cortex. Despite criticism and failings, elements of this classical model have survived for more than a century. Recent advances in neurologic x-ray techniques reveal a more complex network of

cortical areas in both hemispheres involved in the understanding and production of speech.

Aphasia is assessed by neurologists, speech pathologists and therapists, neurolinguists, neuropsychologists, psychiatrists, and other experts who work with stroke or head injury patients. The bedside examination of aphasia involves a systematic study of various aspects of speech including (1) spontaneous speech and fluency, (2) comprehension, (3) repetition, (4) naming, (5) reading, and (6) writing. The presence of pauses, indirect speech, paraphasic errors (word substitutions), or neologisms (nonsensical words) is assessed. Formal assessment of speech involves examination of these modalities using a standardized testing tool, such as the Boston Diagnostic Aphasia Examination or Western Aphasia Battery.

Depending upon the pattern of deficits, aphasia can be classified into types. Motor, expressive, or Broca's aphasia manifests as markedly reduced fluency of spontaneous speech with relatively preserved meaning, preserved comprehension, and impaired repetition. Motor aphasia usually results from a large left frontal lesion. Sensory, receptive, or Wernicke's aphasia presents with poor comprehension, poor repetition, and fluent and sometimes excessive speech output, often with nonsense-type content because of paraphasias and neologisms. Sensory aphasia usually results from a lesion of the left upper temporal region. Conduction aphasia represents a disorder of impaired repetition with relatively preserved comprehension and fluency, attributed to interruption of the arcuate fasciculus (disconnection syndrome). Other disconnection syndromes are transcortical motor and sensory aphasias, from lesions disconnecting motor and sensory areas respectively from the association cortex. Transcortical aphasias differ from corresponding sensory and motor aphasias in that repetition is relatively preserved. Unlike sensory, motor, and conduction aphasias, which result from perisylvian lesions, transcortical aphasias usually result from more peripheral lesions in the left hemisphere. Global aphasia implies loss of all aspects of language function, and usually results from a large left hemispheric lesion. Transcortical sensorimotor aphasia, also known as isolation of the speech area, resembles global aphasia, but repetition without understanding is preserved (echolalia). For most major aphasia types, reading and writing are affected in parallel with verbal language. In addition to these major types, limited syndromes may result from smaller lesions. Word-finding difficulty without significant impairment of fluency,

comprehension, or repetition is also termed anomia or dysnomia. This pattern is not specific to a particular lesion location in the left hemisphere. It is a common language manifestation of Alzheimer's disease. Of interest is alexia (inability to read) without agraphia (inability to write). This unusual disconnection syndrome results from a lesion in the area connecting the two hemispheres and left occipital lobe. Aphasia usually occurs from a cortical lesion (surface lesion of the hemisphere), but may also result from a deep hemispheric lesion. Crossed aphasia refers to the rare occurrence of aphasia from a right hemispheric lesion in a right-handed individual.

Aphasia tends to affect both or all languages in bilingual or multilingual individuals. Often, differential involvement or recovery of languages is seen. There is controversy about which language recovers earlier. One theory states that recovery of the most familiar language is earlier. In contrast, another theory is that the recovery of the native language is earlier.

In the setting of a stroke, patterns of speech deficit can change over time. For instance, sensory aphasia at onset can improve to conduction aphasia over weeks. Aphasia spontaneously improves for as long as 1–2 years after stroke, until a permanent state of functioning is reached. Aphasia is usually treated with speech and language therapy, which involves taking subjects through graded repetitive language tasks tailored to specific deficits, targeting associated attention and cognitive deficits, and teaching compensatory or alternative means of communication. Although convincing evidence of efficacy from randomized controlled trials is lacking, meta-analyses, observational data, and expert opinion do suggest that intense speech therapy, particularly in the first 3 months after stroke, has a favorable effect on eventual language recovery. Alternative treatments, such as medications, are in general less proven and not as popular.

Related Topics

- [Alzheimer's disease](#), ➤ [Communication disorders](#),
- [Dementia](#), ➤ [Speech disorders](#), ➤ [Stroke](#)

Suggested Readings

Albert ML (1998) Treatment of aphasia. *Arch Neurol* 55:1417–1419

- Bhogal SK, Teasell R, Speechley M (2002) Intensity of aphasia therapy, impact on recovery. *Stroke* 34:987–993
- Damasio AR (1992) Aphasia. *N Engl J Med* 326:531–539
- Demonet J-F, Thierry G, Cardebat D (2005) Renewal of the neurophysiology of language: functional neuroimaging. *Physiol Rev* 85:49–95
- Geschwind N (1971) Current concepts: aphasia. *N Engl J Med* 284:654–656
- Geschwind N (1965) Disconnexion syndromes in animals and man. I. *Brain* 88:237–294
- Mohr JP (2005) Aphasia, apraxia and agnosia. In: Rowland LP (ed) *Merritt's neurology*. Lippincott Williams & Wilkins, Philadelphia, PA, pp 8–13

Area Agency on Aging

Sara Ingram

The Area Agencies on Aging are a nationwide network of agencies working together for one common goal. That goal is to plan, coordinate, and offer services to elderly Americans and caregivers. The Agency is an organization in which elderly Americans and their caregivers can gain information and assistance in order to allow the elderly Americans to continue living in their home individually if they choose, and to maintain a certain level of independence. The organization works both on national and state levels to ensure that these citizens have access to relevant information, necessary assistance, and any support that they or their caregivers may need.

The Area Agencies on Aging were created under the Older Americans Act in 1973. This legislation was enacted to assist Americans who were 60 and older to explore care options within their local communities. Later amendments authorized grants to the Area Agencies on Aging.

At the national level, the National Association of Area Agencies on Aging operates as a central facility for the 655 Area Agencies on aging throughout the United States. It is located in Washington, DC, which allows it to advocate for the needs of the organization as a whole. Some of its programs include older driver safety, making the link, and volunteer promotion.

At the state level, the agencies are organized with a central theme in mind, the ability to assist elderly

Americans to live independently in their homes if they choose to do so, as well as to assist their caregivers—whether they are a family member or a close friend. The agencies provide a center for information, programs, and assistance.

Area Agencies on Aging provide numerous services and assistance in a number of areas in services such as referral assistance, health insurance counseling, client assessment, care management, transportation, caregiver support, and retirement planning and education. This type of assistance is given on an individual basis. The client assessment allows individuals to be assessed for their needs and eligibility for certain programs and assistance.

The agencies also provide community-based services that include employment services, senior centers, congregate meals, adult day care services, and volunteer opportunities. The employment services assist elderly Americans in finding employment. The process includes testing, placement, and education. The senior centers and congregate meals allow elderly Americans a place to gather for meals and for social interaction. The agencies also provide various in-home services such as meals-on-wheels, homemakers, chore services, telephone reassurance, friendly visiting, energy assistance and weatherization, emergency response systems, home health services, personal care services, and respite care. These services allow elderly individuals to remain living in their home by bringing meals to their homes, providing cleaning services, and arranging for numerous other services.

The agencies also provide assistance in the area of elder rights such as legal assistance, elder abuse prevention programs, and ombudsmen services for complaint resolution.

The Area Agencies on Aging are used by many different types of people, of which the most common are elderly Americans. Another group that commonly uses the services of the Agencies is that of caregivers. Caregivers are usually family or friends who are ultimately responsible for the care of their elderly loved one. Caregivers use the services to receive information, obtain services such as meals on wheels, and ensure that the elderly individuals in their care are taken care of in the best way possible.

More information about these services and opportunities available to the elderly and their caregivers may be obtained by contacting the community Area Agencies on Aging.

Related Topics

[▶ Access to health care](#), [▶ Activities of daily living](#), [▶ Adult day care](#), [▶ Altruism and volunteerism](#), [▶ Assisted living](#), [▶ Caregiving and caregiver burden](#), [▶ Case management](#), [▶ Family relationships](#), [▶ National Council on Aging](#), [▶ Older Americans Act](#), [▶ Social support](#), [▶ Transportation services](#)

Suggested Resources

Administration on Aging. <http://www.aoa.gov>

Area Agencies on Aging. Mailing address: 1730 Rhode Island Ave, NW, Suite 1200, Washington, DC 20036. Tel: 1-800-677-1116; www.n4a.org

Eldercare Locator. <http://www.eldercare.gov/eldercare/Public/network/aaa.asp>

Older Americans Act & Amendments 42 USC 3001

Arthritis

Douglas Flagg

The word “arthritis” literally means joint inflammation, but in common usage it has come to mean any condition that adversely affects joints. Joints are highly specialized regions where bones join together, allowing movement with minimal friction. In an order of magnitude, there is actually less friction in the interaction of joint components than is produced by ice moving on ice. This is largely the result of the major components of a joint: cartilage, synovial fluid, and the synovial lining. Cartilage is the substance that lies between the bones at the joints and, combined with the synovial fluid, allows for the very low friction between joint surfaces. Cartilage has no blood supply and receives its nutrients from synovial fluid. The synovial fluid in turn gets these nutrients from the small blood vessels (capillaries) in the synovial lining of the joint. These capillaries are different from most in that they are very porous (fenestrated), which allows nutrients to cross into the joint fluid.

The supporting structures of a joint include the fibrous joint capsule as well as ligaments, which connect bone to bone, and tendons, which connect muscle

to bone. Movement is provided by the action of the muscles, either directly or through the tendons. Bursae are spaces that occur in areas with a lot of movement. They may be visualized as deflated balloons containing a few drops of oil, positioned between other moving structures. The two sides of the “balloon” are then able to move against each other with minimal friction. The terms tendonitis and bursitis refer to pain and inflammation of these structures, respectively.

The major symptoms of arthritis are joint pain and stiffness. These as well as other symptoms and clinical findings can be used to provide an organized approach to the diagnosis and treatment of arthritis, of which it is said there are over 100 different types. Broadly speaking, arthritis may be divided into two major categories: inflammatory and noninflammatory. In inflammatory arthritis, as the name implies, there is an active immune response involving the joint. In contrast, in noninflammatory arthritis, there is minimal if any active immune response. The duration of the arthritis is another critical factor to determine. Acute arthritis usually comes on suddenly and lasts less than 6 weeks, while chronic arthritis is defined as lasting more than 3 months.

Arthritis may be further characterized by the number and type of joint(s) involved, and the symmetry of the arthritis. Polyarthritis involves multiple joints, while oligoarthritis (or pauci-arthritis) involves three or less, and monoarthritis involves only one. Symmetric arthritis involves the same joint or group of joints on both sides of the body at the same time, and is contrasted to asymmetric arthritis, in which a given joint is only involved on one side. An example of symmetric arthritis would be one that involves both wrists, while asymmetric arthritis might involve the right ankle and the left wrist. Thus inflammatory arthritis that lasts more than 3 months and involves multiple joints in a symmetric fashion may be referred to as “chronic symmetric inflammatory arthritis.” This approach greatly narrows down the types of arthritis that need to be considered in a given patient.

Pain is the symptom of arthritis for which most people seek treatment. The precise location of pain as well as factors that aggravate and improve it is helpful in determining the type of arthritis. Another useful symptom is that of morning stiffness. In inflammatory arthritis the stiffness or “gel” on first arising in the morning will usually last for longer than an hour, while in noninflammatory arthritis it frequently lasts less than 30 minutes. This is the single most useful

symptom in differentiating between these two categories, as morning stiffness (with the important exception of fibromyalgia) that lasts more than an hour is almost always a sign of inflammatory arthritis.

Clinical characteristics of all types of arthritis include joint warmth, redness, and swelling. When synovial fluid accumulates to the point that it is clinically apparent, it is referred to as an effusion. In all types of arthritis this synovial fluid can be expected to contain inflammatory cells. These cells are derived from circulating white blood cells (WBCs) and their number and type can be helpful in distinguishing between various types of arthritis. In inflammatory arthritis synovial fluid contains a large number of these cells, while in noninflammatory arthritis their numbers are usually low. Warmth and redness are also more prominent in inflammatory arthritis and are usually a reflection of inflammation of the synovial lining of a joint.

Lab evaluation of arthritis may also be very helpful in determining whether it is inflammatory or not. Tests for inflammation such as the erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) may be elevated. Anemia may also be prominent. In some types of arthritis the presence of autoantibodies may be diagnostic. Autoantibodies occur when antibodies are formed to normal cellular structures. In some cases, these antibodies are felt to be the cause of the arthritis; in many others, their role is less clear, but they remain useful for diagnostic and prognostic purposes. Many other specific tests for different types of arthritis are also available.

X-rays also help to differentiate types of arthritis. Since cartilage does not show up on x-rays, the condition of the cartilage is inferred by the space remaining between the bones called the joint space. Other signs that may be noted on x-ray include erosions (where the inflamed tissue has eaten into the bone), thickening or sclerosis of the bone beneath the cartilage, bony proliferation, and even bony fusion (ankylosis) of the joint. Other types of x-rays such as computed tomography (CT) and magnetic resonance imaging (MRI) may also be helpful in select cases.

► *Table 1* shows some common examples of the different types of arthritis, based on the above criterion. These types of arthritis may be further divided into more specific categories in terms of whether they are acute, symmetric, etc. It is important to note that these differentiations are not absolute and there is much overlap between categories.

■ **Table 1**

	Polyarthritis	Monoarthritis
Inflammatory	Rheumatoid arthritis	Gout
	Systemic lupus erythematosus	Infectious arthritis
	Serum sickness	Reactive arthritis
	Viral arthritis	
Noninflammatory	Osteoarthritis	Traumatic arthritis
	Hemochromatosis	Osteoarthritis
	Acromegaly	Osteonecrosis

Treatment of arthritis varies depending on the type of arthritis; however, some basic principles apply. The main goals of treatment are the alleviation of pain, maintenance of joint function, and prevention of further joint damage. Medications play an important role, but should be used in conjunction with physical therapy and exercise when appropriate. Maintaining a proper diet and body weight is also very important. Literally hundreds of treatments, both mainstream and alternative, are available. Some have been shown to be effective and many have not. Given the chronic nature of arthritis pain and the lack of a complete cure, arthritis patients are frequently taken advantage of by those whose interest is more financial than altruistic. Thus it is wise to be wary of treatments that seem too good to be true.

Medications used in the treatment of arthritis begin with those that are least likely to cause side effects. Pain medications such as acetaminophen (Tylenol) are often the first line of therapy. Many patients benefit from nonsteroidal anti-inflammatory drugs (NSAIDs), although increasing attention is being given to their gastrointestinal, cardiac, and other side effects. For those not responding to the above, stronger pain medications such as narcotic analgesics may be considered. In inflammatory arthritis, the use of corticosteroids, which are potent anti-inflammatory medications, may be very beneficial, but their long-term use is limited by side effects. Corticosteroids may also be given by injection directly into a joint or localized area of pain. This allows for immediate benefit with minimal systemic effect. Medicines that suppress or alter the functioning of the immune system, known as immunosuppressive medications, are frequently used in the treatment of inflammatory arthritis.

Physical therapies play an important role in arthritis. Pain is often caused or aggravated by mechanical

forces on the joint and muscle imbalances. Muscles act as the shock absorbers for the joints, so maintaining proper muscle strength and balance through carefully selected exercises is critical to restoring proper functioning of the joint. Modalities such as heat, massage, and ultrasound may also provide some benefit.

When the above therapies fail to provide adequate pain relief or restore the joint to an acceptable level of functioning, surgery may be of benefit. Joint replacement surgery is now one of the most commonly performed surgeries with over half a million hip and knee replacements performed each year.

By following a carefully considered approach, accurate diagnosis and effective treatment may be realized in most cases of arthritis. Recent advances in understanding the basic mechanisms for arthritis have led to treatment breakthroughs in many conditions. We can anticipate more such advances in the near future.

Related Topics

[▶ Fibromyalgia](#),
 [▶ Osteoarthritis](#),
 [▶ Rheumatoid arthritis](#),
 [▶ Systemic lupus erythematosus](#)

Suggested Readings

Klippel JH (ed) (2001) Primer on rheumatic diseases, 12th ed. Arthritis Foundation, Atlanta, GA
 Moskowitz R (ed) (1989) Clinical rheumatology, 3rd ed. Saunders, Philadelphia, PA

Suggested Resources

American College of Rheumatology. www.rheumatology.org

Asians and Pacific Islanders

Christina M. Saunders Sturm

The US Census Bureau estimated that in 2004 approximately 13 million Asian Americans and Pacific Islanders (AAPIs) were residing in the United States, almost 2 million of whom are aged 55 and older.

Approximately 3% of the 65 and older US population is Asian American (AA), and a much smaller percentage is Native Hawaiian and Other Pacific Islander (NHOPI). The percentage of both groups is expected to rise, with AAs growing to 8% by 2050, an estimated 7 million individuals. Although Asians are the smallest of the largest four racial and ethnic groups (white, non-Hispanic; Hispanic; Black and Asian), they are the fastest-growing minority group overall and the second fastest-growing older group.

AAPIs elders constitute a highly diverse group of individuals, not only culturally but also in terms of socioeconomic standing, access to health care, acculturation to the United States (including English language proficiency), healthy lifestyle practices, and morbidity and mortality patterns. Current thinking, incorporated into the 2000 Census, differentiates the AAPI political category into two major subgroups: AAs, representing dozens of cultural groups from almost 30 nations of the Far East, Southeast Asia, and the Indian subcontinent; and NHOPIs, representing 20 Pacific Island cultures. Over 100 languages and a multitude of cultural and religious beliefs are held. Older AAPIs in particular are likely to hold fast to their native traditions and beliefs, creating a need for providers to learn how to interact and communicate with their clients in a way that recognizes, acknowledges, and respects the cultural contexts of their lives.

An important rationale for subdividing the AAPI grouping into AAs and NHOPIs is that there are the many important differences in health indicators between these two groups. While the data are very limited, all indications are that AAs as a whole have much better health and life expectancy than NHOPIs, although there is great diversity between AA subgroups as well. Because AAs constitute 95% of the AAPI category, the problems of NHOPIs have been masked. For example, life expectancy is about 80 years for most AAs (5 years higher than that of white Americans), whereas it is only slightly more than 68 years for Native Hawaiians and Samoans. The age-adjusted death rate for all AAPIs is 350 per 100,000, whereas that of Native Hawaiians alone is 901 (compared with 524 for the total US population). The leading causes of death for AAs are cancer, heart disease, and stroke, whereas for NHOPIs they are cancer, heart disease, and diabetes.

Other important mortality risk differences exist between subgroups that need investigation. According to the National Healthcare Disparities Report

(NHDR) released in 2004, AAPIs, like other racial and ethnic minorities, tend to have worse health and lower-quality health care when compared to whites, although their overall life expectancy and activity levels are higher. In particular, many AAPIs subgroups tend to suffer disproportionately from cardiovascular disease, certain cancers (liver and stomach), tuberculosis, diabetes, and hepatitis. Older AAPIs appear to suffer disproportionately from dementia and other mental disorders that are very difficult to access care for, especially among non-English proficient elders. Cancer screening rates are significantly lower. AAPIs report longer waits to see their provider, rate their health as being worse, and have difficulty understanding health-care directions. This population does fare somewhat better than most other minorities even on measures where they lag behind whites; however, indications are that the overall AAPI statistics mask severe disparities with the NHOPI populations. Diabetes, cardiovascular disease, and risk factors such as obesity, smoking, and physical inactivity are present at high levels in these populations.

AAPIs, particularly NHOPI communities, are often underserved, and the services are even further underutilized. For immigrant older adults, there are substantial adjustment issues as they are more likely to experience stress associated with the acculturation process, isolation due to language barriers, devaluation of their status as an elder, and difficulty adjusting to their separation from homeland friends, families, communities, and peers. The NHDR did find that AAPIs do compare well in terms of patient safety, timeliness of care received, and patient-centered quality of care, although the measures for Asians alone are somewhat lower than whites and there is a great deal of variation between subgroups when categorized by national origin.

Baseline data on each unique AAPI subgroup need to be systematically collected in order for empirically based health initiatives such as the goals of Healthy People 2010 to be addressed. The relative dearth of data in combination with the perception of AAPIs as passive, compliant, and without needs has led to the real problems of these communities being ignored. Cultural factors such as an unwillingness to seek public sector care or to express needs contribute to the failure to seek out available resources. Elders may particularly benefit not only from better access to culturally appropriate health care but also from social services and social interaction. A “model minority” that has

additionally been stereotyped as wealthy and educated with relatively good health—A APIs in general, let alone the older population—has not been closely studied. Although it is clear that data are lacking due to small sample sizes and the concentration of the populations in specific states (California, New York, and Hawaii), there has been little effort to oversample the population or to use other methods that could enable comparative statistical analyses of the A API population as a whole or of its many subpopulations.

Elder A APIs have substantial barriers to good health care and healthy practices. Many live in substandard housing, lack health insurance, and have unreliable transportation options. These issues of poverty are important to many elders as the current estimated 24.1% of AAs living in poverty does not include NHOPIs, who, according to data from the US Census Bureau, tend to be less affluent, and masks the elderly, who also tend to be poorer. In addition, a large percentage of the AA population consists of immigrants who often have difficulty navigating the health-care system, due to the unfamiliarity of the system and, more importantly, limited English proficiency (LEP). While LEP affects each subgroup at different levels, the highest levels are among AA subgroups such as the Hmong and Cambodians and the lowest levels are among NHOPIs.

LEP is an extremely serious barrier for elder A APIs, particularly those from Southeast Asia. LEP may lead to misunderstanding of directions as well as inability to access educational materials in the patient's native language. Evidence suggests that acculturation level, as measured by language use at home, is an important indicator of access to quality care, with those who are more acculturated having the best care relative to those who are least acculturated.

Cultural barriers are critical to accessible quality care as well. Providers need to understand the cultural context of symptoms in order to interpret their meaning and potential causes as well as to understand the variety of causal understandings and treatment options a particular population may ascribe to. Attitudes about the body as well as the position of the care provider may influence the client-provider interaction in important ways that the provider needs to understand and respond to appropriately. Providers often rely on "on-the-spot" translators such as family members or non-clinical hospital staff, leading to costly and sometimes dangerous results. Fortunately, translation services that provide professionals who are trained advocates

and are competent in the cultural as well as the language components of translation are becoming more available.

Use of traditional or complementary and alternative medicines (T/CAM) by older A APIs appears to be high, especially in a context in which the most accepted forms of T/CAM and the most readily available, such as acupuncture, manipulation, and herbal supplements, tend to have Asian origins. However, many insurers, including Medicaid and Medicare, do not pay for these treatments. It is important that providers be able to establish a relationship of open communication and trust with their clients that allows for discussion of T/CAM options in a context of a holistic approach to healing that will fit with a more culturally appropriate model of health and healing for these communities.

In addition to the need for more research and data collection, there is a pressing need for culturally appropriate services geared toward each distinct older A API population's needs and strengths. A holistic approach that values the cultural strengths of the target community and works to build infrastructural capacity as well as identifying, training, and providing culturally competent providers will work toward addressing the many health-care needs of these distinct and widely diverse populations. Working with communities to identify critical concerns and culturally appropriate services should be a core strategy of any intervention effort. Many people concerned with the health of A APIs also argue that without a special federal designation for institutions and organizations targeting A API populations, capacity building within A API communities will remain limited as they are denied access to the services and funding available to other designated minority groups.

Related Topics

- ▶ [Acculturation](#), ▶ [Minority seniors](#), ▶ [Morbidity](#), ▶ [Mortality](#)

Suggested Readings

Federal Interagency Forum on Aging Related Statistics (2004). *Older Americans 2004: key indicators of well-being*. Federal Interagency Forum on Aging Related Statistics. Government Printing Office, Washington, DC

- Ghosh C (2003) Healthy people 2010: Asian Americans/Pacific Islanders: defining a baseline of information. *Am J Pub Health* 93:2093–2098
- Hoyert DL, Kung H-C, National Center on Health Statistics (1997) Asian or Pacific Islander mortality, selected states, 1992. *Monthly Vital Statistics Report* 1997. 46(1)(Suppl). Publication PHS 97–1120
- Keppel KG, Pearcy JN, Wagener DK (2002) Trends in racial and ethnic-specific rates for the health status indicators: United States, 1990–1998. *Healthy People 2000 Statistical Notes* 23

Suggested Resources

- AHRQ 2004 National Healthcare Disparities Report. http://www.qualitytools.ahrq.gov/disparitiesreport/archive/2004/download/download_report.aspx
- Asian and Pacific Island American Health Forum. <http://www.apiahf.org/>
- Association of Asian Pacific Community Health Organizations. <http://www.aapcho.org/site/aapcho/>
- Centers for Disease Control Office of Minority Health. <http://www.cdc.gov/omh/>
- National Asian Pacific Center on Aging. www.napca.org
- National Library of Medicine, Asian American Health. <http://asian-americanhealth.nlm.nih.gov/chronic.html>
- President's Commission on Asian Americans and Pacific Islanders (2003) Asian Americans and Pacific Islanders addressing health disparities: opportunities for building a healthier America. http://www.aapi.gov/Commission_Final_Health_Report.pdf
- Understanding Our Users: How to Better Deliver Online Health Information to Asian Americans, Native Hawaiians, and Other Pacific Islanders. <http://odphp.osophs.dhhs.gov/projects>
- US Census Bureau (2002) Health, United States, 2004, table 1. <http://www.cdc.gov/nchs/data/hus/hus04trend.pdf#001>
- For health information resources in Asian and Pacific Island languages, check out <http://www.healthfinder.gov/justforyou/justforyou.asp?KeywordID=217&branch=1>

Assisted Living

Mary Jane Nottoli

Older persons today are healthier and with fewer disabilities than their counterparts from previous generations. However, the rapid growth of the segment of the population aged 85 or older poses a challenge relative to service delivery and long-term care policy. In addition to increased prevalence of chronic conditions, individuals in that age group are also likely to

experience functional limitations, necessitating help with their activities of daily living.

Services in a nursing home cost, on average, \$5,400 a month. Additionally, nursing homes tend to be modeled on hospitals, placing emphasis on efficiency and routine ahead of individual preferences. Assisted living emerged in the 1980s as an alternative to nursing homes to address the needs of these elders.

Assisted living aspires to provide care in a home-like environment while preserving the highest level of independence possible, and with special attention to personal dignity issues. Assisted living residences seek to offer personalized services with activities like bathing, dressing, meals, toileting, and medication management.

Regulations governing assisted living facilities vary across the nation, along with the different types of services and living quarters among such facilities. Most assisted living residences offer an assortment of services in addition to help with activities of daily living, although some facilities might require an additional fee. Living quarters may be as simple as a room located within a larger building or facility, whereas others may be as elaborate as an individual cluster of homes allowing for residents to use their own furniture.

As expected, fees increase with more ornate living quarters and more inclusive services. Although assisted living is usually paid for by the resident and the family, some costs may be reimbursable depending on the nature of the individual's health or long-term care insurance. Public policy, as evidenced by funding regulations, has generally favored nursing home care. However, some states use Medicaid waiver programs to help pay rent on behalf of income-eligible seniors to live in assisted living residences.

Because of the variability of models and services, it is advisable to use a systematic selection process before making a choice once the decision to enter an assisted living residence has been reached. A good beginning is to obtain a list of assisted living facilities in a geographic area from the Department of Health and Human Service's Elder Care Locator. This public service connects individuals with sources of information on senior services in individual states and local communities. Local offices of the Nursing Home Ombudsman maintain lists of assisted living residences as well as nursing homes. The Assisted Living Federation of America provides information about assisted living and a checklist to aid in the selection process. Other sources of information include the local Area Agencies

on Aging and the American Association for Retired Persons.

Some facilities give information and answer questions over the telephone, whereas others send brochures. Some even have information available online. It is sometimes possible to edit a long list of possible facilities based upon information gathered in this way. For example, one can ask about monthly cost, what is included in that cost, and what is available for an added fee; current openings and size of living quarters; geographic location, and its accessibility to shopping, banking, and medical services as well as proximity to family and friends; and the different levels of wellness and independence in their criteria for admission. One can then select a number of possibilities based on the facilities providing favorable answers to relevant questions on the telephone, via their brochures, or through the Internet. A visit in person can then be arranged to the facilities of interest.

Armed with a consumer checklist obtained from one of the helpful agencies or a prepared list of considerations important to the proposed resident, one can evaluate the individual assisted living residences in person. Because of the lack of standardization and regulation, there is no single source of information regarding quality, cost, services included, or accessibility of medical and social services in assisted living facilities. While visiting individual residences, one can inquire about each of these areas, as well as about the average level of dependence of current residents and the type of procedures followed when a resident becomes more dependent. Recalling that assisted living is largely private pay, it is likely that a resident will have to relocate if he or she outlives funds. Therefore, it is important to learn whether that process is facilitated by the assisted living staff.

There are a number of resources with information to help the selection procedure. Geriatric specialists, including physicians, nurses, and social workers, are often knowledgeable and skilled at guiding individuals through the process. Their input helps avoid some of the pitfalls and/or poor choices. The goal is to find an assisted living residence that provides services essential to the individual and in which the resident feels at home.

Assisted living can offer a long-term care option that combines housing, support services, and health care to seniors seeking to live an independent lifestyle with assistance that is customized to meet their needs. As residential care facilities, adult congregate living

facilities, personal care homes, or community residences, assisted living offers a unique transition from independent living without care to living with independence and care combined.

Related Topics

- ▶ Activities of daily living, ▶ Area agency on aging,
- ▶ Long-term care, ▶ Long-term care insurance,
- ▶ Nursing homes

Suggested Resources

Elder care Locator. www.eldercare.gov/Public/Home.asp
 Navigating your way to a Quality Assisted Living Facility, American Association for Retired Persons. www.aarp.org/caregiving
 What is Assisted Living? Assisted Living Federation of America. www.alfa.org/public/articles

Attachment Theory

Sara Harkness · Marjolijn Blom

A child's "attachment" to its mother or other caregiver is important for well-being and development; the relevance of attachment to functioning in later life has only recently begun to be recognized and researched. Attachment theory traces its roots to the work of John Bowlby, a British psychoanalyst who, drawing from ethology and other disciplines, proposed that a child's need for protection and proximity to its mother is as fundamental as its need for food or physical comfort. Attachment, he suggested, is an evolutionarily adaptive behavioral system that is activated when fulfillment of this need is threatened, as when the mother departs.

Mary Ainsworth, Bowlby's student and colleague, extended this theory to address the question of variability in infants' attachment-related behaviors, both in naturally occurring situations and in a laboratory procedure called the "strange situation," in which an infant and its mother are put through a controlled series of separations and reunions. Ainsworth identified a behavioral pattern of "secure attachment"

evident in approximately two thirds of infants, in contrast to two different styles of “insecure attachment” (avoidant and anxious) in the remaining third; recently, a fourth pattern called “disorganized attachment” has also been identified. Attachment theorists believe that the most important determinant of a child’s attachment style is the mother–child relationship, especially “maternal sensitivity” to the infant’s signals of distress. Through repeated experiences of maternal responsiveness (or lack thereof), it is hypothesized that infants develop “internal working models” or expectations of how important others in their environment will respond to their need for protection and security.

Attachment Theory and Adult Health

The relevance of the idea of attachment for adult health and well-being rests on four basic premises:

1. An individual’s “internal working model,” developed in infancy, becomes integrated into personality and is carried forward throughout the life course, although it may be somewhat modified by other experiences including psychotherapy.
2. “Secure attachment” is essential for the individual’s propensity to explore the environment and ultimately become autonomous, necessary for the development of social competence as well as learning and emotion regulation.
3. “Secure attachment” in infancy and early childhood influences the individual’s ability, as an adult, to form other successful love relationships such as with a spouse.
4. Patterns of attachment are transmitted to the next generation, such that insecurely attached parents may raise children who are also insecurely attached. Furthermore, insecurely attached mothers are more vulnerable to the effects of loss or other trauma, resulting in caretaking behavior that may confuse or frighten the child and lead to the “disorganized” attachment pattern.

Cultural Considerations

A growing body of research has attempted to test these premises, using a variety of methods including the adult attachment interview (AAI), developed by Mary

Main, which elicits memories of childhood and particularly the quality of the early relationship with parents. The results of these studies have demonstrated the usefulness of the attachment construct for understanding disorders such as depression, conflicts in close relationships, and the effects of loss as in bereavement.

At the same time, much attachment research is founded on culturally based ideas about what constitutes “healthy” or “successful” development, and it may thus contribute to a failure to recognize other culturally normative patterns of family interaction and individual development. For example, the emphasis on autonomy and separation, which lies at the core of attachment theory, may be a good representation of current American middle-class beliefs and values, but it fails to capture different cultural pathways of development that emphasize social harmony and interdependence, as in Japan. Furthermore, attachment theorists tend to overemphasize the importance of the pair bond starting in adolescence, to the neglect of other continuing attachments such as those between siblings or between parents and their adult children. Finally, with a few exceptions, attachment theorists have given little attention to the role of other individual differences such as temperament in mental health, thus perpetuating the myth of the mother as the sole source of individuals’ socioemotional well-being over the life course. In summary, the study of attachment in adulthood is a field still in its infancy, with much potential for healthy growth and development.

Related Topics

➤ [Depression](#), ➤ [Family relationships](#)

Suggested Readings

- Bowlby J (1980) Attachment and loss: loss, sadness, and depression. Basic Books, New York
- Grossman KE, Grossman K, Waters E (eds) (2005) Attachment from infancy to adulthood: the major longitudinal studies. Guilford Press, New York
- Magai C, Considine NS (eds) (2004) Attachment and aging. *Attach Hum Dev (Special Issue)* 6(4)
- Parkes CM, Stevenson-Hinde J, Marris P (1991) Attachment across the life cycle. Tavistock/Routledge, New York
- Rothbaum F, Weisz J, Pott M, Miyake K, Morelli G (2000) Attachment and culture: security in the United States and Japan. *Am Psychol* 55(10):1093–1104

Autoimmune Disorders

Lori B. Siegel

The immune system, which consists of white cells that fight off infection, is a very complex and exquisite mechanism in which the body can rid itself and kill foreign organisms that invade the host (body) while trying not to kill the host. There are specialized cells called T cells and B cells that help recognize these foreign proteins or antigens and then remove them from the body. At times, the immune system may err and attempt to attack the host tissues—as occurs in septic shock and autoimmune diseases. The main task of the immune system, however, is to protect the individual from infectious organisms (nonself) without serious injury to self.

Almost any molecule can elicit an immune response and the body learns tolerance or the ability to tell the difference between itself and foreign tissue, so that it can destroy the latter but not react against the constant exposure to one's own tissues. The immune system is constantly undergoing diverse strategies to avoid autoimmunity, where the body fights against itself. The key mechanism in the peripheral immune system is the cells that gather up the host's dead tissue, react to an invading organism, or display certain patterns of receptors on their surfaces. These patterns of receptors allow the body to recognize whether something is foreign or not. When a white cell finds a foreign protein, the pattern it displays on its surface triggers a strong reaction; the body then communicates via various chemicals and appropriate cells are mobilized to kill that organism. When the white cell encounters normal tissue, there is no reaction. Even though there is a sophisticated and overlapping system in place to avoid autoimmunity, these autoimmune conditions still occur.

Although the direct cause for this to occur is not clear, many theories and clues help in understanding this phenomenon. One theory is that autoimmune disease develops subsequent to immunization. Some foreign proteins may have deoxyribonucleic acid (DNA) protein similarities to the person's own protein and cause confusion in the immune system, and the response is not only against the foreign organism but also against the similar host protein. Another proposed mechanism of autoimmunity is that of an infection

initiating autoimmune disease. Some diseases that are considered autoimmune in nature are initially beyond a doubt triggered by a previous exposure to an infection. This is seen with the reactive arthritis that develops after exposure to a nongonococcal urethritis or following gastroenteritis from shigella or salmonella.

It is felt that in these conditions the bacterial antigens are similar to host proteins and the cross-reactivity to the host tissues causes a powerful immune response. Infectious organisms can also alter the immune system directly. Viruses, such as Epstein-Barr, may cause the normal immune system to recognize cells affected by the virus as foreign and set up a path for autoimmunity. Mutations during the development of the immune system or spontaneous mutations may also set up for autoimmune diseases.

Autoimmune disease can affect any body part. Some organs may be affected initially and over time other organs may be affected. The diagnosis of autoimmune disease is not easy and may require repeated histories and physical examinations over time along with blood tests. Patients tend to evolve into a diagnosis than have the diagnosis made at the first visit.

The signs and symptoms of autoimmune diseases are grouped and categorized to help make diagnoses or establish disease conditions. Criteria for each disease or condition have been established but these are primarily for research purposes, and in the real world most people have signs and symptoms from a variety of disease groups. Autoimmune diseases must be diagnosed with extreme caution because many other diseases may mimic them. The danger is in the treatment of autoimmune disease. Because the immune system is hyperactive in autoimmune disease, treatment is aimed at suppressing the immune system. If other mimics of autoimmune disease are treated with immunosuppression, they could rapidly progress and become fatal. Even if the diagnosis of autoimmune disease is certain, the patient must be carefully evaluated to be certain that there is no lurking infection or malignancy.

The classic, prototypic autoimmune disease is systemic lupus erythematosus (SLE). The primary abnormality in SLE is production of autoantibodies to the proteins found in the core of normal cells. SLE may affect the entire body and any organ by either direct antibody attack or precipitation of the antibodies within the organ. The classic symptoms include arthritis, butterfly rash, and inflammation of the lining of the heart and lungs.

Rheumatoid arthritis is another classic autoimmune disease that can cause a symmetric and destructive erosive arthritis. Despite its name, rheumatoid arthritis can affect the entire body, not just the joints. It can cause damage in the skin, lungs, eyes, and heart.

Inflammatory muscle diseases are also autoimmune processes. These conditions cause weakness and breakdown of muscle tissue. The inflammation may be in the muscles themselves or in the blood vessels supplying blood to the muscles. The classic picture in these conditions is a symmetric weakness or pain in the muscles in the shoulder and hip areas. Patients have difficulty getting out of a chair or holding their arms up to comb their hair. In severe cases, patients may have difficulty holding their head up due to neck muscle involvement. If the respiratory muscles are involved, breathing may be compromised. The lungs may also be directly involved with the damage and cause further compromise. With some of the muscle diseases, there is an associated rash on the trunk or over the joints.

Laboratory findings of inflammatory muscle disease reflect breakdown of muscle tissue with elevations in muscle protein. Certain antibodies may be positive and are associated with lung involvement, which carries a worse prognosis. Special electrical tests of the muscles and nerves may be useful in identifying a specific group of muscles that are really inflamed, which may lead to a directed biopsy. The muscle biopsy may reveal chemical abnormalities in the muscle that cannot be detected through routine blood tests. It is important to note that patients with new onset muscle weakness and an associated rash may have dermatomyositis, a disease that is associated with cancer, in 25% of the cases. Many of the patients who present with this condition do not know they have an associated cancer and it is up to the health-care provider to look for a malignancy in patients who have this disease.

Scleroderma is another autoimmune disease that causes hardening and tightening of the skin. The materials that cause scarring and scar tissue formation are deposited in excess in these patients. Patients with scleroderma may have a wide spectrum of disease manifestations and severity. Patients often have Raynaud's phenomenon (sensitivity to cold and color changes associated with cold) or calcium deposits in the skin and muscles. They may have mild skin thickening or widespread skin involvement. Some patients progress

to have kidney, lung, and heart involvement as well. The treatment of this disease is limited but research is ongoing.

Another large class of autoimmune conditions are those that cause inflammation of the blood vessels directly or vasculitis. Vasculitis may affect any size of blood vessel, and the clinical features commonly include fever, general malaise, and multiorgan involvement. In cases in which a diagnosis of vasculitis is considered, infection must be thoroughly evaluated and ruled out. The degree of organ involvement must also be thoroughly investigated and all organs examined. Signs of underlying vasculitis may be subtly found in the hands, oral mucosa, skin, and nails. A complete examination of the urine, blood, and stool should be done to look for evidence of vasculitis. Tissue biopsy is often necessary to confirm the diagnosis and allow for disease categorization. Knowing the size of vessel affected helps in determining the type of vasculitis. Small-vessel vasculitis usually involves the skin, joint, and gastrointestinal (GI) tract. Small-vessel vasculitis may also affect the brain and cause subtle behavioral or neurologic conditions. Medium-vessel vasculitis often involves the lungs and kidneys. Some classic conditions are polyarteritis nodosa, Churg–Strauss vasculitis, and Wegener's vasculitis. Large-vessel vasculitis includes Takayasu's vasculitis, polymyalgia rheumatica, and temporal arteritis. A good and detailed history usually reveals classic symptoms of these disorders. Autoimmune disorders may also cause endocrinologic disorders such as diabetes and thyroid conditions. Some neurologic conditions, such as multiple sclerosis, and hematologic conditions are also autoimmune. Interestingly, more than one autoimmune disease may occur in an individual, affecting different areas. These conditions may flare and remit, and the patterns need to be followed to help patients cope with their conditions. Often a full picture of the autoimmune disease may not become clear until years after the initial presentation. Patience and persistence in these complex and confusing patients will, with time, reveal the right diagnosis and allow appropriate treatment.

Related Topics

- ▶ [Giant cell arteritis](#), ▶ [Rheumatoid arthritis](#), ▶ [Scleroderma](#), ▶ [Systemic lupus erythematosus](#)

Suggested Readings

- Klippel JH (ed) (2001) *Primer on rheumatic diseases*, 12th ed. Arthritis Foundation, Atlanta, GA
- Klippel JH, Dieppe PA (1998) *Rheumatology*, 2nd ed. Mosby, St. Louis, MO
- Klippel JH, Dieppe PA, Ferri FF (2000) *Primary care rheumatology*. Harcourt, London

Autoimmune Theory of Aging

Jessica Diggs

The autoimmune theory of aging, introduced by Roy L. Walford in 1969, asserts that with age, the immune system tends to lose efficiency and experiences widespread dysfunction, evidenced by autoimmunity (immune reactions against one's own body proteins) and a decreased ability to respond to infection and other immune challenges. Human immunity is a highly regulated and coordinated process, and is often divided into two components. The first, known as innate immunity, provides a defense against pathogens (potential disease-causing agents) in a nonspecific way; and the second, known as adaptive or protective immunity, involves a specific response to a pathogen that the body has seen before. Once the body is exposed to an antigen (a foreign substance or pathogen capable of causing an immune response), antibodies will be produced that specifically target that antigen.

There are many different types of cells that are involved in protecting the body against infection; the primary cells involved in the adaptive immune response are called B and T cells. B cells, which function to produce antibodies, are produced in the bone marrow. The bone marrow is the tissue located in the inside of larger bones, where red blood cells, white blood cells (immune cells), and platelets are produced. Immature white blood cells mature into T cells in the thymus gland, which lies in the upper part of the chest. There are several types of T cells, including helper T cells that produce chemical signals in order to initiate the immune response, and cytotoxic T cells responsible for destruction of antigen-bearing targets.

Age-Related Changes to the Immune System

As a person ages, the thymus gland progressively shrinks in size and decreases functionality. While the absolute number of cells remains relatively constant, T-cell function and responses are decreased, making the elderly more susceptible to the development of tumors and decreasing a person's ability to fight against viral illnesses. The amount and type of antibodies produced in response to immune stimuli are also decreased with age. This may be due to an increased proportion of senescent (nondividing) cells with age (see Cellular theory of aging) or a general degeneration of the cells of the immune system. The lack of this antibody response makes the elderly more susceptible to infectious diseases.

As a person ages there are several notable changes to the immune system, one of which is an increase in autoantibodies. These are antibodies that have lost their ability to distinguish "self," cells of the individual aging person's body, from "nonself." Examples of "nonself" cells are cells that are infected with a pathogen, cancer cells, pathogenic organisms, or foreign cell types that have infiltrated the body. Instead of having specificity for "nonself" antigens, these antibodies attack "self" antigens, leading to the dysfunction and destruction of normal body tissues—a phenomenon often referred to as autoimmune disease. The development of autoantibodies may potentially result from genetic errors that accumulate with age in cells of the immune system (see Error accumulation theory of aging).

Despite the observed increase in the number of these autoantibodies, the incidence of autoimmune diseases has not been shown to increase with age. Some examples of autoimmune diseases are systemic lupus erythematosus, a systemic autoimmune disease affecting many parts of the body including the skin, kidneys, lungs, joints, blood vessels, and brain, and myasthenia gravis, a rare muscular disease associated with progressive weakness of the eyes, face, and neck muscles, in which autoantibodies attack neuromuscular junctions (areas where the nerves that control muscle function and muscle fibers meet). Other more commonly recognized autoimmune diseases include rheumatoid arthritis, insulin-dependent diabetes mellitus, and multiple sclerosis.

Public Health Perspective

Health-care professionals, public health professionals, and personal caregivers responsible for the care of aging adults must be aware and account for the changes in the immune system with age. There is also significant interindividual variability in the immune response, with many elderly individuals having normal immune function. Recognizing this variation may be particularly important for those involved in clinical research with the elderly, since this variability may limit the generalizability of study results. Although studies have not drawn a causal link between immune dysfunction and an increased incidence of autoimmune diseases or increased rates of specific infections, the elderly have been shown to experience disproportionate morbidity and mortality related to these conditions and to decreased immune functioning. Elderly people should therefore be closely monitored for the development of age-associated autoimmune diseases or cancers, and should be treated promptly and aggressively.

Given the potential for reduced defenses against infections, elderly adults should be vaccinated to prevent infections from occurring and should be given additional care as required, when faced with common infections. These precautionary measures are particularly important because the elderly tend to experience more comorbid disease and use more medications.

Both comorbidity and medication usage can lead to compromised immune function and limit the ability to cope with infection and disease. Supplementation with immune-stimulating nutrients and vitamins or medications to encourage immune-cell regeneration may prove helpful in preventing some of the negative effects of age-related immune system dysfunction.

Related Topics

[▶ Arthritis](#), [▶ Cellular theory of aging](#), [▶ The error catastrophe \(accumulation\) theory of aging](#), [▶ Immunizations](#), [▶ Multiple sclerosis](#), [▶ Polypharmacy](#), [▶ Vitamins](#)

Suggested Readings

- Hazzard WR (1999) Principles of geriatric medicine and gerontology, 4th ed. McGraw-Hill, Health Professions Division, New York
- Holliday R (1995) Understanding ageing. Cambridge University Press, Cambridge
- Janeway CA Jr, Travers P, Walport M, Schlomchick M (2005) Immunobiology: the immune system in health and disease, 6th ed. Garland Science Publishing, New York
- Maddox GL (1987) The encyclopedia of aging. Springer, New York
- Morley JE, Berg, Van den L (2000) Endocrinology of aging, 20th ed. Humana Press, Totowa, NJ
- Schneider EL, Rowe JW (1990) Handbook of the biology of aging, 3rd ed. Academic Press, San Diego, CA

Baby Boomer

David A. Schott

A baby boomer is a person born during a period of increased birthrates, which typically occurs during a period of increased economic prosperity. In the United States, most demographers have put the generation's birth years between 1946 and 1964, despite the fact that the birthrate actually began to decline in 1957. Born early or late in the generation, baby boomers are the generation that fought in and protested the Vietnam War, the generation that first heard and fell in love with the Beatles, and the generation notoriously noted for their experimental drug use.

Today, baby boomers make up roughly one third of the current workforce. The oldest in the generation are reaching the age of retirement while the youngest are in their forties. With such a large percentage of the baby boomers set to retire, employers are concerned about replacing the aging workforce, especially their expertise and knowledge. Employers, however, are not the only people concerned.

The approaching retirement of so many baby boomers has also become a matter of public concern, partly because of the budgetary concerns that will develop when the baby boomers begin to collect social security and Medicare benefits, and partly because many claim that the baby boomers have not accumulated enough savings to finance their retirement. Compared to their parents, the baby boomers have higher income, are preparing for retirement at relatively the same pace, and have accumulated more private wealth.

Despite having accumulated more than their parents, about a quarter of the baby boomers have failed to accumulate significant savings and are more likely to depend on governmental programs. At the other end, about one half of the baby boomers have enough savings to maintain their working-age standard of living. The remaining are likely to experience a slight decline in their standard of living. This slight decline can be offset by modestly increasing savings, and remaining in the workforce for a few years beyond retirement.

Another public concern involving baby boomers is their impact on health care. Unlike their parents who avoided health care, baby boomers seek it out, expect to stay healthy, and want to be "fixed" when they are not healthy. Baby boomers make more visits to the doctor and take more prescription pills than members

of any previous generation. A large number of baby boomers are developing age-related diseases such as Type II diabetes, high blood pressure, and high cholesterol. Prevention and screening are the methods employed to combat such diseases, with prevention being the most important.

A balanced diet and exercise are essential for anyone wishing to maintain a healthy lifestyle, and this is especially true for the baby boomers. To maintain a balanced diet baby boomers should avoid high-fat and high-salt foods, and remember to eat plenty of fruits and vegetables. Thirty minutes of moderate exercise at least five times a week is recommended.

Screening for various types of diseases should begin around the age of 40. It is recommended that women past this age have regularly scheduled mammograms and men should begin having annual prostate exams. Preventive screening allows for a better chance of curing the disease and elevates the probability of survival in cases where the disease is found to exist.

Related Topics

🔗 [Early retirement](#), 🔗 [Medicare](#), 🔗 [Social security](#)

Suggested Readings

- Grossman T (2000) *The baby boomers' guide to living forever*. The Hubristic Press, Golden, CO
- Iverson Jon (2005) *The baby boomer's guide to estate and medicaid planning*. Stonemark Publishing, Medford, OR

Back Pain

Lori B Siegel

Back pain encompasses a large range of disorders that may affect people aged 50 and above. It may involve areas of the spine from the neck to the buttock, and some symptoms may involve fingers and toes. Back pain is very difficult to diagnose and treat. The symptoms of back pain may come from the nerves, spinal cord, vertebral bodies, muscles, vertebral discs, and other lesions that may take up space such as tumors and infection. Diseases in other organs may also be

referred to the back and therefore present as back pain. These include pancreatitis, kidney disease, and reproductive organ pathology. Although it is impossible to have strict criteria regarding what back disorder happens in specific age groups, some generalities may be made. However, there are always exceptions. In general, people in their fifties may begin to suffer from disk degeneration, herniated disks, or metastatic tumors (tumors that have spread through the body). Those in their sixties and above may develop all of the above plus spinal stenosis (narrowing of the central canal of the spinal column), and spinal instability. As the aging process continues, any biomechanical or anatomic derangement, such as scoliosis (curvature of the spine) or leg length discrepancy, that had been clinically silent previously, may cause back pain.

Back pain in general affects 70–80% of the population at some point in their life and is therefore a consequence of aging. Nonsurgical interventions should be attempted initially and a thorough investigation of all the causes must be investigated. Patients should continue working, and if needed, ergonomic modifications in the workplace may be done. The economic burden of back pain from loss of work is serious. There are frequent nonphysical consequences and situations that affect the treatment of back pain as well. These include litigation, involving worker's compensation or an accident, and secondary gains.

Although usually a mechanical or anatomic issue, there are some red flags that may arise during the evaluation that indicate a more serious and life-threatening process. Night pain that interrupts sleep may indicate malignancy or infection. Fever and weight loss are also indicators of infection or malignancy. Loss of bladder or bowel continence is also a sign of spinal cord impingement and is a medical emergency.

Neck pain may be a result of degeneration and osteoarthritis of the cervical (neck) vertebrae. Cervical stenosis, a condition in which there is ingrowth of bony spurs in the spinal canal, may be present with neck pain and stiffness. These arthritic changes may predispose the patient to muscle spasms involving the shoulder/back area (paraspinal, trapezial, and interscapular muscles). When the pain is radicular (traveling down the arm) there may be entrapment of the cervical (neck) nerve root by a herniated disk or bone spur. Often the patient may have associated pain along the arm, but not be aware that it is connected to their neck pain, so a detailed questioning about limb involvement

is the key. Also some patients mention that the pain moves "up" their arm, from a distal point proximally (toward the body trunk), and even though this is the patient's perception, the symptoms are coming from the neck.

Assessing the neck in a patient with a complaint of shoulder pain is also important if evaluation of the shoulder is unremarkable.

Plain radiographs (x-rays) may help demonstrate arthritis, anatomic deformity, and neuroforaminal (spinal column/nerve) impingement. Specialized radiologic studies such as magnetic resonance imaging (MRI) are usually best in assessing any nerve or spinal cord pathology. Computed tomography (CT) scan is another special type of radiologic study that can be helpful if spinal stenosis is in question.

Treatment of cervical arthritis includes heat, nonsteroidal anti-inflammatory medications, amitriptyline (an antidepressant compound), and muscle relaxants. If there is retractable pain, radiculopathy (weakness), or stenosis, cervical epidurals (nerve blocks) may be indicated. In severe cases when the pain is not controlled or there is loss of coordination or muscle control, or other neurologic sequelae, neurosurgical evaluation is needed.

The majority of back pain results from issues involving the lumbar spine or "low back." The most frequent problem in the lumbar spine is osteoarthritis or wear and tear arthritis. Many patients may also have spondylolisthesis or slippage of the vertebral bodies. If this occurs the radiographs reveal a step-like change in the vertebral alignment. Patients with this may complain of pain while bending, lifting, or twisting. Another common problem is lumbar stenosis. In this condition, there is bony hypertrophy (bone overgrowth) and proliferation within the spinal canal. Patients having neurogenic claudication (pain due to nerve injury) may reveal complaints of stiffness and pain radiating down both buttocks. The problem is worse with prolonged standing and walking long distances. The pain can be relieved with bending over and some people report that they shop for groceries leaning over the cart or do dishes leaning over the sink to avoid these symptoms. The difference between neurogenic and vascular claudication (pain due to disease of the circulatory system) is that the former has full pulses and the patients recover more quickly if they stop walking for a while.

Back pain that radiates in an asymmetric fashion is usually from a herniated disk. The pain will radiate

down the leg in a specific pattern depending on the level of the disc herniation. The classic L5-S1 herniation (refers to where the pain is in the vertebral column), involves pain radiating through the buttock down the outside of the leg, crossing over at the knee to run down the inside of the lower leg, and then to the great toe. Patients may present with part or entire constellation of symptoms. It is an emergent situation when the physical examination reveals asymmetric reflexes or muscle weakness on the affected side. In some cases, the disks may bulge anteriorly causing a more symmetric pattern of symptoms. Patients with weight loss, fever and/or a high sedimentation rate (type of laboratory test that identifies acute reactivity) may have a malignancy or infection near the spinal cord, and should be evaluated and treated aggressively.

The treatment of back pain is often frustrating for the patient and may require a multimodal approach. Nonsteroidal anti-inflammatory medications as well as nonnarcotic analgesics, such as acetaminophen and tramadol, are helpful for some people. Muscle relaxants may also help alleviate any muscle spasm associated with disk herniation or osteoarthritis. Epidural steroid injections are most helpful with spinal stenosis and may also offer relief to patients with radicular back pain. Many patients require narcotic analgesia if there is a contraindication to more traditional approaches or when other treatments are unsuccessful. Other nonpharmacologic treatments are very useful in patients with back pain and should be used early in treatment to avoid polypharmacy. Physical therapy with careful assessment and correction of anatomic irregularities such as heel lifts for leg length discrepancies or orthotics may help. Posture must also be addressed. Muscle strengthening and stretching may also help and many patients do well with “back school” which helps patients learn to decrease the amount of stress they place on their back during their daily activities. Massage and therapeutic ultrasound also provides patients with relief. Transcutaneous electro-neural stimulation (TENS) units, a specialized mechanical device, may also help a patient with back pain and a component of muscle spasm. Corsets are used frequently and are helpful for support. Acupuncture may also be an appropriate option in patients with back pain.

Back pain represents a diverse and complicated spectrum of conditions. It may involve the neck down to the sacrum. Knowledge of anatomy and

consideration of the interplay between the muscles, bones, and nerves will help establish an appropriate diagnosis. Treatment may require multiple modalities and engaging the patient in their treatment is the key to success.

Related Topics

- [▶ Arthritis](#), [▶ Chronic pain](#), [▶ Osteoarthritis](#),
- [▶ Regional rheumatic pain](#)

Suggested Readings

- Arthritis Foundation (2001) Primer on rheumatic diseases, 12th ed. Arthritis Foundation, Atlanta, GA
- Klippel JH Dieppe PA (1998) Rheumatology, 2nd ed. Mosby, St. Louis, MO
- Klippel JH, Dieppe PA, Ferri FF (2000) Primary care rheumatology. Harcourt, London
- Snider RK (1999) Essentials of musculoskeletal care. American Academy of Orthopedic Surgeons, Rosemont, IL

Bedsores

Mary Jane Nottoli

A bedsore is a disruption of the structural intactness and normal physiological function of the skin and underlying tissues due to mechanical factors resulting in altered vascular perfusion and ischemia. They have a physical, social, and financial impact on those who develop them and often result in admission to, or a longer stay in, a hospital with subsequent increased costs to individuals and to society.

Causes

Bedsore or pressure ulcers result when pressure impairs circulation, depriving tissues of oxygen and nutrients, resulting in tissue breakdown. Left untreated, the damage can extend through the skin, to the subcutaneous tissue, into the muscle and beyond. The intensity and duration of the pressure exerted, usually over a bony prominence such as the sacrum, the hips, heels, or elbows, determines the severity of the lesion.

These lesions, called decubitus ulcers, pressure ulcers or bedsores may be superficial, like a local skin irritation, or deep and penetrating into subcutaneous tissues.

Shearing force, or the force resulting when tissue layers move over one another, can also cause bedsores because shearing stretches the skin and compresses local capillaries which effectively deprives tissues of the oxygen and nutrients normally carried in them. For example, when the head of a bed is raised, the gravity causes the occupant to slide downward and forward creating shearing as the back rubs against the linens covering the bed.

Other factors that increase the likelihood of an ulcer formation include poor nutrition and/or poor hydration, the presence of excessive moisture, diabetes or vascular disease, and decreased mobility or diminished awareness. The aged, the chronically ill, and the disabled, are at increased risk for the development of bedsores. The Braden Scale is a validated tool, which can predict pressure ulcer risk, assessing many of the factors discussed using a numeric scale.

Prevention

Prevention is preferred as decubitus ulcers (bedsores) are often slow to heal and in themselves present additional risk for their recurrence. Preventive measures such as frequent position changes need to be instituted and encouraged. Health care professionals should emphasize the importance of these position changes at regular intervals and encourage the individual patient/client and family caregiver to participate in them after demonstrating appropriate techniques. Clients confined to a chair and their caregivers need instruction on methods of shifting weight while being seated. Position changes in bed are recommended every 2 hours and seated weight shifts every 30 minutes. Pressure-relieving mattress, overlays, and seat cushions are helpful, but not a substitute for position changes and weight shifts. A diet that includes adequate calories, proteins, and vitamins is important as well. High nutrition supplements under a variety of trade names are available for a client with poor food and fluid intake. The most appropriate choice will be guided by the overall health of the client and his or her dietary needs. Excessive moisture, due to incontinence or excessive perspiration, mandates linen and clothing changes as needed. Protective moisture barrier

ointments are available to further protect the skin from irritation due to incontinence.

If protective measures fail, prompt initiation of appropriate treatment is imperative to prevent worsening of the bedsore, and complications such as an infection. Consequently, frequent inspection of the skin, especially over bony prominences is strongly advised. Clients with a number of risk factors for the development of pressure ulcers need to inspect or have the caregiver inspect their skin twice daily preferably at 12-hour intervals.

Identification and Staging

A shiny reddened area over a bony prominence is a sign of early breakdown. Such superficial damage is known as a Stage I pressure ulcer. When small blisters and openings are present, the superficial damage has progressed beyond the dermis into the epidermis, and the bedsore is a Stage II. A Stage III ulcer usually represents a crater with total loss of a skin covering and damage to subcutaneous tissue. An ulcer or bedsore that extends into the muscle has become a Stage IV pressure ulcer. Stage IV ulcers with extensive destruction of subcutaneous tissue and muscle may penetrate, damaging tendons, joint capsules, and bone. Undermining and sinus tracts are most often associated with them.

Treatment

Specific modalities of treatment depend upon the stage of the pressure ulcer, its location, and condition, but always include pressure relief and good nutrition. Pressure relief is accomplished by frequent position changes, avoidance of those positions that would put pressure on the bedsore, use of special support surfaces such as mattress overlays, seat cushions in chairs and, in some instances, specialty beds designed to reduce gravitational pressure. The type of pressure-relieving device is determined based upon an individual client's body build, nutritional status, and the stage and condition of the pressure ulcer.

Bedsore or pressure ulcer care has three components: cleaning, removal of debris and dead tissue, and application of a dressing or bandage. Cleaning is best accomplished using normal saline, a mild salt solution that can be bought in most drug stores or made by using eight teaspoons of salt to one gallon of distilled

or boiled tap water. Research has shown that solutions such as peroxide or betadine inhibit granulation (healing). The removal of dead tissue is always done under the supervision of a health care professional either chemically, by the use of enzymatic ointments, or mechanically, using wet to dry dressings, or surgical techniques. Dressing or bandage types are based on what material best aides the healing of the pressure ulcer, its location and stage, the number of dressing changes required, and the presence or absence of infection.

Infected pressure ulcers require additional treatment, which often includes antibiotics since infection in a bedsore can spread to surrounding tissue (cellulites), to underlying tissues, and even to bone (osteomyelitis), or throughout the whole body (sepsis). Signs of infection in an ulcer include thick greenish or yellow drainage, a foul odor, redness, or swelling of surrounding tissue. These signs should be reported to a health care professional immediately. The presence of a fever especially with chills, a rapid heart beat, changes in awareness or levels of alertness, and feelings of weakness are signs of a systemic infection which is a medical emergency requiring immediate hospitalization.

With appropriate treatment initiated, a bedsore or pressure ulcer usually begins to show signs of healing in 2–4 weeks. Absence of healing within that time or worsening of the ulcer requires prompt reassessment, evaluation, and change of the treatment plan as appropriate.

The United States Department of Health and Human Services, which, through the Agency for Health Care Policy and Research Publications Clearinghouse, publishes guidelines on a number of health-care concerns, is a rich source of information about pressure ulcers, including their prevention and treatment. The guidelines can be obtained by mail and are also available on-line.

Related Topics

➤ Harm reduction, ➤ Preventive care, ➤ Quality of life, ➤ Skin care, ➤ Urinary incontinence

Suggested Readings

Lyder CH (2003) Pressure ulcer prevention and management. *JAMA* 289(2):223–226

United States Department of Health and Human Services, Agency for Health Care Policy and Research Pressure Ulcers in Adults: Prediction and Prevention Clinical Practice Guideline 3. AHCPR Pub. No. 92-0047. National Center for Biotechnology Institute, US National Library of Medicine, Bethesda, MD

United States Department of Health and Human Services, Agency for Health Care Policy and Research (1992) Treatment of Pressure Ulcers Clinical Practice Guideline 15. AHCPR Pub. No. 92-0047. National Center for Biotechnology Institute, US National Library of Medicine, Bethesda, MD

Suggested Resources

National Pressure Ulcer Advisory Panel. www.npuap.org

US Department of Health and Human Services Clinical Practice Guidelines. www.guideline.gov

Wound, Ostomy and Continence Nurses Society. www.wocn.org

Behavioral Modification

Melisa Moore

Behavior modification encompasses a variety of techniques used to facilitate behavior change. The term “behavior modification” is often used interchangeably with “behavior therapy” to refer to therapy which is based on learning principles. Behavior modification focuses primarily on changing current behavior rather than gaining insight into the underlying causes of such behavior.

Behavior therapy developed in the late 1950s and early 1960s out of learning theory is based on principles of operant and classical conditioning. Operant conditioning posits that a given behavior will occur with increased frequency when it is reinforced. Two types of reinforcers are: positive (presentation of a stimulus following the target behavior) and negative (removal of a stimulus following a target behavior). Another conditioning process, extinction, occurs when a behavior that was reinforced in the past stops being reinforced, and the behavior decreases or stops. During the extinction process, the behavior often temporarily increases in frequency, duration, and/or intensity before finally remitting. This is called an extinction burst. Another method of decreasing unwanted behavior is punishment. Punishment occurs when an aversive consequence is introduced, making it less likely

that the behavior will be repeated. These responses can be used when a person is currently engaging in a behavior. If a target behavior is not part of a person's repertoire, behavior modification is aimed at developing that behavior. Shaping is a technique used to develop a behavior in which a person does not currently engage. Reinforcement of successive approximations (i.e., behavior that approximates the desired behavior) is the process by which shaping occurs.

Though the term behavior modification includes a variety of techniques, each has the same underlying characteristics.

1. Behavior (usually observable behavior) is the primary focus of treatment and there is a specific behavior that is identified as the target of change.
2. A method of assessment called behavior analysis is used to identify the target behavior, to evaluate how the environment impacts behavior, and to see what reinforcers might be maintaining the behavior. Behavior analysis also provides a baseline to compare throughout treatment in order to see if behavior changes.
3. Homework or practice is an essential component of behavior therapy. The therapist's work with the client involves time together during the session; however, the client is also expected to complete assignments between sessions. These continuing behavioral assignments usually take place in the client's daily environment and are thought to contribute to the effectiveness of the therapy.
4. Work with the client in session may involve setting up a plan for behavioral modification; though, much of the work is implemented by the client and often parents, teachers, or caregivers.
5. The behavior modification plan is specific and details are decided upon collaboratively between the therapist and client about when, how, and what the target goal is and how it will be reinforced.

There are a myriad of techniques used in behavior modification. Some of these include token economy, desensitization, stress management, and biofeedback. These techniques can be applied to psychological problems as well as areas outside the traditional realm of clinical psychology including smoking cessation, weight management, and stress management. Behavior modification is used in settings including hospitals, nursing homes, schools, mental health agencies, and businesses. These techniques can be useful in gerontology in order

to help individuals increase positive social interactions, maintain health behaviors, decrease risk behaviors, and adjust to declining physical abilities.

Related Topics

- [Anxiety disorder](#), ➤ [Cognitive behavioral therapy](#), ➤ [Mental illness](#), ➤ [Psychotherapy](#)

Suggested Readings

- Bellack AS, Hersen, M, Kazdin AE (eds) (1990) International handbook of behavior modification and therapy. Plenum Press, New York
- Hersen M, Rosqvist (eds) (2005) Encyclopedia of behavior modification and cognitive behavior therapy. Sage Publications, Thousand Oaks, CA
- Miltenberger R (1997) Behavior modification: principles and procedures. Brooks Cole, Pacific Grove, CA
- Sundel M, Sundel SS (2005) Behavior change in the human services. Sage Publications, Thousand Oaks, CA

Benign Prostatic Hyperplasia

Sejan Patel

Benign prostatic hyperplasia (BPH) is the most common benign tumor among men, and is responsible for more than 1.7 million office visits every year. The condition is identifiable in 50% of the men at 60 years and in 90% of them by 85 years. Treatment is necessary in only half of the men who develop hyperplasia.

The prostate is a walnut-sized gland located beneath the bladder and adjacent to the rectum, and is surrounded by a capsule of fibrous tissue called the prostate capsule. The urethra, which is the tube that transports urine and sperm, passes through the prostate to the bladder neck. Prostate tissue produces prostate-specific antigen and prostatic acid phosphatase, an enzyme found in seminal fluid, which is the milky substance that combines with sperm to form semen.

Prostate growth is stimulated by hormonal changes that occur as men age. The testes produce the hormone testosterone, which is converted to dihydrotestosterone (DHT) in certain tissues and gradually

accumulates. This causes an increase in the number of cells in the prostate and is termed hyperplasia.

The symptoms of BPH are obstructive or irritative. Obstructive symptoms include weak urinary stream, hesitancy, terminal dribbling, and sensation of incomplete bladder emptying. Irritative symptoms include frequency of urination (more than eight times a day during daytime), nocturia (more than once a night) urgency of urination, and dysuria. The American Urological Association (AUA) Symptom Index has been developed to help quantify urinary symptoms and assess treatment success.

Physical examination, patient history, and evaluation of symptoms provide the basis for diagnosis of BPH. Physical examination includes a digital rectal examination (DRE), and symptom evaluation from the results of the AUA Symptom Index.

During a DRE, the doctor inserts a lubricated gloved finger into the patient's rectum to feel the surface of the prostate gland through the rectal wall to assess its size, shape, and consistency. Healthy prostate tissue is soft. Malignant tissue is firm, hard, and often asymmetrical. If the examination reveals the presence of unhealthy tissue, additional tests are performed to determine the nature of the abnormality.

The AUA Symptom Index is a questionnaire designed to determine the seriousness of a man's urinary problems. The patient answers seven questions related to common symptoms: frequency, nocturia, weak urinary stream, hesitancy, intermittence, incomplete emptying, and urgency. The frequency at which the patient experiences each symptom is rated on a scale of 1 to 5. These numbers added together provide a score that is used to evaluate the condition. An AUA score of 0 to 7 means the condition is mild, while 8 to 19 means the condition is moderate, and 20 to 35 means the condition is severe.

Patients should also have a microscopic urinalysis in order to examine for infection or blood (hematuria) as well as a serum test called creatinine that detects kidney function. In addition, prostate-specific antigen (PSA) testing may be offered to patients at risk for prostate cancer who prefer to be screened for the malignancy. The AUA and the American Cancer Society recommend that DRE and PSA testing be offered annually to men who are 50 years and above if they are expected to live at least 10 more years. African American men, and men who have a first-degree relative with prostate cancer are at high risk

for prostate cancer. These men should be offered screening at the age of 45.

Patients with mild symptoms often require no intervention, but those with moderate to severe symptoms can benefit dramatically from therapy. Medical therapy is attempted first, with surgical intervention reserved for use in patients who do not respond to drug treatment. Medications that have been used to treat BPH include prescription drugs such as alpha₁-adrenergic blocking agents and 5-alpha-reductase enzyme inhibitors, as well as various herbal remedies.

Alpha-blockers such as doxazosin (Cardura) and terazosin (Hytrin) relax smooth muscle tissue in the bladder neck and prostate, which increases urinary flow. Patients taking an alpha-blocker require follow-up during the first 3 or 4 weeks to evaluate the effect on symptoms and adjust the dosage, if necessary. Side effects include headache, dizziness, low blood pressure, fatigue, weakness, and difficulty in breathing.

5-Alpha-reductase inhibitors such as finasteride (Proscar) prevent the conversion of testosterone to DHT. Long-term inhibition causes gland shrinkage. In many cases, a treatment period of 6 months is necessary to see if the therapy is going to work. Patients should see their physician regularly to monitor side effects and adjust the dosage, if necessary. Side effects include reduced libido, impotence, breast tenderness and enlargement, and reduced sperm count.

Herbal medicines have been used to treat BPH as well. They usually do not have side effects when used appropriately. Saw palmetto (*Serenoa repens*) is a popular treatment. How it works is uncertain but may be related to inhibiting the enzyme 5-alpha-reductase. In patients with BPH, saw palmetto has been shown to be as effective as finasteride (Proscar) but not as effective as other medical treatments. Additional agents include African plum, South African star grass, stinging nettle, and rye pollen.

Transurethral resection of the prostate (TURP) is the surgical standard. This procedure is performed under general or regional anesthesia, which takes less than 90 minutes. The surgeon inserts an instrument called a resectoscope into the penis through the urethra. The resectoscope is about 12 inches long and one-half an inch in diameter. It contains a light, valves for controlling irrigating fluid, and an electrical loop to remove the obstructing tissue and seal blood vessels. The surgeon removes the obstructing tissue and the irrigating fluids carry the tissue to the bladder.

This debris is removed by irrigation, and any remaining debris is eliminated in the urine over time.

Patients usually stay in the hospital for about 3 days, during which time a catheter is used to drain urine. Most men are able to return to work within a month.

Related Topics

• [Bladder](#)

Suggested Readings

- Dull P, Reagan RW, Bahnson RR (2002) Managing benign prostatic hyperplasia. *Am Fam Physician* 62:77–90
- Epperly TD, Moore KE (2000) Health issues in men: common genitourinary disorders. *Am Fam Physician* 61:3657–3668
- Vaughan ED (2003) Medical management of benign prostatic hyperplasia – are two drugs better than one. *New Engl J Med* 349:2449–2451

Bereavement

Paula L. Hensley · Paula J. Clayton

Approximately 800,000 people in the US are widowed every year. By the time American women reach the age of 65, almost half will be widowed; about 14% of American men of that age are also widowed. Besides these notable losses, there may have been losses of children, siblings, parents, and other close people; so older people have much experience with death. The death of a loved one, especially a child, spouse, or someone of similar closeness, is one of the most significant and traumatic events a person is likely to experience. Despite this, the majority of people handle the loss with minimum morbidity. For a small minority, the loss may lead to increased visits to the doctor for new or worsening medical conditions, increased use of substances (such as alcohol, benzodiazepines, and hypnotics), development of chronic depression or a post-traumatic stress disorder (PTSD)-like syndrome termed “complicated grief,” and even increased mortality. In order to understand the pathologic outcomes, one must be familiar with the expected reaction in the immediate post-bereavement period and in the year following.

Definition of Terms and Stages of Bereavement

Before proceeding with the normal reaction, it is important to define terms. Bereavement is the reaction to a loss by death. Grief is the emotional and/or psychological reaction to any loss, but not limited to death. Mourning is the social expression of bereavement or grief, sometimes defined by culture, custom, and religion. Complicated or traumatic grief is the disordered psyche and behavioral state present beyond 6 months following a loss; the term implies unresolved loss and impaired performance. With these definitions in mind, we will discuss bereavement and complicated or traumatic grief.

Most studies of the recently bereaved have delineated three stages:

1. **Numbness.** This is the term that the recently widowed used to describe themselves. It lasts from a few hours to a few days, perhaps a few weeks. Things that need to be done get done, but most of what is said and done is poorly remembered. Anxiety symptoms may appear.
2. **Depression.** While symptoms of irritability and restlessness are prominent, all depressive symptoms are common. Many people are on their way to recovery by 6 months, although others continue to have symptoms through the first year and even into the second year. The survivor’s mood is almost always disturbed on holidays, anniversaries, birthday of the deceased, anniversary of the death, and other personal or meaningful events and may partially be the cause of the much discussed “Christmas depression.” In the recently bereaved, prominent symptoms of the second stage are crying, sleep disturbance, sadness, depression, loneliness, restlessness, poor appetite, feeling tired, poor memory, loss of interest in some things (but not necessarily neighbors and friends), difficulty concentrating, and weight loss which can be profound. Sleep disturbance often remains entrenched, whereas weight loss usually ends after the second month. From the third month on there is more likely to be weight gain. By one year, the most prominent symptoms are sleep disturbance and loneliness.
3. **Recovery.** It is acceptance of the death and a return to some level of functioning that was established before the death.

Bereavement-Related Depression

Since depressive symptoms are common, the question is how many of the recently bereaved experience the full depressive syndrome that we know as a major depressive disorder. In studies of widowed persons, about 50% meet the criteria for major depression at some time during the first year. About 10% of the recently widowed experience a chronic depression. There are very few predictors of this chronic depression. Those that have been verified across several studies include poor physical health prior to the loss, poor mental health prior to the loss (particularly a previous depressive episode or prior substance abuse), and depression at 1–2 months post loss. An unknown percentage of those with chronic depression develop complicated grief. These people experience preoccupation with the deceased, crying, searching, and yearning for the deceased, feeling stunned, disbelief, nonacceptance, anger, distress, detachment, avoidance, some replication of symptoms that the deceased experienced, loneliness, bitterness, and guilt. This syndrome demands an intervention.

Morbidity and Mortality of Bereavement

There is still a good deal of controversy over the physical morbidity and mortality of bereavement. The bereaved do not have more physical symptoms than matched controls; and there is no increase in hospitalization, either psychiatric or general, after a loss. The most important outcome in the immediate bereavement period is that those who use substances use more; those who drink, drink more; those who smoke, smoke more. This may explain some of the morbidity and mortality associated with bereavement. There have been numerous studies on mortality following the death of someone close. There is probably an increased mortality after bereavement in men and women under the age of 74 (the “young-old”) in the first year after a loss.

Treatment

The vast majority of people who experience a loss will recover gradually without any interventions. Those who become chronically depressed or develop complicated

grief need psychiatric intervention. Individuals who believe they are experiencing a bereavement-related depression or complicated grief should first seek care with their family doctors. Although the treatment could be simple, such as education and self-help groups, a more logical treatment is psychotherapy (such as interpersonal therapy, IPT) or pharmacotherapy (such as antidepressant therapy). For post-bereavement depression, open-label studies of antidepressants demonstrated remission rates at or above 50% in the first 2–3 months of treatment; low relapse rates occurred following medication discontinuation. The field awaits a definitive study involving placebo controls. The largest study to date, which has utilized placebo controls, indicated that antidepressant medication was quite effective, but interpersonal psychotherapy did not add significantly to the improvement seen with antidepressant medication alone. A recently published study found that a novel psychotherapeutic approach called complicated grief treatment outperformed interpersonal psychotherapy for the treatment of complicated grief.

Related Topics

➤ [Ambiguous loss](#), ➤ [Depression](#), ➤ [Mood disorders](#), ➤ [Post-traumatic stress disorder \(PTSD\)](#), ➤ [Psychotherapy](#)

Suggested Readings

- Clayton PJ (2000) Bereavement. In: Fink G (ed) *Encyclopedia of stress*. Academic Press, London
- Clayton PJ, Darvish HS (1979) Course of depressive symptoms following the stress of bereavement. In: Barrett JE (ed) *Stress and mental disorder*. Raven Press, New York
- Clayton P, Demariais L, Winokur G (1968) A study of normal bereavement. *Amer J Psychiatry* 125:64–74
- Prigerson HG, Shear MK, Frank E, Beery LC, Silberman R, Prigerson J, Reynolds CF (1997) Traumatic grief: a case of loss-induced trauma. *Amer J Psychiatry* 154:1003–1009

Suggested Resources

- AARP Online. www.aarp.org/families/grief_loss/
- For people who have lost a child of any age. www.compassionatefriends.org
- The Hospice Foundation. www.hospicefoundation.org

Biofeedback

Teresa J. Linares Scott

Biofeedback has been in existence since 1950. It developed out of several fields, including learning theory, behavior therapy, biomedical engineering, stress research, and psychophysiology. The major professional organization in this area is the Association of Applied Psychophysiology and Biofeedback (AAPB). The title of this organization reflects the organization's use of biofeedback and other therapy methods, which emphasizes a broader scope of this field compared to a narrow focus on only biofeedback methods.

Biofeedback is defined as "a group of therapeutic procedures that uses electronic or electromechanical instruments to accurately measure, process, and feed back to persons and their therapists, information with educational and reinforcing properties about their neuromuscular and autonomic activity, both normal and abnormal, in the form of analog or binary, auditory, and/or visual feedback signals." Biofeedback then is the use of machines to provide concrete feedback to the patient in order to help them achieve better control over their physiologic processes.

Biofeedback procedures can include measuring a number of physiologic indices. One of the indices commonly measured is surface electromyography (EMG), a process that measures muscular activity. The muscle contraction measured by the biofeedback equipment is not a direct measurement; however, the electrical output of the contraction that is measured is highly correlated with the actual muscle contraction. Another physiologic marker often utilized is peripheral temperature, commonly measured with a temperature probe placed on the side or back of the patient's finger. Galvanic skin response or skin conductance activity can also be measured via an electrode that measures the amount of electrical current that is passed through the skin and is usually placed on the finger or palm. Respiration rate is also commonly monitored during biofeedback sessions, as well as cardiovascular activity (heart rate, blood pressure). Electroencephalography (EEG/Brain wave monitoring) is also a biofeedback method. However, this type of biofeedback requires extensive training and is not within the realm of practice for most biofeedback clinicians.

Prior to initiating biofeedback treatment, clinicians are encouraged to get certified by the Biofeedback

Certification Institute of America (BCIA) in order to ensure competent care and that safety procedures for using the equipment are followed. Additional activities that are recommended include attending workshops, reading the AAPB journal, attending AAPB meetings, and receiving supervision by a competent clinician in this field. Biofeedback is typically thought of as part of the psychology field; however, many other fields use this type of treatment, including physical therapy.

It has not been determined for which disorders biofeedback is indicated. However, research studies done to date have provided some understanding of the efficacy and effectiveness in certain disorders. Disorders for which the best evidence suggests that biofeedback is an appropriate treatment include: tension headache, migraines, essential hypertension, fecal and urinary incontinence, nocturnal enuresis, and phantom limb pain. Disorders that have good evidence to suggest biofeedback treatment include insomnia, anxiety disorders, epilepsy, asthma, irritable bowel syndrome, Raynaud's disease (a disorder of the circulation in the extremities), and chronic pain. Research evidence is less supportive of using biofeedback in patients with diabetes, dermatological disorders, substance abuse, and dystonias. Biofeedback is contraindicated in patients who are diagnosed with severe depression, schizophrenia, acute agitation, delirium, or obsessive-compulsive disorder.

The beginning stages of biofeedback treatment include a thorough assessment of the patient's history, current symptoms, and their understanding of biofeedback methodology. It is important to provide the patient with a thorough rationale for the use of biofeedback, and spend time developing a rapport with the patient. A good treatment rationale and a good rapport will help with adherence to treatment protocol. Also, most practitioners begin with a baseline evaluation of the targeted physiologic indices. The baseline evaluation typically measures the patient's resting basal activity as well as evaluating the patient's physiological responses to cognitive (e.g., tell stressful story), and physical stressors (e.g., put hand in ice).

Protocols will vary depending upon the disorder being treated. For the purposes of illustration, biofeedback for tension headaches will be described. Typically, patients are taught to control muscles that contribute to tension headaches. Electrodes are placed on the forehead muscles, which are indicated in headaches, but may also be placed on the occipital muscles if these are identified by the patient as part of the headache

symptoms. The patient is shown how to decrease tension in these muscles through relaxation techniques and feedback is provided to the patient from the biofeedback software. The ultimate goal is to decrease headaches in general, and not on the units of measurement shown on the software. That is, the focus is on total disorder improvement, and not on a specific physiologic index, such as body temperature. Biofeedback can be a useful addition to treatment, and is important to consider when treating disorders in which it has shown to be instrumental in global improvement for patients.

Related Topics

➤ [Chronic pain](#), ➤ [Mental illness](#), ➤ [Mood disorders](#),
➤ [Stress](#)

Suggested Readings

Middaugh SJ, Pawlick K (2002) Biofeedback and behavioral treatment of persistent pain in the older adult: a review and a study. *Appl Psychophysiol Biofeedback* 27(3):185–202
Schwartz MS, Andrasik F (eds) (2003) *Biofeedback: a practitioner's guide*, 3rd ed. Guilford Press, New York

Bipolar Disorder

Lakyntiew P. S. Aulakh

Bipolar disorder also known as manic-depressive disorder is a type of disorder that prevails between 0.1% and 0.4% among older adults above the age of 65. Although, there is a lower prevalence of the disorder in later life, the number of older adults with bipolar illness will increase exponentially over the next few decades. Bipolar illness in later life may be an illness that began in early adulthood and has persisted chronically into late life or it may be a new onset illness.

In adults, bipolar disorder is characterized by the presence of mania, defined as a period of persistently elevated or irritable mood which also includes grandiosity, elevated self-esteem, excessive speech, diminished need for sleep, racing thoughts, distractibility, and involvement of activities that lead to negative consequences such as substance abuse, excessive spending,

sexual promiscuity, and other high-risk behaviors. Individuals with a manic episode frequently lack understanding and awareness of their illness.

These symptoms are associated with severe impairment and functioning. Risk of harm to self or others may occur in the context of impulsive decision-making. Some individuals with mania become psychotic or paranoid and may require hospitalization for protection of themselves and others. In the elderly, mania is generally associated with symptoms that are fewer and milder than those seen in younger patients. They may also present with mixed mania (i.e., the presence of both manic and depressive symptoms), as well as cognitive symptoms that mimic dementia. Geriatric manic patients often have a psychotic symptom that is persecutory in nature. They are also more likely to have irritable behavioral characteristics, a tendency toward treatment resistance, and higher rates of mortality. Older patients with mania who need hospitalization tend to have a slower resolution of symptoms and longer duration of hospitalization.

Older adults with bipolar disorder may also experience depressive episodes characterized by depressed mood, diminished interest in everyday activities, difficulty sleeping, significant weight change, decreased energy, feelings of worthlessness or inappropriate guilt, diminished concentration, and thoughts of death or suicide. Many older adults present with atypical symptoms of depression that do not meet the criteria for depression. These symptoms may be complicated by memory problems (dementia and depression), physical symptoms, and denial of depressive symptoms.

Bipolar disorder tends to run in families. Late onset of a bipolar disorder is likely to be associated with a lower family history of the disorder and with more medical and neurologic comorbidity. In men, the first episode is more likely to be manic, and may be more likely to experience subsequent manic episodes. Women are more likely to have the first mood episode in the form of depression, and may be more likely to experience depressive episodes compared with men.

Bipolar disorder is a cyclical and chronic disorder with multiple occurrences of either depressive or manic mood episodes. More than 90% of single manic episode go on to have future episodes. Studies on the course of bipolar illness prior to the common use of treatment for the disorder suggest that an average of four episodes will occur over a 10-year period.

In many cases, an individual will experience several bouts of depression before the occurrence of a first

manic episode. For this reason, a diagnosis of bipolar disorder may be overlooked, particularly in the early phases of the illness. It is not uncommon to see individuals who are eventually proven to have bipolar disorder being mistakenly diagnosed with depressive disorder, schizophrenia, or some types of personality disorders.

Clarifying diagnoses can be difficult because some of the symptoms of hypomania may be thought of as normal, a personality type, and maybe desirable. This may lead to an underreporting of manic symptoms. Consultation with family members or significant others is often important. Bipolar disorder may be differentiated from major depressive disorder by the occurrence of mania/hypomania in bipolar illness.

Individuals with schizophrenia primarily experience psychotic symptoms such as hallucinations or delusions in contrast to the primary disorder of mood seen in bipolar illness. Individuals with personality disorder, particularly borderline personality, may exhibit labile (rapidly fluctuating) mood state, impulsivity, and risk-taking behavior that may mimic a manic state. Close observation of symptoms over a longer time period will assist in differentiating these disorders from bipolar illness.

About 5–15% of individuals with bipolar disorder experience four or more episodes within a 12-month period. This variant of bipolar disorder is classified as rapid cycling type and is more common in women.

Multiple aspects of life are frequently affected including marriage, relationships, childrearing, and occupational status. Divorce rates are generally higher among individuals with bipolar illness, approaching two to three times the rates of individuals who do not have bipolar illness. The occupational status of individuals with bipolar illness is twice as likely to be impaired leading to multiple job losses.

Suicide is also a significant risk in bipolar disorder; with up to 19% of individuals with bipolar illness eventually committing suicide. The risk of suicide appears to be greatest when individuals have depressive symptoms. Individuals with comorbid alcohol abuse are more likely to make suicide attempts. Additionally, stressful life events may precede suicide attempts. The lifetime risk of death by suicide is increased in older adults, especially men. The use of lithium carbonate has been associated with a sixfold reduction in the rate of suicide attempts among individuals with bipolar illness.

Psychiatric comorbidity is defined as the presence of other psychiatric syndromes in addition to the

principal psychiatric diagnosis. The rate of comorbidity between bipolar disorder and substance-related disorder is particularly high, reported to range from 21–58%. Although substance abuse is generally seen more often among men, some researchers have reported that women are more likely to have a history of comorbid substance abuse or dependence compared with men with bipolar illness.

Management of manic states and bipolar depression in late life is often challenging. Their psychopathology can be severe, and when treated often have incomplete response, further episodes, and a high mortality rate. Unfortunately, there is no “cure” for bipolar disorder, but it is possible for individuals with bipolar illness to experience long periods of freedom from symptoms or with minimal recurrence of mood episodes. Predictors of good outcome include good response to medications, older age at illness onset, good psychosocial supports, absence of comorbid psychiatric and medical conditions, and adherence with treatment.

It is known that psychotherapies may make biological treatments more effective in the management of bipolar illness. Most studies of psychosocial treatments for bipolar disorder utilize contemporary psychotherapies such as cognitive behavioral therapy. These therapies offer practical techniques for coping with stress, educate patients and families about bipolar illness, and encourage adherence to medication treatment. Psychosocial treatment of bipolar disorder may be delivered in individual, family/couples, or group formats.

Determination of tolerability of specific agents guides treatment selection and dosing in the elderly. As bipolar disorder tends to be a chronic and relapsing condition, long-term prophylactic treatment with mood-stabilizing medications is recommended. The two most commonly used mood-stabilizing medications are lithium carbonate and anticonvulsant medications (valproic acid/valproate, carbamazepine, levetiracetam, lamotrigine, and others). Atypical antipsychotic medications like olanzapine (Zyprexa), risperidone (Risperdal), quetiapine (Seroquel), aripiprazole (Abilify), clozapine (Clozaril), and ziprasidone (Geodon) are now approved for the treatment of bipolar disorder. The Food and Drug Administration (FDA) has determined that the treatment of behavioral disorders in elderly patients with dementia with these medications is associated with increased mortality.

Baseline clinical laboratory evaluation, blood pressure, pulse rate, weight, height, and electrocardiograms

(ECG) are routinely obtained. Neurological examination, cognitive assessment, and regular follow-up are also important. During maintenance treatment visits, the treating clinician will generally review any occurrence of medication adverse events and monitoring of medication levels. Drug–drug interaction is of particular concern in the elderly. Psychoeducational interventions are typically most effective during the maintenance period, once individuals have achieved some degree of clinical stability. Best results are generally obtained when families or important individuals in the patient's social support network are engaged in treatment. Families and support individuals should be alerted to possible suicide risks. Individuals with suicidal ideation may require hospitalization.

Less commonly, alternative biological therapies are used for the treatment of bipolar disorder. These include treatments such as electroconvulsive therapy (ECT), rapid transcranial magnetic stimulation (rTMS), and bright light therapy. ECT is a generally safe and highly effective treatment for depression and mania in the elderly. It is done under general anesthesia. A brief electrical stimulus is administered via electrodes attached to the scalp, which results in a brief seizure (40–60 seconds). rTMS is a procedure in which electrical activity in the brain is influenced by a pulsed magnetic field. The magnetic field that is generated in rTMS can penetrate the scalp and skull safely and painlessly to induce a current in specific neurons (brain cells). This procedure does not require anesthesia or hospitalization. Bright light therapy relieves depression by increasing serotonin, decreasing melatonin, and affecting areas of the brain that regulate the sleep/wake/mood/energy cycles.

Related Topics

- ▶ Alcohol use, ▶ Cognitive behavioral therapy,
- ▶ Depression, ▶ Mood disorders, ▶ Psychotherapy,
- ▶ Schizophrenia, ▶ Substance use

Suggested Readings

- American Psychiatric Association (1994) Diagnostic and Statistical Manual of Mental Disorders, 4th ed (DSM-IV). American Psychiatric Association, Washington, DC
- American Psychiatric Association (2002) Practice guideline for the treatment of patients with bipolar disorder (revision). *Am J Psychiatry* 159 Suppl 4:1–50

Brady KT, Lydiard, RB (1992) Bipolar affective disorder and substance abuse. *J Clin Psychopharm Suppl* 12:175–225

Suggested Resources

- Round the Clock Resources for Psychiatry. <http://www.psychiatry24x7.com>
- National Alliance on Mental Illness. <http://www.nami.org/Content/ContentGroups/Helpline1/UnderstandingBipolarDisorder-r.pdf>

The Bladder

Raymond Firfer

Normal bladder function is required in adults for physical and social acceptance. Symptoms and consequences due to an aging bladder may not be life-threatening immediately, but they are of great concern to the individual who has them and the caregivers confronted with some obvious problems such as quality of life, social compatibility, and therapeutic measures.

Overactive bladder is a very common symptom related to the aging bladder and this term can be used to clarify the concept of the aging bladder. Statistical data indicates that the aging bladder affects 17% of men and women in the United States and Europe. Furthermore, the prevalence increases with age as 31% of women and 42% of men are affected after 75 years of age.

Incontinence, frequency, and nocturia are frequently associated with the overactive bladder. Increasing episodes and severity of incontinence seems to follow the increase in age. Women have a greater increasing prevalence up to 64 years of age and at that point men begin to have an equal prevalence and surpass women as general aging increases. All this cannot be blamed specifically on aging of the bladder, as there is a major contribution by the changes in the bladder wall and surrounding anatomy due to wear and tear. Women are prone to frequent irritation and infections of the urethra. Pregnancy and childbirth add to distortion, trauma, and wear on the bladder. As men age, prostatic hyperplasia becomes a problem and is a potential source of obstruction or malignancy with distortion of bladder anatomy.

Mild obstruction, infection, or other insults to the bladder will result in fibrosis, thickening, and scarring

of the bladder wall. This distortion may cause pockets in the bladder and decreased volume compliance. Ultimately the bladder wall will not be able to stretch to a normal capacity nor will it be able to contract efficiently to empty completely.

Normally, as urine fills the bladder, messages are sent to the nervous system and brain to coordinate when the bladder should hold urine or let it go. As people age, some of these mechanisms do not work as well leading to either difficulty starting urination or even losing urine control.

Decreasing cardiac function, altered hormones controlling urine production, as well as decreased valve function in peripheral veins fail to appropriately control the body's water status. Water accumulated during the day is mobilized at night while lying down or at other inappropriate times. This nocturnal voiding—nocturia—affects the general health due to lack of sleep and the problem is worse in the early hours between 3 a.m. and 6 a.m. Elderly men and women, groggy and sleepy, rushing to get to the toilet in time may fall, so trauma and fractures can be considered a complication of the aging bladder.

Consider an old arthritic, wheelchair-confined, fully clothed patient whose joints and fingers are stiff, and even with a urinal nearby, suddenly gets a message from the aging bladder to void. Is this to be considered incontinence? Therapy must be directed at an assortment of symptoms that interfere with social acceptance and quality of life.

Understanding the causes of these symptoms is a priority by the individual, family, and other caretakers. Sometimes timed voiding, at regularly scheduled time intervals, needs to be determined and established for toileting to prevent the anxiety of urgency and loss of urine. Help for Incontinent People (HIP) and pharmacies have an assortment of garments that may satisfy some individuals, and depending on their ability to wear a garment, amount of urine loss, and associated symptoms, more extreme efforts may be required.

Medication to reduce the frequency and severity of the stretch reflex like the anticholinergics (atropine-like medications) that block overactive receptors in the bladder wall has become a panacea for many with urgency, but caution must be used. Sensitivities, allergies, and problems arising from the medication may be worse than the urgency and incontinence being treated. Some newer emerging oral medications may not only reduce bladder contraction, but will help

strengthen the closure of the outlet sphincter and prevent urine loss.

Pelvic floor rehabilitation including Kegel exercises, biofeedback, neuromodulation, and acupuncture, can be attempted in mentally alert and physically active older population, but are not very successful with the very old debilitated population. Anyone retaining large residual urine should be considered a candidate for self or intermittent catheterization.

In summary, the aging bladder is in itself not a life-threatening entity, however, it is a naturally evolving syndrome whose ramifications aggravate or create other problems that can become life-threatening and be socially isolating.

Related Topics

➤ [Cancer](#), ➤ [Kidney disease](#)

Suggested Readings

- Bartolin Z, Savic I, Persec Z (2002) Relationship between clinical data and urodynamic findings in patients with lumbar intervertebral disk protrusion. *Urol Res* 30(4):219–222
- Carey MP, De Jong S, Friedhuber A, Moran PA, Dwyer PL, Scurry J (2000) A prospective evaluation of the pathogenesis of detrusor instability in women, using electron microscopy and immunohistochemistry. *BJU Int* 86(9):970–976
- Griffiths DJ, McCracken PN, Harrison GM, Gormley EA, Moore KN (2002) Urge incontinence and impaired contractility in the elderly. *Neurourol Urodyn* 21(2):126–131
- Haferkamp A (2004) Ultrastructural changes in the aging bladder. *A Urology* 43(5):527–534
- Merkel J I (2001) Urinary incontinence in the elderly. *South Med J* 94(10):952–957

Bladder Cancer

Derek Raghavan

Bladder cancer accounts for more than 90% of urinary tract malignancies. It is the sixth most common cancer in the United States, affecting more than 50,000 people annually, and causing over 10,000 deaths each year. Its incidence rises with age and peaks during the 7th decade of life. More men are affected by bladder cancer,

with the male/female ratio around 4:1. Cigarette smoking is by far the leading risk factor. Occupational exposure to carcinogenic compounds found in dye, rubber, paint, plastics, metal, and motor vehicle exhaust significantly raises the risk of bladder cancer. In the Mediterranean region, the infection, schistosomiasis, is still the main cause of bladder cancer.

The majority of bladder cancers are transitional cell carcinoma (90%). The less common cell types are squamous cell carcinoma (7%), adenocarcinoma (1–2%), and small cell carcinoma; rare histologic types such as sarcoma, lymphoma, and melanoma comprise less than 1% of the cases. Transitional cell carcinoma may be classified in two prognostic groups:

1. Superficial tumors are those that occur at the level of the bladder lining and usually are associated with a good prognosis as they tend to be less aggressive and thus do not usually invade and spread through the body. Occasionally these penetrate just into the layer below the bladder lining (lamina propria).
2. Invasive tumors are those that invade into or through the surrounding and underlying tissues, sometimes penetrating through fat and muscle; these are more aggressive and are associated with an increased tendency to spread (metastasis) and a concomitantly worse prognosis.

Most bladder cancers are detected when blood is found in the urine. There is generally no pain and the amount of blood may be microscopic or visible. Urinary frequency and urgency can be the result of bladder wall irritation or volume loss due to the tumor. Abdominal discomfort, flank pain, pelvic pain, or a palpable mass can occasionally be the first clinical evidence of invasive bladder cancer. Obstruction of the ureteral orifice(s), subsequent hydronephrosis (dilatation of the ureter), and renal insufficiency are possible from an invasive tumor, although it can remain clinically silent until it has spread into surrounding tissues.

Invasive bladder cancer may extend locally into the prostate, seminal vesicles, rectum, uterus or vagina, sacral vertebra, and the retroperitoneal soft tissue. It spreads via lymphatics and blood vessels to distant lymph nodes, the lungs, the liver, skin, peritoneum and bones, and may even cause brain metastases.

Bladder cancer is usually diagnosed definitively by a cystoscopy, a minor surgical procedure in which a

metallic tube with an eyepiece that allows visualization is inserted via the urethra into the bladder. The staging process, the mechanism for defining the extent and spread of bladder cancer, should include a thorough history and physical examination, laboratory studies, and tests (e.g., computed tomography [CT] scans) to determine whether the tumor has spread beyond the bladder. Staging allows the physician to define a plan of treatment that is based on the site and extent of disease.

For superficial papillary bladder cancer, the initial treatment is careful and thorough removal of the tumor(s) via cystoscopy (transurethral resection). For patients at high risk for recurrence, bacille Calmette–Guerin (BCG), a preparation of a killed tuberculosis bacteria, may be administered into the bladder through a catheter as an adjuvant to transurethral resection. The mechanism of action is incompletely understood, but it appears that this material acts as an immune stimulant that causes the death of bladder cancer cells.

During BCG treatment, the patient may experience dysuria (difficulty or pain upon urination), increased frequency of urination, hematuria (presence of blood or red blood cells in the urine), or a general flu-like syndrome. However, because BCG is a living organism, it can produce local, regional, and systemic infections. Chemotherapy drugs can also be used for intravesical treatment, although superiority of BCG has been demonstrated in randomized clinical trials. Agents that may have a role for patients who decline cystectomy (surgical removal of the bladder) after BCG failure include doxorubicin, thiotepa, and mitomycin C.

For patients with invasive bladder cancer that has not apparently spread beyond the bladder, cystectomy is viewed as the standard treatment in North America and Europe. Often a procedure known as a bilateral pelvic lymph node dissection is performed—this involves removal of the lymph nodes that surround the bladder, allowing pathological examination to assess whether the tumor has spread and offering some treatment benefit by removing the nodes that contain cancer. After removal of the bladder, the ureters (which drain urine from the kidneys to the bladder) may be reconnected to an intestinal conduit as a urinary diversion. There are many techniques for doing this, including the creation of an artificial bladder from intestinal tissue; another option is to

bring the ureters to the surface of the skin, with a small tissue reservoir, which allows short-term storage of urine (which is relieved by passage of a urinary catheter into the reservoir). Surgical removal of the bladder results in cure rates ranging from as high as 70% to 20–30%, depending on the extent of the cancer. In patients with extensive cancer, chemotherapy is sometimes combined with surgery, either before or afterwards. Clinical trials have proven that initial chemotherapy followed by surgery is better than surgery alone. It is not yet certain whether the addition of chemotherapy after surgery has the same level of benefit.

For patients with localized invasive disease who decline to have the operation or who are not sufficiently fit for surgery, radiation is the alternative definitive therapy. Clinical studies have suggested that the combination of chemotherapy and radiotherapy is better than radiotherapy alone. Once again, the cure rate depends on the extent of cancer, but it is probably a bit lower than that achieved with surgery.

For patients with metastatic bladder cancer (i.e., cancer that has spread far beyond the bladder to lymph nodes, lung, liver, bones, or elsewhere), chemotherapy is the treatment of choice. The first major step in the modern era of chemotherapy was the development of the combination of four anticancer drugs, methotrexate, vinblastine, doxorubicin, and cisplatin. Although shrinkage of the cancer and improvement of the quality of life occurred in about 70% of patients, cure was uncommon and this treatment was quite toxic. More recently, gentler chemotherapy regimens have been introduced, such as the combination of gemcitabine and cisplatin, and appear to offer similar anticancer effect, but with less toxicity.

Another important area of investigation involves the study of growth factor inhibitors and targeted treatments in bladder cancer. It has been demonstrated that the epidermal growth factor receptor (EGFR) and genes that form proteins involved in cellular growth (e.g., *Her-2/neu*) are found in bladder cancer cells. Laboratory studies have suggested that herceptin and iressa, drugs targeted against such gene products, may act against bladder cancer cells, adding to the effect of chemotherapy. These observations are now being tested in clinical trials.

Related Topics

➤ Cancer, ➤ Cancer screening, ➤ Chemotherapy

Suggested Readings

- Bi J, Raghavan D (2000) Tumors of kidney, ureter and bladder. In: Humes, HD (ed). *Kelley's textbook of internal medicine*, 4th ed. Lippincott, Williams & Wilkins, Baltimore, MD, pp 1248–1254
- Gospodarowicz MK, Hawkins NV, Rawlings GA et al (1989) Radical radiotherapy for muscle invasive transitional cell carcinoma of the bladder: failure analysis. *J Urol* 142:1448–1452
- Grossman HB, Natale RB, Tangen CM et al (2003) Neoadjuvant chemotherapy plus cystectomy compared with cystectomy alone for locally advanced bladder cancer. *N Engl J Med* 349:859–866
- Raghavan D (2003) Molecular targeting and pharmacogenomics in the management of advanced bladder cancer. *Cancer* 97 Suppl 8:2083–2089
- Raghavan D, Shipley WU, Garnick MB, Russell PJ, Richie JP (1990) Biology and management of bladder cancer. *N Engl J Med* 322:1129–1133
- Stein JP, Lieskovsky G, Cote R et al (2001) Radical cystectomy in the treatment of high grade, invasive bladder cancer: long-term results in 1054 patients. *J Clin Oncol* 19:666–675

Suggested Resources

- American Society of Clinical Oncology. People living with cancer. Alexandria, VA (2002–2006). www.plwc.org

Blindness

Michael Levine

The human visual system is an elaborate and complex system, which is designed to accumulate a myriad of information from the environment, and incorporate the information quickly and concisely so that the brain can interpret images. The process of seeing begins when light travels through the cornea, which is the outermost layer of the eye. Light rays get reflected through by the cornea, and then travel through a fluid-filled region called the anterior chamber. They then pass through the iris and lens before reaching another fluid-filled region called the posterior chamber. Both the anterior and posterior chambers are filled with a fluid called the aqueous humor and the vitreous humor, respectively. The fluid in the anterior chamber is constantly being recirculated. The rays then travel to the retina, where there are more than 100 million rods, which are responsible for black and white vision, and five million cones, which deal with color vision.

Through a complex series of interpretation, signals are sent through the optic nerve to the occipital lobe, in the back of the brain, where these signals are interpreted, and an image is created. Visual loss can occur as a result of dysfunction at any of these levels.

There are various causes of vision loss in the elderly, some of which are acute, while others are chronic. Etiologies of acute monocular, one eye, vision loss include acute angle closure glaucoma, optic neuritis, central retinal artery occlusion, central retinal vein occlusion, amaurosis fugax, retinal detachment, temporal arteritis, and trauma. These are explained in detail below. If the vision loss is binocular (involving both eyes), the cause is almost always due to a defect in the central nervous system (CNS), most often involving the vertebrobasilar circulation (the blood circulation system in the back of the head). Monocular vision loss can occasionally be from a CNS etiology, but in these cases only part of a visual field is lost, rather than a complete loss of vision. Some of the more common causes of a progressive or chronic visual loss include cataracts, macular degeneration, primary open-angle glaucoma, diabetic retinopathy, retinitis pigmentosa, or various tumors.

Acute angle closure glaucoma results when the iris moves forward, thereby preventing the outflow of aqueous humor through the anterior chamber. As a result, the fluid accumulates, causing a rise in the intraocular pressure, thereby causing pain, swelling of the eyelid, injection (redness) of the conjunctiva, and blurred vision. If untreated, the pressure increases, and compresses the optic nerve, leading to irreversible vision loss. African Americans, Asians, and females are at the highest risk, although other groups can certainly develop angle closure glaucoma. On examination, the cornea is cloudy, intraocular pressure is elevated, and there is inflammation in the anterior chamber. With prompt diagnosis and treatment, vision loss can be reversed. Treatment of acute angle closure glaucoma involves several agents, including hyperosmotic agents (e.g., mannitol), carbonic anhydrase inhibitors (e.g., acetazolamide), beta-blockers, miotics, and steroids. Mannitol will draw fluid out of the anterior chamber and into the blood, while acetazolamide will decrease production of fluid in the anterior chamber. Beta-blockers (e.g., timolol) increase flow of fluid from the outflow tract, and miotics (e.g., pilocarpine) constrict the pupil, thereby increasing flow of fluid out of the anterior chamber. In addition, patients often complain of nausea and vomiting, so anti-nausea medications are useful.

In contrast, open angle glaucoma is a cause of chronic vision loss. Here the pressure accumulates over a much longer time course, so there is no frequent pain or conjunctival injection. The vision loss starts at the peripheral fields, and if not treated, will progress centrally, ultimately leading to complete vision loss. The definitive treatment for chronic glaucoma involves peripheral iridectomy or laser iridotomy. Frequently, various eye drops, including pilocarpine, and timolol are also required for long-term therapy in this chronic form.

Optic neuritis is the most common cause of acute vision loss in patients aged 20–40, but clearly can occur in the elderly as well. The eye appears red, and is frequently quite painful, especially with eye movement. This disorder is more common in women than men. The most common cause of optic neuritis is multiple sclerosis, although other causes include leukemia, sarcoidosis, syphilis, tuberculosis, *Cryptococcal* infections, collagen vascular disease, and various toxicities (e.g., lead or chloramphenicol). Vision loss frequently occurs over the course of a week, but can occur over several hours. Color vision is most affected, and defects in the central vision are common. Therapy is primarily aimed at detecting and treating the underlying cause. Some physicians will still treat optic neuritis with steroids.

Central retinal artery occlusion (CRAO) causes a sudden onset of painless vision loss. There is often a preceding history of Amaurosis fugax, like a shade or curtain closing on the eye, since the first branch of the carotid artery is the ophthalmic artery. The central retinal artery can get occluded because of a thrombus, embolus, or vasospasm. Because the central retinal artery supplies the retina, occlusion of this artery will occlude blood flow to the retina, thereby causing the retina to appear pale and swollen. There is a “cherry red spot” which is visible on examination. This “red spot” is actually the macula, which is the thinnest part of the retina, and appears red because the macula receives a separate source of blood supply than the rest of the retina. If an embolus is seen, the appearance of the embolus may help identify its source. For example, a yellow embolus suggests a cholesterol plaque, and white embolus suggests a talc or calcium plaque (seen often in intravenous drug abusers). Massaging the eye through a closed eyelid should be immediately performed, in an attempt to reduce intraocular pressure, thereby allowing a thrombus to move deeper into the artery, which can lead to restoration of some vision. In addition,

drugs such as acetazolamide, and beta-blockers can be given to reduce intraocular pressure.

In a central retinal vein occlusion (CRVO), there is often a thrombosis of the central retinal vein, causing venous blood to pool, and resultant hemorrhage into the retina. Other causes of CRVO include an atherosclerotic artery that increases in size and compresses the vein. The vision loss is rapid and painless. There is no good therapy, but often patients are subsequently advised to take an aspirin.

Amaurosis fugax is a temporary loss of vision in one eye, because of a transient loss of blood supply to the eye; in essence a mini stroke affecting the retina. The patient describes a descending curtain across the visual field. Amaurosis fugax or transient monocular blindness usually occurs because of a thrombus in the internal carotid artery on the same side, or an embolism from the internal carotid artery to a retinal artery. If the blockage lasts only for a short duration, then there will be return of vision to the eye. If not, the vision loss is permanent (see CRAO).

A retinal detachment occurs when the vitreous humor leaks through a small tear in the retina, thereby causing the inner layer of the retina to separate from the outer layers. Retinal detachments are most common among elderly patients, diabetics, and those with a history of a previous retinal detachment. Patients will often complain of seeing flashing lights, or floating objects move across the visual field prior to the actual detachment. When the actual retina detaches, there is a sudden loss of vision, in which patients describe a “curtain drawn up or down” across the visual field. The retina will have an elevation, hole, or wavy appearance. Ultrasound can demonstrate the tear if the diagnosis is in question.

Temporal arteritis or giant cell arteritis is a systemic vasculitis, which affects the medium sized arteries including the carotid artery. Systemic steroids are the treatment of choice, and should be started even before a biopsy proves the diagnosis.

Cataracts cause clouding of the lens, thereby causing a gradual impairment in vision. They are very common with increasing age, affecting nearly 50% of adults over the age of 75. Cataracts can be unilateral or bilateral. While most cataracts are idiopathic, there can be accelerated formation in conditions such as diabetes mellitus or Wilson’s disease, and in patients on corticosteroid therapy. The only treatment is surgical removal of the cataract.

Macular degeneration causes a painless bilateral loss of central vision, and can exist in a “wet” or “dry” form. It is the leading cause of severe progressive visual loss in adults above 50 years. The dry, or nonexudative, variety occurs when there is an accumulation of extracellular deposits under the retinal pigment epithelium. On fundoscopy, small discrete yellow lesions are seen on the macula. The wet or exudative, variety is much less common, and results from neovascular formation in the space under the retinal pigment epithelium. This later type is difficult to detect on fundoscopy, and often requires fluorescein angiography to make the diagnosis. While laser surgery can delay progression of the current vessel formation, the process tends to recur with other vessels forming.

Diabetic retinopathy is a common cause of vision loss among diabetics. While total blindness is not very common, most diabetics will eventually develop some reduction in their visual acuity as a result of diabetic retinopathy. This disorder can be classified into proliferative, preproliferative, and nonproliferative forms. The nonproliferative and preproliferative forms are characterized by hard exudates, soft exudates (cotton wool spots), and punctate retinal hemorrhages. Hard exudates are yellow or white lipid deposits located on the outer retinal layers, while soft exudates are areas of ischemia or infarction. Proliferative retinopathy involves the formation of new blood vessels along the retina. Therapy involves photocoagulation or vitrectomy (removal of the vitreous).

Tumors can cause chronic vision loss by compression of various vascular structures. However, a tumor can also cause vision loss by compression of a nerve or nerve track. A common example would be a pituitary adenoma, which compresses the optic nerve, causing bilateral decrease in peripheral vision. A mass in the occipital lobe or along the nerve tracts can cause a hemianopsia.

Related Topics

- ▶ [Cataract](#), ▶ [Eye care](#), ▶ [Giant cell arteritis](#),
- ▶ [Glaucoma](#), ▶ [Vision](#)

Suggested Readings

Brunette DD (2002) Ophthalmology. In: Marx JA, Hockberger RS, Walls RM (eds) Rosen’s emergency medicine: concepts and clinical practice, 5th ed. Mosby, St Louis, MO, pp 908–928

- Horton JC (2001) Disorders of the eye. In: Braunwald E, Hauser SL, Fauci AS (eds) *Harrison's principles of internal medicine*, 15th ed. McGraw-Hill, New York, pp 164–178
- Widell T (1998) Eye, ear, nose, throat, and dental emergencies. In: Plantz H, Adler JN (eds) *National medical series for independent study: emergency medicine*. Williams & Wilkins, Baltimore, MD, pp 355–394

Board and Care Homes

Mary Lock

Choosing senior housing and residential care can often be a daunting process, but it is important to research the alternatives and choose a residential option that best meets the needs of the senior seeking assistance. Board and care homes are homes for persons who require some supervision and personal care, but not on-site medical services. The majority of board and care homes are privately owned, and may be for-profit or nonprofit organizations. Not all board and care homes are licensed. However, given the standards a home must meet to become licensed by state and local authorities, it is strongly advisable to choose a licensed home. While more than 500,000 older adults and individuals with physical and/or mental disabilities reside in licensed board and care homes, a similar number of individuals reside in unlicensed homes.

The services provided usually include transportation, reminders to take medications and meals; help with laundry, money management, housekeeping, and shopping; exercise; social, religious, and educational activities; and assistance with daily living such as bathing, dressing, toileting, and incontinency issues. Generally, board and care homes are located in private, single-family homes with less than six residents, although some are located in a retirement residence or other types of care facilities. Established to provide noninstitutional home-based services, board and care homes are also referred to by the following names: adult foster care homes, residential care homes, residential care facilities, adult care homes, assisted living facilities, personal care operations, sheltered care homes, independent living facilities, and domiciliary care. Persons living in board and care homes maintain the freedom to come and go, and have visitors as they please. They have daily contact with a small staff, and

are encouraged to make as many independent decisions as possible.

Board and care homes provide a safe, comfortable, dignified environment for those who need help intermittently, but do not require ongoing medical services. There is an emphasis on privacy in board and care homes that tends to lessen as the need for more intrusive assistance increases. If medical care is necessary, board and care homes usually contract for such services. The small number of residents and staff and the close supervision tend to lower the stress and anxiety of patients with Alzheimer's, which is why board and care homes can be an especially appealing option for these patients.

In addition to the small size and personal attention residents receive, board and care homes are usually about half the cost of nursing home care. The cost varies from \$700 to \$3,000 a month, depending upon the region, the quality of the home, the services and activities offered, and whether the resident shares a room or has a private room within the facility. Many homes take residents who receive supplemental security income. This usually needs to be supplemented by other types of income in order to meet the costs. Other homes care for private-pay residents only.

Information about board and care homes can be located in newspapers, the phone directory, from social service agencies, hospitals, and the State licensing authority. It is advised that anyone considering placement at any board or care home contact their local Better Business Bureau and State Licensing Agency to ensure that there have been no complaints, violations, or sanctions.

When choosing a board and care home, there are several factors to be considered, in addition to whether it is licensed. One should always visit a care facility in order to assess the surroundings. It is important that the residents are comfortable, appropriately dressed, have plenty of opportunities to socialize, and that their personal hygiene is well-tended to. One should observe the maintenance of the grounds as well as the housekeeping and food preparation in order to determine the quality of the residents' surroundings. It is also important to get a sense of how the staff interacts with the residents. Try to determine if the residents are referred to by their first names, if the staff is warm and caring toward them, and if they make you feel welcome. Experts recommend making unannounced visits at varying times of the day and night in order to determine how the facility operates when the staff is

not expecting a visit from an outsider. Additionally, one should always request and check references of every board and care home that is being considered.

Related Topics

- [Activities of daily living](#), ➤ [Alzheimer's disease](#),
- [Long-term care](#), ➤ [Long-term care insurance](#),
- [Nursing home](#)

Suggested Resources

www.carehomefinders.com/index.html
www.helpguide.org/elder/board_care_homes_seniors_residential.htm
www.getcare.com/learn/boardandcare.shtml
www.seniorresource.com/hbc.htm
 Senior.site.com. Board and care homes for senior citizens. <http://seniors-site.com/housingm/boardcar.html>
www.tlchoices.com

Body Composition

Craig A. Horswill · Lynn Janas

The effect of aging on body composition is significant because of the implications for the well-being and functionality of the individual. Recent data are available on changes in body composition that occur with aging, the health implications of those changes, and therapies for maintaining lean body mass. The composition of the human body can be viewed as having two compartments, the lean body mass (LBM) or fat-free mass (FFM), and the total body fat. The subtle difference between LBM and FFM is that LBM includes the relatively small amounts of essential fat in cell membranes and nerve tissue. The major components of LBM or FFM are muscle, bone, and water. Body fat mass is the subject of a separate entry in this volume.

Changes in the lean body compartment are evident throughout the lifecycle and the patterns are unique in the aging human. Although the changes in body composition with advanced age are highly variable, the overall trend shows a loss of lean body mass. Using whole body potassium counting, which is highly correlated with LBM, there is a decline from 25 to 85 years, with the average loss of 5% of total body

potassium per decade. The reduction over time is similar for both genders when standardized to initial values of the young adult. Changes in lean body mass include decreased muscle mass and changes in muscle fiber type as well as reduced bone mineral content. Total body water (TBW) is thought to decrease or be maintained with age. The maintenance may be reflective of a loss of intracellular fluid and an increase in the extracellular fluid (ECF) although consensus of thinking does not exist. It is well accepted that bone mineral content is lost progressively after about 25 years. Interestingly, recent data indicates that the hydration status of the fat-free mass (TBW/FFM) in older individuals may be greater than in younger adults. This may be due to acute behavioral differences such as better hydration practices in the older group, or possibly an expansion of the ECF. An expanded ECF volume would contribute to the TBW volume being assessed.

The implications for age-associated changes in the lean body mass changes include a loss of physical work capacity, self-sustenance, and a reduced reserve of protein in the event of illness. Some speculate that approximately a 40% decline in body cell mass (the body protein compartment) will result in mortality. Reduced bone mineral is strongly associated with osteoporosis and with fractures and falls, which can increase the risk of mortality. Osteoporosis resulting in changes in the structure of the body may also reduce physical work capacity. Finally, absolute reductions in total body water will lead to heat intolerance and reduced physical work capacity, may increase the risk of orthostatic hypotension and falls, and increase the risk of heat illness. For example, the US heat wave of 1995 resulted in over 700 deaths. Statistical analysis of that event revealed that being elderly increased the risk of mortality. It is impossible to determine to what extent dehydration was a direct culprit, but hydration status along with other factors may well have put the elderly at risk. Hypohydration may also be indirectly linked to risks of kidney stone formation and bladder cancer due to inadequate fluid intake, which will impact hydration status.

Therapies used to intervene in the loss of lean body mass include physical exercise, altering nutrient intake, pharmacological agents, and dietary supplements. Regular physical exercise has been shown to sustain physical strength and presumably self-sufficiency of individuals into their nineties. Resistance training is particularly useful for maintaining lean body mass and physical strength. In combination with protein

supplementation, resistance training may further reduce declines in the lean body mass and function if not help older individuals restore this compartment. The benefits appear to be linked to the intensity of the exercise; heavier resistance and fewer repetitions provide the impetus for retarding the decline in muscle and bone mass. Little has been done in older individuals to examine other nutritional interventions with exercise, such as changing dietary carbohydrate and protein intakes, particularly those consumed immediately after exercise. Intake of essential amino acids and carbohydrate immediately after exercise has been shown to dramatically stimulate protein synthesis and contribute to a positive protein balance acutely in college-age adults. Whether chronic application results in a larger muscle that produces greater force remains to be determined. Pharmacological agents such as growth hormone injections, oral testosterone treatment, and more recently insulin-like growth factor 1 (IGF-1) administration have shown mixed value for stimulating an increase in LBM in the elderly. None of these treatments are without side effects. Dietary supplements have been recently investigated. The benefits of dehydroepiandrosterone (DHEA) have received most of the attention regarding aging. Creatine, chromium, conjugated linoleic acid, and androstenedione have been studied to a limited extent.

An “age-old” question remains: to what degree are the changes in LBM exclusively due to advancing age? Many factors associated with aging such as reduced nutrient intake due to loss of taste or appetite, self-selected sedentary lifestyle unrelated to loss of function, and preexisting but undiagnosed disease, wield a strong influence aside from aging per se. Armed with this knowledge, individuals may be able to manipulate some effectors of body composition (e.g., improved diet and physical activity), and attenuate to some degree the decline in LBM that is thought to be caused by aging.

Related Topics

▶ [Body fat](#), ▶ [Body mass index](#), ▶ [Diet](#)

Suggested Readings

Baumgartner RN (2005) Age. In: Heymsfield SB, Lohman T, Wang Z, Going S (eds) *Human body composition*, 2nd ed. Human Kinetics Publishers, Champaign, IL, pp 259–269

Evans WJ (2004) Protein nutrition, exercise and aging. *J Am Coll Nutr* 23:601S–609S

Kehayias JJ (2002) Aging and body composition. In: Rosenberg IH, Sastre A (eds) *Nutrition and aging*, vol 6. Karger/Vevey, Farmington, CT, pp 63–74

Body Fat

Lynn Janas · Craig A. Horswill

The factors that affect body composition and specifically the amount of fat an individual has in aging are complex and like those of overall body composition include genetic makeup, physical activity, diet, hormones, disease and drug, and supplement use. Changes in body fat content and distribution occur with aging and are associated with significant public health concerns. Strategies for maintaining body composition that is consistent with optimal health and functionality are especially important. To this end, the monitoring of body fat and the identification of associated health risks in the clinical setting are recommended. Topics of interest covered in this brief review include body weight, body mass index (BMI), percent body fat (% body fat), fat within the abdominal area, which appears to be associated with risk of chronic diseases, and obesity presenting with loss of skeletal muscle mass and strength (sarcopenic obesity).

Total body fat increases with aging in maturity and the pattern of deposition tends toward increased visceral fat, defined as intra-abdominal adipose tissue. Abdominal fat deposition is not uniform in aging and appears likely to be influenced by other factors. Men accumulate more visceral adipose tissue and this type of fat accumulation is substantially increased with menopause. Visceral fat accumulation is of concern because of its endocrine or hormone activity. Years of research now shows this tissue to be metabolically active and influential in insulin action, glucose tolerance, and the regulation of blood lipids. In the last decades of human life, the trend towards increased total body fat is reversed on the whole. Sarcopenia is also associated with aging and is defined as a loss in skeletal muscle mass and strength. The condition is accompanied by fat accumulation into muscle and results in increased risk of loss of mobility. Now seen with chronic obesity is the condition called sarcopenic obesity, which appears to have a profound link to

disease and disability. Because the age-related loss in muscle and strength is preceded by the accumulation of fat, it has been hypothesized that sarcopenic obesity results from chronic obesity that accelerates the loss of muscle, possibly through systemic inflammatory effects.

BMI is a measure of weight relative to height and is used as a useful and noninvasive clinical measure for estimating overall body fatness. The most widely used index of BMI for adult populations is calculated as [weight (kg)/height (m)²]. BMI increases through adulthood and then declines after the age of 60. Both high and low BMI values are associated with increased risk of disease.

A limitation of BMI is that it is not a direct measure of the fat compartment and does not distinguish excess adiposity, muscularity, and edema weight. The % body fat is a direct measure of obesity and health risk and is expressed as the total fat mass in relation to total body mass. Skinfold thickness measurements are a useful clinical measure of subcutaneous body fat from which body density and % body fat can be calculated. Computerized tomography and magnetic resonance imaging are the only methods available for accurate measurement of fat deposition within the abdomen.

Clinical measurement of waist circumference or waist/hip ratio can be used along with BMI as an indicator of abdominal fat deposition, allowing for a more specific assessment of regional body fat. Disease risk for cardiovascular disease, type 2 diabetes, and hypertension is increased in men with waist circumference over 40 inches and in women with waist circumference over 35 inches, even in those with normal body weights. In persons with such increase in abdominal girth, disease risk is increased in those who are overweight (BMI of 25–29.9), high or very high in patients who are obese (BMI of 30–39.9), and extremely high in those who are extremely obese (BMI of over 40). From 60 to 79 years of age, fat-free mass is reduced and the % body fat is higher for any given BMI value. Obesity-related disease risk categories specific for this older age group are yet to be established.

Because there are many causes of weight gain in aging, an individualized approach to weight loss is indicated. Approaches to weight loss include modification of lifestyle factors such as diet and physical activity, behavior modification, pharmacologic agents, and surgery, and available data do not support a single therapy over all others. Influences on body weight may change dramatically in an individual and one method of weight control may not be effective throughout the mature

years. Flexibility is needed in the approach to weight control with consideration of any changes in the physiologic state.

Because of the staggering effects of obesity on public health, efforts to prevent accumulation of excessive body fat are critical. Strategies for successful long-term weight loss can be viewed as the means of preventing weight gain in those most at risk. Success has been reported with high levels of physical activity each day, a healthy diet low in both calories and fat, eating a healthy breakfast each day, regular self-monitoring of weight, a consistent diet without variances on week-ends and holidays, and the avoidance of even small gains in weight that are likely to become larger gains.

Related Topics

➤ [Body composition](#), ➤ [Body mass index](#), ➤ [Diet](#)

Suggested Readings

- Baumgartner RN (2005) Age. In: Heymsfield SB, Lohman T, Wang Z, Going S (eds) *Human body composition*, 2nd ed. Human Kinetics Publishers, Champaign, IL, pp 259–269
- Mitchell CO, Chernoff R (2006) Nutritional assessment of the elderly. In: Chernoff R (ed) *Geriatric nutrition: the health professional's handbook*, 3rd ed. Jones & Bartlett, Sudbury, MA, pp 429–458

Suggested Resources

- American Dietetic Association, Food and nutrition information (Oct 27, 2005). <http://www.eatright.org>

Body Image

Kathleen Franco · John Franco

Body image has not drawn as much attention in the aging population as it does in early adulthood. In general, older individuals are concerned about overall health. Yet outward appearance is indeed important and affects quality of life and social advantages. There is some evidence that those who appear older than their chronological age are frequently less physiologically fit. Although many changes of aging are not life-threatening, they can carry negative psychological effect. Deteriorating self-esteem can lead to a depressed

mood or withdrawal from loved ones. If appearance carried importance in one's younger life, it will remain an important value. "Baggy" skin and an increasing plethora of wrinkles can cause great distress. For some, plastic surgery offers facelifts and skin tucks of arms, legs, and abdomen. Others prefer Botox injections or skin preparations prescribed or over-the-counter.

Facial wrinkles and hair changes are common normal experiences of aging. Pigment or color of the skin will often darken in uneven blotches and are part of the aging process.

There are many other noncancerous skin changes of aging including "skin tags," cherry angiomas, seborrheic keratosis (excessive growth of hard tissue produced by the outer skin layer), sebaceous hyperplasia (enlargement of sweat glands or mature sebaceous or sweat cells proliferate forming a plaque or papule), and telangiectasia (dilation of small capillaries of the vascular blood system). Red or dark red blotches are more visible during the aging process. Procedure to remove skin blotches such as electrodesiccation with or without curettage can be used in older adults. Cryosurgery is another frequently selected method for removal. Doctors perform cryosurgery in outpatient clinics by exposing selected cells to extreme cold leading growths to drop off as the selected cells die.

For seborrheic keratoses, dermatologists can scrape off the hard keratotic areas allowing the underlying skin to heal properly. Even if one chooses not to have them removed, it is wise to have them examined as occasionally they transform into basal cell carcinomas. For seborrheic keratoses, alpha-hydroxy acid and glycolic acid also hold merit. Photoprotection (protection from the sun) to prevent or limit is always recommended and includes sunscreens and clothing.

Hair color can easily be changed at home or in the salon as grey or white hairs increase. For some, losing hair may be a significant concern. Medications such as minoxidil, antiandrogens, or hair transplantation are treatment options. However, unwanted facial hair may increase in older women leading to increased tweezing, shaving, facial bleaches, waxing, depilatories, and electrolysis.

One uncommon condition of younger adults, body dysmorphic disorder (BDD) can carry over into older years. Postmenopausal women can develop a preoccupation with imagined or small defects in appearance. Frequently the focus is on the face, genitals, or breasts. If there is a specific and real change in appearance it can be greatly exaggerated. For example, nose and ears

appear proportionately larger than other facial features in normal aging. Regardless of whether or not it is normal and to be expected, it may be difficult for some individuals to accept this change in their appearance. Although plastic surgeons see these patients more often than psychiatrists, depression and suicidality, as well as other symptoms of psychological distress may be present needing attention. Strong personality traits or even personality disorders frequently accompany BDD. Although these individuals do not generally lose touch with reality, up to 50% can have rigid, fixed, or delusional beliefs not grounded in fact.

Cognitive behavioral therapy can teach an individual with BDD to identify particular triggers to these thoughts and emotional responses. The therapist will assist in developing a list of more realistic interpretations and encourage practice and homework assignments to bring about better adaptation. Antidepressants will address depression, anxiety, and obsessive-compulsive symptoms accompanying BDD. Those agents that directly inhibit the reuptake of the neurotransmitter, serotonin, are most beneficial, but occasionally a drug specifically to reduce psychosis is needed.

Related Topics

[Cognitive behavioral therapy](#), [Cosmetic surgery](#), [Depression](#), [Eating disorders](#), [Hair replacement](#), [Obesity](#), [Psychotherapy](#), [Skin care](#), [Skin disorders](#), [Wrinkles](#)

Suggested Readings

Agronin ME (2004) Somatoform disorders. In: Blazer D, Steffens D, Busse E (eds) Textbook of geriatric psychiatry. American Psychiatric Press, Arlington, VA, pp 295–302
 Fenske N, Albers S (1990) Cosmetic modalities for aging skin: what to tell patients. *Geriatrics* 45(9):59–67

Body Mass Index

Jyoti Aneja · Ashish Aneja

Body mass index (BMI) is defined as a person's weight in kilograms (kg) divided by their height in meters (m) squared ($BMI = \text{weight}/\text{height}^2$). BMI is a crude but useful standard for the assessment of overweight and

obesity and in general tends to parallel total body fat. According to the National Institute of Health (NIH), overweight is defined as a BMI of 25 or more for men and 23 or more for women. Obesity is defined as a BMI of 30 and above. Morbid obesity is defined by a BMI exceeding 35.

BMI is currently used and accepted widely as a measure of obesity in populations and has been accepted by the World Health Organization (WHO) for this purpose. On a population-based model, BMI allows for an accurate estimation of nutritional, economic, and health trends in society.

Despite its usefulness, simplicity, and practicability, the use of BMI alone for estimation of obesity has several important shortfalls. Athletes and muscular individuals may have a BMI greater than 30 because of their muscle mass and cannot therefore be classified as obese. On the other hand, the elderly may have “normal” BMI with a lot of body fat, making them obese by other parameters. BMI also does not account for differences in body mass that occur in people of different ages, sexes, races, and ethnicity. It also does not consider the variations in muscle mass, bone density, body fat percentage, or body fat distribution.

Recommended BMI Cutoffs

For men:

- Underweight: less than 20
- Ideal: greater than or equal to 20 but less than 25
- Overweight: greater than or equal to 25 but less than 30
- Obese: greater than or equal to 30
- Morbidly obese: greater than or equal to 35

For women:

- Underweight: less than 18
- Ideal: greater than or equal to 18 but less than 23
- Overweight: greater than or equal to 23 but less than 30
- Obese: greater than or equal to 30
- Morbidly obese: greater than or equal to 35

In 1998, the US NIH redefined BMI, lowering the normal/overweight cutoff from 27.8 to 25. This had the effect of redefining approximately 30 million Americans, previously “technically healthy” to “technically overweight.” For Southeast Asian body types, a BMI of 23 or greater is now widely accepted as

overweight. The new cutoff BMI index for obesity in Asians is 27.5 compared with the traditional WHO figure of 30.

Related Topics

[Body composition](#), [Body fat](#), [Obesity](#), [Weight control maintenance](#)

Suggested Resources

www.nhlbisupport.com/bmi/bmi-m

Bone Strength

Lori B. Siegel

Understanding the pathophysiology of bone is important in understanding what happens to bone strength as we age. The skeleton is a dynamic organ with a tremendous amount of turnover of tissue. However, the degree of tissue activity may vary with different conditions. Bone continually remodels itself as old bone is broken down and replaced by new bone. This is necessary so that the skeleton remains biochemically healthy. The process of resorbing or taking away bone is closely coupled with the laying down of new bone. When these two processes are balanced, there will be no loss of bone or bone strength. In osteoporosis, the bone is normal in structure but there is a reduction in the bone mass that is being replaced, so the strength of the established bone is constant, but the overall strength is less due to reduced bone mass.

Bone strength declines with aging due to a decline in bone mass, alterations in bone alignment, and changes in the bone chemicals themselves. Bone density is associated with bone strength but they are not always the same depending on the quality of bone that is being made. As bones age, the architecture and quality of bone may be lowered causing decreased bone strength. The end result is that as we age the bones are weaker in spite of even having the same amount or density. Some of the reasons for this may be a decrease in the thickness of the cortical bone (outside bone), or more holes in the bone (porosity).

There may be a thinning of the inside of the bone (trabecular bone), which acts as a bridge to support the bone material. If the supports are thin, the overall bone is weak. As a result of the changes of the bone itself, any loss in the bone density will seem to have a more dramatic effect on the bone strength. Because of this, previously normal stresses on the bone may no longer be tolerated and result in a higher rate of fractures. Also, as people get older, other innate bone-protective mechanisms, such as balance, vision, and coordination disappear. A combination of loss of these senses and a subsequently increased fall rate on weakened bones is a set-up for breaks and fractures. Less or mild trauma can even cause more bone damage.

When men and women reach their thirties or forties their bones start to lose strength. This process continues throughout life. By the time people reach old age, men may have lost up to a quarter of their bone strength and women almost half. Other age-related conditions that add to decrease in bone strength include changes in bone cell function and mineral metabolism. After menopause, women have increased bone loss due to estrogen decline as the bone seems to be taken up more than it is being made. There is more bone turnover, with an imbalance on the side of making bone.

Age-related changes on bone strength include falling vitamin D levels, through decreased consumption or exposure to sunlight. The basic metabolism of vitamin D is altered through a body's aging process. Other concurrent medical conditions and medications may also have an adverse affect on bone strength as one ages. The use of corticosteroids that may be used in patients who develop arthritis or other autoimmune conditions may weaken bone. Thyroid abnormalities and even thyroid replacement may cause alterations in bone strength.

Decrease in bone strength as we age may not be entirely preventable. The greatest risk for fracture is bone loss. The bone loss on top of weakened bones is of great concern in the aging population. The most important thing that can be done is prevention of osteoporosis and falls. A good knowledge of osteoporosis and identifying those individuals at risk is key. There are medications to treat osteoporosis and they should be used in those patients at risk of fracture. Although these medications will not increase bone strength per se, they will help prevent fracture. Assuring adequate vision, balance, and coordination will help prevent falls. Muscle strengthening may also

help prevent falls and maintain bone strength. Promoting an active lifestyle and healthy diet will also be of benefit.

Related Topics

▶ [Falling](#), ▶ [Osteopenia](#), ▶ [Osteoporosis](#)

Suggested Readings

Arthritis Foundation (2001) Primer on rheumatic diseases, 12th ed. Atlanta, GA

Klippel JH, Dieppe PA (1998) Rheumatology, 2nd ed. Mosby, St Louis, MO

Klippel JH, Dieppe PA, Ferri FF (2000) Primary care rheumatology. Harcourt, London

Botox

Janet M. Blanchard

Botox has become a very popular procedure in the past decade and the aesthetic use for relaxing muscles that cause wrinkles has risen dramatically. Before being used for cosmetic reasons, its application was primarily medical, including migraines.

It was approved by the Food and Drug Administration (FDA), for treating wrinkles in between the eyebrows, in 2002. The complexity of facial aging is more apparent than ever, as many women and men want to reduce these signs, but do not want a surgical procedure. This is one of the contributing factors toward making it the number 1 procedure performed by board-certified plastic surgeons in 2002.

Botox is a toxin produced by the bacterium *Clostridium botulism*. In its active form, it is a deadly poison and can produce drastic symptoms in food poisoning. It can be used for cosmetic and medical purpose because it is manufactured in the stable form. This substance works by paralyzing the muscles of interest. This is used for muscles that cause wrinkles/creases in between the eyebrow, forehead, crow's feet, and even the bands in the neck. Botox is an office procedure that takes approximately 15 minutes and there is no downtime or associated discomfort. The end result does not become apparent for approximately

a week. It should be noted that it does not completely paralyze the muscles so a patient cannot animate or look “stone-faced.” Botox lasts approximately 3 months. The longer Botox is used, the longer the interval of injections. This is because the muscle gets weaker over time when it is not stimulated.

Botox is a very viable alternative for nonsurgical facial rejuvenation; it should be administered by someone who is qualified and board-certified.

Related Topic

• [Cosmetic surgery](#)

Suggested Readings

Rohrich RJ, Janis JE, Fagien S, Stuzin JM (2003) Cosmetic use of botulinum toxin. *Plast Reconstr Surg* 112(5):1775–1885

Suggested Resources

American Society of Plastic Surgeons (2002) National plastic surgeons. Cosmetic and reconstructive patients. [hatistics.cfm](#) (accessed April 2003).

www.botoxcosmetic.com

Bowel Obstruction

Robert Stern · Lawrence Miller

The term “bowel obstruction” describes a condition in which there is a blockage to the flow of the intraluminal (within the walls of the bowels) contents of either the large bowel (colon) or the small bowel (small intestines). While the results of these conditions are mainly similar, the causes are very different; therefore, large bowel obstruction (LBO) and small bowel obstruction (SBO) are generally treated as separate entities.

Small Bowel Obstruction

In the United States, SBO is one of the most common indications of abdominal surgery, and the most

common indication for surgery of the small bowel. The three most common causes of SBO in the United States are: adhesions (areas of scarring/abnormal fibrous connection) from prior surgeries (~60%), cancer (20%), and hernias (10%).

1. After surgery, as part of normal healing, the body generates fibrous tissue in an effort to strengthen the areas damaged by surgery. Sometimes fibrous bands called adhesions are formed between the various intra-abdominal organs. These adhesions may become entangled with the small intestines, causing a mechanical obstruction to the flow of the contents of the intestines, resulting in SBO.
2. Cancer causing SBO can be a malignancy intrinsic to the small bowel or be a metastasis from another primary tumor. If the tumor is native to the small bowel, it can grow sufficiently large such that the luminal contents can no longer pass, and an obstruction results. When the cancer is a metastasis (spreading cancer) it will usually cause SBO by externally compressing the small bowel walls until flow is impeded.
3. Hernias are another cause of mechanical obstruction to the small bowel. A hernia is an abnormal protrusion of part of an organ through the tissues that normally contain it. Because so much of the small bowel is freely mobile within the abdomen, it can move and get trapped in a defect in the tissue that normally contains the small bowel. This can impede the flow of bowel contents causing SBO.

Clinical Presentation Patients with SBO typically present with the sudden onset of abdominal pain and distention, cramping, vomiting, and the inability to pass stool and flatus. The severity of the patients’ symptoms depends on the degree of obstruction (complete or partial) and its duration.

Initial physical examination may show mild abdominal tenderness, with or without a palpable mass. Auscultation of the abdomen (listening to the abdomen with a stethoscope) may initially reveal high-pitched hyperactive bowel sounds that gradually subside even as the obstruction continues. If the involved segment of bowel becomes strangulated, and thus loses its blood supply, the abdominal tenderness will often increase dramatically and localize to the site of the strangulated bowel. At the same time the patient may become hemodynamically unstable (experience serious abnormalities in blood pressure or pulse).

Laboratory tests are not particularly helpful in diagnosing SBO but plain abdominal x-rays are often sufficient to make the diagnosis. Typical findings on x-rays include dilated loops of the small bowel without signs of dilated large bowel on supine (lying down) views, while upright films show multiple air fluid levels within the small bowel. The presence of gas in the large bowel helps determine whether there is a partial or complete SBO. When the diagnosis of SBO is in question, an abdominal computed tomographic (CT) scan with contrast can be helpful.

Pathophysiology Once the small bowel becomes obstructed, the three main complications that may develop are: infection, hypotension (low blood pressure), and ischemia (loss of blood supply) causing death of the small bowel.

With a complete obstruction, the segment of bowel behind the blockage will accumulate fluid, swallowed air, and fecal contents. This increase in luminal contents increases pressure on the bowel walls causing them to stretch. As the walls stretch, the normal contractions of the bowel walls slow down or stop. This allows the bacteria that are native to the small bowel to multiply and later move across the intestinal walls and enter into the blood stream causing a serious infection.

Also, these bacteria contribute to an increase in the secretion of fluids into the intestinal lumen. This fluid loss can be severe enough to cause hypotension and death.

Finally, as the pressure within the bowel lumen increases, it may become high enough to overcome the pressure within the arterial blood vessels. This pinches off the circulation, causing death to that part of the bowel.

Treatment Treatment of SBO generally revolves around the prevention of the three major complications listed earlier. Large volumes of intravenous fluids are administered to maintain intravascular volume (fluid in the circulatory system), and any electrolyte abnormalities (levels of essential chemical compounds in the blood) are corrected. At the same time broad-spectrum antibiotics are started against the common organisms known to be present within the bowels. A nasogastric tube (tube inserted through the nose into the stomach) should be used to suction out stomach contents in an effort to decompress the involved section of bowel. If the obstruction is complete then surgery is required to relieve the obstruction and

restore normal intestinal flow. If the patient has a strangulated SBO, then emergent surgery is required as this is a life-threatening condition.

Partial obstructions can be managed with non-operative treatment when there is no clinical evidence of strangulated bowel and the patient improves within 48 hours. This involves nasogastric suction, fluid and electrolyte repletion, and antibiotics. If this approach does not significantly alter the patient's clinical status after 48 hours, then surgery is indicated.

Large Bowel Obstruction

In contrast to SBO that can be found among any age group in the United States, LBO is primarily a disease of the elderly with cancer as its typical cause. At least 50–60% of all cases are caused by malignant disease, usually colorectal cancer. The other two major causes are volvulus, which is a loop of bowel twisted on top of itself (~20%), and diverticular disease (~10%), which is a weakness and thinning of the wall of the bowel, which may ultimately lead to an obstruction.

Clinical Presentation People with LBO will often seek medical care complaining of abdominal pain, and either diarrhea or a complete lack of stool. When the obstruction is caused by cancer, patients may notice a change in their stool caliber from normal to elongated and thin. They may also complain of weight loss, weakness, fatigue, and decreased appetite.

Patients with volvulus often have an abrupt onset of symptoms. Many times, these patients have a history of chronic laxative use and multiple medical problems including a high proportion of mental illness.

Patients who present with obstruction from strictures (narrowing of the colon), which developed because of diverticular disease (diverticulosis and diverticulitis) may have a history of diverticular disease with symptoms evolving over several months to 2 years.

Findings on physical examination will vary depending on whether the obstructed segment of bowel has become strangulated. Initial examination may show mild abdominal tenderness, with or without a palpable mass (mass that can be felt on exam).

When bowel obstruction is considered possible, plain x-rays in the supine and upright positions are done. In most cases the colon will be dilated with little gas in the rectum; and the small bowel may or may not be dilated.

X-rays are often diagnostic for volvulus as well, and may identify potential complications like perforation, which is an indication for urgent surgery. If x-rays show an LBO, the next study is often a contrast enema (specialized x-ray procedure that allows for examination of the bowel walls), which can outline a mass or show the focal point of a volvulus. A fiberoptic scope (a colonoscope inserted into the bowel to allow a direct look) may also be used, but only when perforation is not suspected.

Standard blood tests usually show signs of dehydration and occasionally infection. Also, electrolyte abnormalities are common secondary to fluid sequestration (fluid accumulation) within the bowel lumen.

Pathophysiology Similar to SBO, obstruction of the large bowel results in increasing intraluminal pressure with bacterial overgrowth, intraluminal fluid accumulation, and increasing wall pressures. The ileocecal valve separates the ileum (the end of the small bowel from the cecum), which is the start of the large bowel. When that valve is functional, it prevents the spread of the increased fluid, bacteria, and pressures into the small bowel. Unfortunately, this creates an area of increasing pressure in the cecum without an outlet. As its diameter increases under the stress of increasing pressure, the wall tension also increases. This may cut off blood supply to a segment of the colon, causing cell death, and an increased chance of developing complications.

Treatment The initial treatment of LBO as a result of strictures or malignancy is the same, and includes intravenous fluids, correction of electrolyte abnormalities, and nasogastric decompression. Antibiotics may not be given if the person does not show signs of infection. If the obstruction is complete, then emergency surgery is warranted. In cases of partial obstruction the person can be managed without surgery and monitored for improvement over the next 24 hours. If the person responds to therapy, then surgery can be performed urgently rather than emergently allowing treatment with a single operation. If the patient does not respond to medical management, then surgery is indicated.

Treatment of sigmoid volvulus involves decompression using a fiber-optic scope, with or without a tube placed in the rectum. As the recurrence rate of sigmoid volvulus is 40–50%, surgery to remove part of the colon is indicated following successful

treatment. Treatment of cecal volvulus is less clear though a surgical approach seems to be better.

Related Topics

▶ Abdominal pain, ▶ Cancer, ▶ Colonoscopy, ▶ Colorectal cancer, ▶ Constipation, ▶ Sigmoidoscopy

Suggested Readings

- Al-Jaroudi D, Tulandi T (2004) Adhesion prevention in gynecologic surgery. *Obstet Gynecol Surv* 59(5):360–367
- Bitterman R, Peterson M (2002) Large intestine. In: Marx J, Hockberger RS, Walls RM (eds) *Rosen's emergency medicine: concepts and clinical practice*, 5th ed. Elsevier, Philadelphia, PA, pp 1327–1342
- Harris JW, Beauchamp RD, Evers BM, Mattox KL, Townsend C (2004) *Sabiston textbook of surgery: the biological basis of modern surgical practice*, 17th ed. Elsevier, Philadelphia, PA
- Swenson BR, Hollenbeak CS, Koltun WA (2002) Hospital costs and risk factors associated with complications of ileal pouch anal anastomosis. *Surgery* 132(4):767–773
- Torrey S, Henneman P (2002) Small intestine. In: Marx J, Hockberger RS, Walls RM (eds) *Rosen's emergency medicine: concepts and clinical practice*, 5th ed. Elsevier, Philadelphia, PA, pp 1283–1293
- Turnage R, Bergen P (2002) Intestinal obstruction and ileus. In: Feldman M (ed) *Sleisenger & Fordtran's gastrointestinal and liver disease*, 7th ed. Elsevier, Philadelphia, PA, pp 2113–2126

Breast Augmentation

Janet M. Blanchard

Over the past few decades, there has been a lot of societal emphasis placed on the shape and size of women's breasts. Many women sometimes wish that their breasts were larger and for that reason seek breast enlargement or augmentation mammoplasty. This cosmetic procedure entails using implants to enlarge and shape the breasts.

This procedure then gives a woman the flexibility to wear clothes that, at one time, were not an option, such as swimsuits or dresses that fit in the hips and not the breast. Sometimes, women wish to go back to the size they were prior to pregnancy or after weight loss. It may also help her with her self-esteem and, indirectly, how she relates to others. These are some

of the indications for which women seek breast augmentation.

Over a decade ago, there was a great deal of negative publicity directed toward breast implants, particularly silicone gel implants. Reports that the implants broke and caused illnesses, such as atypical autoimmune disease and localized problems, prompted the US Food and Drug Administration (FDA) to ban implants except for patients with breast cancer or few others who enrolled in strict research studies. Since then, there have been both prospective and retrospective studies that have exonerated the implants of causing serious or chronic conditions such as cancer or lupus.

Still, silicone implants are only used in trial studies and have been replaced with saline (salt) implants. Salt is a natural constituent of our bodies and, therefore, allergic reactions are virtually nonexistent. Other substances such as peanut and soybean oil have been tried, but have since been taken off the market.

One of the most important steps for seeking breast augmentation is an in-depth consultation with a board-certified plastic surgeon. There are always risks associated with any procedure and these should be provided in the consultation. Many women also obtain a wealth of information from the Internet. There are many websites dedicated to this subject as well as information through the American Board of Plastic Surgery. If you are on a different website other than this, make sure your plastic surgeon is board-certified.

Once a woman has decided to have the procedure performed, there are various options for how and where it is performed. This is a procedure performed in an accredited outpatient facility, surgery center, or hospital usually on an outpatient basis. It is usually performed under general anesthesia, but conscious sedation can also be used. An incision can be made in the following places: around the edge of the areola (pigmented area around the nipple), just above the crease underneath the breast, within the armpit or just at the edge of the navel. Once the incision is made, a space or pocket is developed and the implant is placed. The implant can be placed either underneath the breast tissue itself or underneath the muscle of the chest wall.

The technique used for the surgery depends not only on the surgeon's preference but also on the desired result of the patient. It is also possible that a procedure to enhance the desired result will be suggested by your surgeon. For example, if the breasts are saggy, a breast lift may be needed.

Postoperatively, there is a period of recovery for 2 or 3 days and sometimes a week depending upon the patient's threshold. Pain medication is given to help with the discomfort. Usually within a week, one is able to shower, the stitches (if not dissolvable) will be removed, and return to nonstrenuous work is allowed. A period of time will elapse before the swelling resolves and discontinued use of a support bra is allowed. Strenuous activity is usually allowed after a month.

There are many common questions regarding breast augmentation. How does a woman decide how large she wants to be? Many women look at pictures in a magazine. Although this can be of some assistance, the shape and size of the picture may not have any correlation to hers. Some surgeons have women put trial sizes in their bra. Others suggest buying an inexpensive bra of their desired size and placing water in a sandwich bag. It is a difficult decision to make, but the woman should really make a conscientious effort to be a part of that. Many women think when they have their breasts enlarged they will go, for example, from a 32A to a 36C. This is a misconception. The circumference of the chest will not get bigger, just the volume, that is, a woman who wears a 32 bra will continue to wear a 32 bra.

Another common question is how long do the implants last? No one really can predict that figure. Keep in mind, this is a manufactured device and can have defects. The manufacturing companies offer a lifetime warranty and will replace the implant at no charge. Sometimes, there is also a stipend offered to help offset the surgery that is necessary to replace the implant if this event occurs within the first 2 years.

Some women wonder what may happen to them if there is a defect. If there is a defect in the implant, the only thing it can do is deflate. There is an obvious difference between the two sides and the implant will have to be replaced. However, the procedure to replace implant is relatively simple and does not require a lot of "downtime."

Others wonder what will happen if they make the wrong decision about the size. If this occurs, the size can be changed with further surgery. If there is any uncertainty, there are implants, which have a port through which more volume may be added. However, a small secondary operation is necessary to remove the port.

Thousands of breast augmentations are performed every year with successful and pleasing results on the patients' part. This is an important decision and it is critical to have a good rapport with the plastic surgeon

you choose, as well as making sure that he or she has the proper qualifications.

Related Topics

• Breast reconstruction, • Breast reduction, • Self-esteem

Suggested Readings

- Bostwick J III (2000) Reduction mammoplasty. In: Bostwick J III (ed) *Plastic and reconstructive breast surgery*, 2nd ed. Quality Medical Publishing, St Louis, MO, p 371
- Culbertson JH, Jr (ed) (1998) Operative techniques in plastic and reconstructive surgery 5(2):138–144
- Elliott FL (2001) Breast augmentation with round, smooth, or gel implants: the pros and cons. *Clin Plast Surg* 28(3):523–53
- Young L, Watson M (2001) Breast implant research: where we have been, where we are, where we need to go. *Clin Plast Surg* 28(3):451–484

Suggested Resources

American Board of Plastic Surgery. <http://www.abplsurg.org/www.implantinfo.com>
www.plasticsurgery.org

Breast Cancer

Lisa M. Arfons

Breast cancer is the most common malignancy affecting females, and is the second most common cause of cancer-related deaths in women. In 2005 approximately 212,000 people were diagnosed with breast cancer and 40,000 lost their lives to it. Although the number of new diagnoses increases each year, in part due to increased screening, the mortality rate has continued to decline over the past several years. While breast cancer can also affect men, it is rare, accounting for less than 0.1% of all breast cancer diagnoses in 2005. This chapter focuses primarily on the risk factors, screening, diagnosis, and treatment of the disease in women.

Breast cancer can develop in any woman, but some women are more likely to develop breast cancer compared to others based on a variety of risk factors. The most important risk factors are age, a personal history

of breast cancer, and a strong family history. The majority of breast cancers occur in women 50 years or older with the greatest risk of development between 70 and 80 years. Any woman with a previous diagnosis of breast cancer is at a higher risk of being diagnosed with a second breast cancer. Women with two or more first-degree relatives (father, mother, daughter, or sister) with breast cancer are more likely to develop the disease compared to women with no family history. Other risk factors related to estrogen exposure such as age of menarche (before 12 years), age of menopause (after 55 years), first pregnancy (after 30 years), and use of hormonal therapy, all increase the risk of developing breast cancer. Prior abnormal breast conditions such as fibroadenomas, atypical hyperplasia (a precancerous condition), and carcinoma in situ (cancerous cells without invasion into surrounding breast tissue) increase a woman's risk of developing cancer approximately 3.5 times. Conversely, breastfeeding, regular exercise, and a low body mass index may decrease an individual's chance of developing breast cancer.

Mammography is the only imaging modality that is currently approved for breast cancer screening. The American Cancer Society recommends yearly screening mammography and the United States Preventive Services Task Force recommends screening mammography every 1–2 years for women 40 years or older who are at average or low risk for the development of breast cancer. Patients at high risk should discuss with their doctors the ideal time to begin screening and how often screening should be performed. The age at which mammographic screening is no longer necessary depends on an individual's overall health and functional status compared to her risk of developing the disease.

The majority of breast abnormalities are identified by mammography, while a smaller proportion is discovered by the woman herself during a monthly self-breast examination, or by a physician during a clinical breast examination. Many breast cancers are asymptomatic but can present as a breast mass, nipple discharge, a change in the texture or shape of the breast, or painless swelling of the lymph nodes in the underarm. Since all breast masses and mammogram abnormalities are not cancerous, a radiologist may recommend more mammographic images or an ultrasound to better evaluate the lesion. Any suspicious mass should be biopsied. A surgeon will obtain a sample tissue by an image-guided biopsy if the mass is not palpable, a needle biopsy, or an open tissue biopsy to make a definitive diagnosis of malignancy.

After diagnosis a medical oncologist will stage the cancer to determine the prognosis and treatment plan. Staging is based on the tumor size, lymph node, skin, and chest wall involvement and spread to other organs, usually brain, lung, or bones. Therapy is twofold and includes both local and systemic control of the disease. The goal of local treatment is to excise the tumor entirely, either by a modified radical mastectomy, which results in removal of the entire breast or any breast conserving therapy that results in removal of the tumor itself. If breast conserving therapy is performed, additional radiation therapy to the affected breast is also necessary to achieve local control of the disease. During either surgery, lymph nodes in the underarm are sampled and examined for breast cancer, and if found, it determines the need for systemic therapy.

Systemic therapy can be divided into hormonal therapy and chemotherapy. When a breast cancer is analyzed under the microscope the pathologist can determine the types of surface markers on the individual cells. If a breast cancer has receptors for estrogen and progesterone, therapies designed to reduce the levels or block the actions of these hormones can be used. Side effects from hormonal therapy include hot flashes, blood clots, and a slightly increased risk of uterine cancer. Chemotherapy kills any cells that are rapidly dividing, including cancer cells. Common side effects of chemotherapy include nausea and vomiting, hair loss, and fatigue; all are temporary and resolve once the therapy is completed. Most systemic therapy regimens for breast cancer include a combination of hormonal therapy and chemotherapy.

Over the last three decades there have been many breakthroughs in breast cancer prevention, diagnosis, and treatment. Currently there are over two million people in the United States who have survived the disease, and this trend is expected to continue as new discoveries are made.

Related Topics

- ▶ Breast examination, ▶ Breast reconstruction,
- ▶ Cancer

Suggested Readings

Giordano S, Hortobagyi G, Kau S et al (2005) Breast cancer treatment guidelines in older women. *J Clin Oncol* 23:783–791

- Humphrey L, Helfand M, Chan B et al (2002) Breast cancer screening: a summary of the evidence. *Ann Intern Med* 137:347–360.
- Jemal A, Taylor M, Ward E et al (2005) Cancer statistics, 2005. *Cancer J Clin* 55:10–30
- Myers R, Johnston M, Pritchard K et al (2001) Baseline staging tests in primary breast cancer: a practice guideline. *CMAJ/JAMC* 164:1439–1444

Breast Examination

Susan Kirsh

A breast examination is a simple means of detecting changes in breast tissue. There are two kinds of examinations: self and clinical. The goal of these procedures is early detection of breast cancer in order to provide early treatment and increase survival rates.

Breast cancer is not only the most common non-skin cancer in women, but the second deadliest as well. If a woman lives up to 90 years, she has a one in eight chance of developing breast cancer. Breast cancer is a common malignancy for all women, but as women age, they are more likely to be diagnosed with the disease. Statistically, the 1-year incidence for breast cancer in a 40-year-old woman is 1 in 800, for a 50-year-old it is 1 in 400, and for a 60-year-old it is 1 in 200. When the incidence of disease in a population is lower, screening tests may be less effective. Therefore, patients experience different recommendations based on their age, family history, and self-history of breast cancers (see also Cancer screening).

Much research in the last 40 years has been done on screening for breast cancer, yet guidelines differ slightly in their recommendations for breast examination and initiation age for mammography. The screening methods studied and currently in use include: clinical breast examination (CBE), mammography, and self-breast examination (SBE).

CBE is performed by a health care professional on a patient without symptoms. Some women are more willing to accept CBE instead of mammography for breast cancer screening, which makes it an especially important clinical skill. To adequately perform a CBE, one must know the distribution of breast tissue. Breast tissue extends from the sternum medially to the mid-axillary line laterally, and from the clavicle superiorly to the “bra line” inferiorly. Normal breast tissue can be lumply to the touch due to mammary ducts and lobules.

A second screening method for breast cancer is mammography. While no previous randomized controlled trial has looked at the effectiveness of CBE alone (versus no screening method), mammography has been evaluated without other modalities for breast cancer detection and has been shown to be effective in decreasing breast cancer mortality. Since mammography is known to be an effective screening tool, a clinical trial that excludes it would be unethical.

Several clinical trials conducted in 1999 studied the effectiveness of both the CBE and mammography in early breast cancer detection. Of those participating in these trials, breast cancer mortality decreased by about 25% in women aged 50–69 and by 18% in women in their forties.

Research in this area is ongoing. Another study, the Edinburgh Randomized Trial of Breast Cancer Screening, found mammography detection of breast cancers to be 26% while CBE detection rate was only 3%. However, another randomized trial, the Health Insurance Plan (HIP) of New York, found breast cancer detection rates of 33% and 45%, respectively. The HIP study was conducted with early mammography techniques, but this suggests that CBE does have a role in detection of breast cancer outside of mammography. Others report CBE can find from 3% to 45% of breast malignancies. The exact percent of cancers found using CBE as a screening method is not known but felt to be important.

One reason that cancer rate detection with CBE may vary is the difference in technique used. Rates of CBE sensitivity (finding disease in those who really have it) range from 53–68% in women aged 40–49 to 48–63% in women aged 50–69. Different studies use different methods for performance of the CBE. The Mammacare method has been advocated for universal use since its components have been validated in independent investigations of CBE technique. The components include palpation, examination pattern, and duration of inspection. Palpation of the breast is most accurately done while the patient is lying down with her arm extended above her head. This flattens out the breast tissue. The entire breast is palpated using the boundaries previously outlined in a vertical strip pattern or lawnmower pattern. The pads of the index, middle, and ring fingers palpate each row. In each row, the clinician should stop and make small circular motions as if tracing the outer edge of a dime at a superficial, intermediate, and deep pressure. Each CBE can take up to 3 minutes for each side in

an average-sized breast (B cup). Feeling the breast tissue for enlarged lymph nodes and palpation of the nipple area are important elements of a comprehensive examination. Expression of fluid from a nipple is not a useful prognostic sign for cancer. However, spontaneous nipple discharge may need further evaluation.

Several guidelines recommend CBE be performed every 1–2 years for all women above 40. However, women at higher than average risk need to discuss individual screening recommendations with their health-care provider. Evidence shows that clinicians who were taught the Mammacare method of CBE improved their sensitivity of finding breast cancers.

There is some overlap with mammography and CBE; CBE will detect 10% of breast cancers that mammography misses and mammography will detect 40% of breast cancers not found on physical examination. Overall, patients have a better long-term survival if their breast cancer is detected by mammography as compared to CBE.

A third breast cancer screening method is SBE. This procedure allows women to monitor and detect changes in their own breast tissue. It should be performed each month, usually within a week of menstruation, when the breast is least bumpy. Technique is important in SBE. Patients should ask their health care providers to assist in demonstrating the proper technique. The proper technique includes visualization of the breast and the systematic examination of breast tissue using the middle three fingers. SBE is not a substitute for screening mammography or CBE.

Few studies have shown that the chance of dying from breast cancer is reduced by utilization of SBE. However, there may be some evidence to support this method of screening. Patients need to be aware that the evidence for SBE is unproven and that it may increase their chances of having a benign breast biopsy. The American Academy of Family Physicians, the American College of Obstetricians and Gynecologists, and the American Cancer Society all recommend routine practice of SBE.

Related Topics

- [Breast cancer](#), ➤ [Cancer](#), ➤ [Cancer screening](#), ➤ [Health promotion](#)

Suggested Readings

- Barton MB, Harris R, Fletcher SW (1999) Does this patient have breast cancer? The screening clinical breast examination: should it be done? How? *JAMA* 282:1270–1280
- Bobo JK, Lee NC, Thames SF (2000) Findings from 752,081 clinical breast examinations reported to a national screening program from 1995 through 1998. *J Natl Cancer Inst* 92:971–976
- Harvey BJ, Miller AB, Baines CJ, Corey PN (1997) Effect of breast self-examination techniques on the risk of death from breast cancer *CMAJ* 157:1205–1212
- Miller AB, To T, Baines CJ, Wall C (2000) Canadian national breast screening study-2: 13-year results of a randomized trial in women aged 50–59 years. *J Natl Cancer Inst* 92:1490–1499
- Newcomb PA, Weiss NS, Storer BE, Scholes D, Young BE, Voigt LF (1991) Breast self-examination in relation to the occurrence of advanced breast cancer. *J Natl Cancer Inst* 83:260–265

Suggested Resources

- Breast Cancer Information and Support. <http://www.breastcancer.org>
- The Breast Self Examination Website. <http://www.breastselfexam.ca>
- Imaginis: The Breast Cancer Resource. <http://imaginis.com>
- The Susan G. Komen Breast Cancer Foundation, “How to do breast self exams”. <http://komen.org/bse>

Breast Reconstruction

Janet M. Blanchard

One in every seven women will develop breast cancer sometime during their lifetime. There are many surgical options that are available for treating this disease; there are times when mastectomy is the best option for cure; however, the emphasis during the past decade has leaned toward breast conservation. This and other less invasive surgical procedures leave the woman with less of a deformity and minimize the psychological effects.

Women have restorative options after mastectomy and/or lumpectomy. In the past decade, these options have been offered before the procedure has been performed. Breast reconstruction is not for everyone as hearing the diagnosis can be so overwhelming that patients do not wish to think about this secondary aspect.

A thorough discussion between the patient and her doctor will help her decide and select the best option.

There are also other factors that need to be considered such as radiation and chemotherapy.

The decision to have breast reconstruction usually does not stem from the fact that a woman is missing a breast. It is more convenience-oriented than aesthetic. Women do not want to put a prosthesis into their bra everyday. They want to be able to wear a bathing suit, low-cut dress, or open blouse without having to worry about the prosthesis being seen. In addition, putting a prosthesis on everyday reminds them about their breast cancer.

Breast reconstruction is a minimum of two procedures and may be performed either immediately at the time of mastectomy or later. If delayed, it is usually because the woman does not want to think about reconstruction, she has not been availed her options or for one reason there are health issues at that time. In the majority of cases, women elect to have immediate reconstruction. The goal of breast reconstruction is to create a breast that is as natural as can be performed, to have a woman look as good in clothes as is surgically possible and be soft. However, it should be remembered that the reconstructed breast will never be the same as the natural one. In addition, there is no evidence that reconstruction will increase the chance for cancer recurrence nor hide recurrence.

Surgery for reconstruction consists of two types: (1) using one's own tissue known as autologous and (2) using skin expansion. When a mastectomy is performed, there is a shortage of skin and tissue. If tissue expansion is used, a balloon expander is placed underneath the muscle of the chest wall. After healing, the tissue is gradually expanded in the office. When desired expansion is obtained, the second phase of the reconstruction is performed. The expander is removed, a permanent implant placed and if desired a nipple created. In addition, the opposite side may have to be adjusted for symmetry (e.g., if the opposite side is very large). If autologous tissue is the one used, a skin flap taken from the back, abdomen, or buttocks is used. This flap consists of skin, fat, and muscle with its own blood supply. In short, the tissue is elevated and transferred to the mastectomy site and a breast mound created. This is a more complicated procedure, requiring much more time with the need for blood transfusions and a much longer hospital stay. However, the advantage is that there is no foreign body associated and there is usually less need for adjustment of the opposite side. The second stage entails nipple reconstruction and rare adjustment of the opposite side.

One of the most popular flaps is called the “tummy tuck” or transverse rectus abdominis muscle (TRAM) flap. This procedure entails taking skin, fat, and muscle from the bottom of the abdomen and transferring it up into the mastectomy site and creating a breast mound. The end result is that a breast is created and a tummy tuck is performed as the skin, etc. were removed from the site. Another flap is taken from a muscle in the back and is called the latissimus dorsi flap. Sometimes there is need for an implant in this procedure as there is not as much tissue in the back as the abdomen. The buttock flap is used rarely and usually when there are no other alternatives.

There are always risks and complications, which can occur and these should be discussed in detail with your reconstructive surgeon.

Any woman undergoing mastectomy should be given the options available so that she and the team who is caring for her can make the best individual decision.

Related Topics

➤ [Breast augmentation](#), ➤ [Breast reduction](#)

Suggested Readings

- Bostwick J III (2000) Reconstructive breast surgery. In: Bostwick J III (ed) *Plastic and reconstructive breast surgery*, 2nd ed. Quality Medical Publishing, St Louis, MO, pp 663–1137
- Kroll SS (1998) Breast reconstruction with autologous tissue. *Clin Plast Surg* 25(2):135–319

Suggested Resources

www.plasticsurgery.org

Breast Reduction

Janet M. Blanchard

Society places a great deal of attention on the size of a woman’s breasts. Most of the time, the emphasis is focused on enlarging their size. However, large breasts can be equally difficult for women. Usually

the problem starts in early adolescence when puberty begins or after pregnancy, particularly when a woman has gained a great deal of weight. When a young teenager has large breasts, fellow peers usually make fun of them or pass rude comments. This can create psychological problems that may go on into adulthood. In addition, a significant weight gain can cause the breasts to enlarge. The medical term for this condition is breast hypertrophy or macromastia.

There are other sequelae that can occur with macromastia. First, the increased weight can cause a lot of stress on the shoulder, eventually creating a poor posture that may lead to shoulder, neck, and back pain. In addition, women find it difficult to exercise due to “bouncing” and increased weight on their shoulders. Other symptoms may include skin irritation under the breasts, indentations in the shoulders from the bra, and a feeling of self-consciousness about the size of the breasts.

Patients with the above symptoms may seek options for correcting the macromastia. First, height and weight criteria should be examined. If a woman is grossly overweight, a weight reduction program should be initiated. This will help bring the size of the breasts hopefully into the correct proportion. If the breasts are still large, a surgical procedure can be planned.

Breast reduction surgery, also known as reduction mammoplasty, is a procedure designed to remove the excess breast tissue. When the breasts enlarge, the nipple and pigmented area around the nipple, called the areola, descend below the crease underneath the breast. In addition to removing the excess breast tissue, this procedure also raises this complex into a normal position. This is a procedure that involves a lot of incisions and suturing. It is performed in an operating room under a general anesthetic, usually on a same day surgical basis. There are a variety of procedures available. A fair amount of scarring also occurs with this procedure.

However, in the past few years, new surgical techniques have developed that reduce the amount of scarring, preserve nipple sensation, and increase the ability to breastfeed, if a woman is still within the childbearing age. The type of procedure used will be discussed and determined with the initial consultation with the board-certified plastic surgeon. There are literally thousands of breast reduction surgeries performed every year. Although many incisions are necessary, there is usually not enough blood loss to necessitate a blood transfusion.

The timing for breast reduction surgery is individualized; however, if women are of childbearing age and feel strongly about breastfeeding, the procedure should be postponed until after this period.

As discussed earlier, there is scarring associated with this procedure and these scars are permanent. It takes at least 1–2 years for the scars to fade. This is probably the biggest drawback to this operation. However, women are usually so thankful to have the increased weight off their chest and back that they consider this is a fair trade-off. It is very helpful to see pictures prior to surgery and these are usually shared with the woman at the initial consultation with the plastic surgeon.

Some commonly asked questions include: How does a woman determine which size they want to be after the operation? This is a decision that is made with the plastic surgeon.

Factors that enter into this decision include body habitus, height, and weight. Pictures are also extremely helpful. There is also a great deal of helpful information on the internet but patients should make sure they use the American Board of Plastic Surgery websites. Women who gain weight after breast reduction surgery will experience an enlargement of their breasts. The reverse is true as well.

Most insurance companies do not consider this a cosmetic procedure. However, they do set guidelines for this procedure to be covered. They will usually allow payment if more than 500 g or 1 lb is removed from each side. Preauthorization for medical necessity

is required. This includes taking pictures, including height, weight, bra size, and recording symptoms prior to the surgery. The insurance companies make the decision for reimbursement, not the doctor, as to whether this meets the criteria.

Breast reduction surgery can be an extremely rewarding operation. However, a thorough consultation, examination, and understanding of the details of surgery should take place prior to making this commitment.

Related Topics

- ▶ [Breast augmentation](#), ▶ [Breast reconstruction](#), ▶ [Self-esteem](#)

Suggested Readings

- Bostwick J III (2000) Reduction mammoplasty. In: Bostwick J III (ed) *Plastic and reconstructive breast surgery*, 2nd ed. Quality Medical Publishing, St Louis, MO, p 371
- De Castro CC (2002) Mastopexy and breast reduction. *Aesthetic Surg J* 22:569–572
- Hammond DC (2001) The SPAIR mammoplasty. *Clin Plast Surg* 29(3):411–421

Suggested Resources

- www.plasticsurgery.org/public_education_procedure/reduction-mammoplasty.com



Calcium Disorders

Michael Levine

An average adult human body contains approximately 1,100 g of calcium, 99% of which is located in the skeleton. The rest of the calcium is attached to proteins in the blood, free or ionized (charged). Calcium is also linked to bicarbonate, phosphate, citrate, and lactate. Only the ionized calcium is physiologically active. In addition to its role in forming bone structure, calcium has many other vital roles in cell communication, enzyme activation, muscle contraction, platelet aggregation, and membrane stability.

The average level of calcium in the blood is 8.5–10 mg/dL. Several hormones are essential for regulating calcium metabolism. Because only the free (ionized) form of calcium is physiologically active, it is that when measuring calcium levels, the ionized calcium concentration is measured directly or the calcium level is adjusted to the protein (albumin) level in the blood. There are several disorders that can cause the level of calcium to be either too high (hypercalcemia) or too low (hypocalcemia).

Hypocalcemia can result from either increased loss of calcium or decreased intake. Excess calcium may be removed from the circulation with increased bone deposition, increased loss in the urine, or increased binding in the serum. The clinical features of hypocalcemia depend on the degree and rate of the development of hypocalcemia. Patients with chronic hypocalcemia can tolerate hypocalcemia better than those patients who develop hypocalcemia over a shorter time course. Hypocalcemia can be associated with nerve problems, numbness, weakness, muscle cramps, and ultimately tetany (muscle locking). A variety of central nervous system (CNS) abnormalities associated with hypocalcemia include altered/depressed mental status, irritability, or seizures. Severe hypocalcemia can also harm the heart.

When the blood phosphate levels are high, calcium may be bound to phosphate and removed from the circulation thereby causing hypocalcemia. This condition is associated with renal failure, extensive muscle damage (rhabdomyolysis), pancreatitis, and phosphate supplementation. Hypocalcemia can also occur when the free calcium binds to substances in the blood stream such as citrate, lactate, foscarnet, and EDTA. Because stored blood products contain citrate, patients

receiving massive blood transfusions or plasma exchange, can develop hypocalcemia.

Vitamin D deficiency is another common cause of hypocalcemia. This may be caused by poor intake or malabsorption. Both renal and liver diseases cause decreased vitamin D production, and therefore, hypocalcemia.

Decreased parathyroid hormone production (PTH) or hypoparathyroidism, may also cause hypocalcemia. One of the most common causes of decreased PTH secretion involves recent parathyroid glands removal. Also patients having a near total or total thyroidectomy for thyroid cancer develop hypoparathyroidism, which can be temporary or permanent. Magnesium disorders, sepsis, burns, and certain drugs may lower PTH production. Various chemotherapeutic agents and some of the bisphosphonates are associated with causing hypocalcemia. Lastly, significant fluoride poisoning, as can occur with hydrofluoric acid, can cause a profound hypocalcemia.

Hypercalcemia is a relatively common clinical problem, and results when the entry of calcium into the circulation exceeds the rate of deposited calcium into bone or excreted in urine. Most causes of hypercalcemia are either increased bone resorption or increased intestinal absorption. Most cases of hypercalcemia are relatively mild and usually asymptomatic, and require no emergent treatment. However, the mildly hypercalcemic, asymptomatic patient may have a significant underlying medical disorder. Hypercalcemic crisis occurs in a small percent and is associated with serum calcium concentrations above 14 mg/dL.

Symptoms of hypercalcemia are widespread, and affect the neurologic, cardiovascular, renal, and gastrointestinal systems. Common neurologic complaints include fatigue, weakness, confusion, ataxia, and possibly coma. Cardiovascular manifestations are hypertension, slow heart rate, and arrhythmias. Dehydration, frequent urination, and increased thirst are common, as are nausea, vomiting, loss of appetite, peptic ulcer disease, constipation, pancreatitis, and kidney stones. Hypercalcemia may result from some form of a malignancy. Hyperparathyroidism can result from parathyroid tumors. Other tumors or cancers can make a PTH-related protein, which is similar in structure to PTH, and thus can cause hypercalcemia like PTH. In addition, bony metastasis can cause destruction of the bone, with subsequent release of calcium into the circulation.



Other causes of hypercalcemia include various disorders, such as tuberculosis, sarcoidosis, and histoplasmosis. These conditions are associated with both high serum and urinary levels of calcium. The so-called milk-alkali syndrome can cause hypercalcemia when a person consumes excessive amounts of calcium and absorbable antacids. Lithium alters the release of PTH, and therefore, patients on chronic lithium therapy can develop hypercalcemia.

Related Topics

[Bone strength](#),
 [Osteoporosis](#),
 [Osteopenia](#)

Suggested Readings

Ganong WF (1999) Hormonal control of calcium metabolism and the physiology of bone. In: Review of medical physiology, 19th ed. Appleton & Lange, Stamford, CT, pp 365–377

Gibbs MA, Wolfson AB, Tayal VS (2002) Electrolyte disturbances. In: Marx JA, Hockberger RS, Walls RM (eds) Rosen's emergency medicine, 5th ed. Mosby, St. Louis, MO, pp 1724–1744

California Natural Death Act

Sandra Cook

The California Natural Death Act was enacted to create a standard “living will.” A “living will” is a set of written instructions regarding the determination of end-of-life health care decisions. California also had legislation regarding The Durable Power of Attorney for Health Care, which is a written document that allows an individual to appoint another person to make health care decisions in the event that the individual has lost the decision making capability. As of July 1, 2000, both Acts are no longer in effect and have been replaced with California's new Health Care Decisions Law.

Living Wills and Powers of Attorney for Health Care executed prior to July 1, 2000 remain valid. Living Wills will not normally have an expiration date, but a Power of Attorney for Health Care may terminate on specified date. California assumes that a Power of Attorney for Health Care is binding indefinitely unless expressly valid for a specific duration.

The new California Health Care Decisions Law simplifies both the Living Will as provided in the California Natural Death Act and the Durable Power of Attorney for Health Care by incorporating both into a single form. The form contains four parts. Part 1 of the form is a power of attorney for health care that allows an individual to appoint another individual to make health care decisions on their behalf should they become incapable of making their own decisions. Under Part 1, there are several options that permit an individual to limit the authority of the person appointed. Part 2 of the form allows an individual to give specific instructions about any aspect of their health care, whether or not they appoint another individual to act on their behalf. Additional space is provided in Part 2 to allow an individual to supplement their choices or to write out any additional wish pertaining to their health care or end-of-life decisions. Part 3 of the form allows an individual to express an intention to donate their body organs and tissues following death. Part 4 of the form provides for the designation of a physician to have primary responsibility of an individual's health care. The form must be signed and dated at the end, witnessed by two qualified persons or acknowledged before a notary public. The Health Care Decisions Law does not require that an individual use the specific form. An individual is free to use a different form, but caution should be taken to ensure that other forms comply with the requirements of the Health Care Decisions Law.

A capable individual may revoke the form at any time and a later advance directive revokes a prior directive only to the extent of any conflicts between the two directives. It further provides that the advance directive appointing a spouse as agent is revoked upon the dissolution or annulment of the marriage. The California Health Care Decisions Law only pertains to matters of health care and does not address such issues as property disposition or the authority of an agent to act in other matters should an individual become incapable of decision making. For more information on the Health Care Decisions Law or to obtain the form, contact the California Medical Association at 1-800-882-1262 or online at <http://www.cmanet.org/publicdoc.cmf>.

Although California was the first state to enact legislation allowing a competent individual to self-direct health care at some future time, many states have followed enacting similar legislation. The American Bar Association Committee on Aging provides infor-

mation on advance directives at <http://www.abanet.org/aging/toolkit/home.html>. Information may also be obtained by contacting the state's medical or bar associations.

Related Topics

• Durable power of attorney, • Legal services, • Living trust, • Living will

Cancer

James Carlson

Aging itself is a risk factor for the development of cancer. Studies on cancer reveal that nearly 60% of all tumors occur in persons aged 65 and older. Environmental factors, genetics, and the aging process itself can contribute to the development of a variety of cancers. This chapter focuses on the most common forms of cancer that develop as we age and current recommendations for preventative screening. The definitive treatment for each type of cancer discussed is beyond the scope of this text.

Skin Cancer

Skin cancer is the most common form of all cancers, accounting for >50% of all cancers diagnosed annually. Skin cancers are divided into two broad categories: melanoma and nonmelanoma cancers. Melanoma is a potentially life-threatening skin cancer arising from pigmented cells or moles within the skin. Melanomas, most commonly diagnosed in patients during their late twenties, make up about 4% of all skin cancers and result in the most skin cancer-related deaths due to their tendency to metastasize. Nonmelanoma skin cancers (basal cell carcinoma and squamous cell carcinoma) increase in incidence with age, but are far less aggressive with a 90% cure rate when treated early.

Risk factors for the development of nonmelanoma skin cancers include: lighter skin color that burns easily (Types 1 and 2), history of significant sunburn and recurrent sun exposure (especially during childhood), personal history of skin cancer, and family history of skin cancer.

While there are no formal guidelines for the screening and counseling of patients regarding nonmelanoma skin cancer, it is clear that the chances can be reduced by minimizing exposure to the sun and early diagnosis. Periodic examination and patient education is helpful in early detection and treatment of skin cancer.

Nonmelanoma skin cancer is generally considered to be carcinoma in situ (noninvasive cancer). The remainder of the cancer data and screening recommendations discussed in this chapter is drawn from the American Cancer Society's *Cancer Facts and Figures 2005*, an annual report regarding cancer statistics in the United States. The statistics reported do not include carcinoma in situ such as nonmelanoma skin cancer, but rather invasive forms of cancer where formal screening guidelines are recommended.

Breast Cancer

Breast cancer is the most common form of cancer diagnosed in women other than skin cancer. It can also be found in men, but this accounts for only 1% of the total number of breast cancers diagnosed in the United States. The National Cancer Institute estimates that in 2005 there will be 211,240 new cases of breast cancer in women and 40,410 deaths attributed to breast cancer, making it second to lung cancer in terms of mortality in women. Generally, most breast cancers are diagnosed over the age of 50 and the incidence continues to increase with age.

There are a number of factors that may increase a woman's risk of developing breast cancer that include: positive family history, personal past history of breast

Summary of screening recommendations for the early detection of breast cancer

- Yearly mammograms starting at age 40.
- Clinical breast exam by health care provider as part of periodic health exams in every 3 years for women in their twenties and thirties, and then annually for women at 40 and older.
- Monthly self-breast examination as an option starting in the twenties. Report any changes promptly to health-care provider.
- Women of higher risk (personal or family history) should talk with provider about more frequent exams, earlier mammography, or other imaging studies (MRI/ultrasound).



cancer, early age of first menses, late menopause, advanced age, obesity and sedentary lifestyle, and hormone therapy. Screening that involves a combination of regular self-breast examination, clinical breast examination by a provider and mammography, has been shown to improve early detection.

Treatment of breast cancer depends on tumor size and type, and may consist of any combination of surgery, radiation, or chemotherapy. Typically, cancer that is found early and localized only to the breast and not spread to surrounding tissue statistically carries a 5-year survival rate of 98%. Despite this, recent findings have shown that only 61% of women over the age of 40 report having had a mammogram in the last year and even fewer (54%) reported having both a clinical breast exam and mammogram in the last year per the recommended screening guidelines.

Colorectal Cancer

Cancer of the colon and rectum, also called colorectal cancer, is the third most common cancer in both men and women (excluding skin cancer) and the third leading cause of cancer-related deaths. In 2005, it is projected that 145,290 new cases of colorectal cancer will be diagnosed with slightly more than half in women. Both incidence and mortality rates associated with colorectal cancer have been steadily declining over the last decade. Research suggests that this trend is largely due to increased diligence in screening resulting in greater removal of precancerous polyps and earlier detection of cancer if it has developed.

More than 90% of colorectal cancer is detected in individuals above the age of 50, making age a primary

risk factor. Personal history of inflammatory bowel disease (Crohn's disease or ulcerative colitis) and family history of colorectal cancer also increases a patient's risk. Use of tobacco and alcohol, a diet high in saturated fat, and low consumption of fruits and vegetables, and physical inactivity have all been shown to increase risk as well. Patients with higher risk should talk with their provider regarding a more aggressive screening schedule and all patients should receive counseling to inform them of modifiable risk factors.

Most colorectal cancers that are early and more easily treated do not produce symptoms underscoring the need for regular screening and prevention. When reported, signs and symptoms may include changes in frequency of bowel movements, blood in or darkening of the stool, changes in size or consistency (diarrhea/constipation) of the stool, and abdominal pain or discomfort. In addition, general fatigue and weight loss may be reported.

Precancerous polyps, once identified, may require no further treatment but more frequent screening. If a diagnosis of cancer is confirmed, surgery to remove the cancerous tissue is the most common form of treatment. Study of the removed tissue and further imaging studies will identify if the cancer has spread beyond the colon to surrounding or distant tissue. If the cancer is caught early and has not spread, surgery is usually curative resulting in a 5-year survival rate of 90%. If the cancer has spread locally to surrounding tissue or to distal sites, there is a significantly poorer prognosis.

Lung Cancer

Lung cancer is the leading cause of cancer deaths in both men and women and is projected to account 29% of all cancer deaths in 2005. Not including skin cancer, in 2005 it is projected to be the second most common diagnosed cancer in both men and women. Despite the prevalence, lung cancer has shown a decline in incidence and mortality over the last 30 years largely due to decreased smoking rates. Signs of symptoms of lung cancer may include cough, bloody sputum, chest pain, and recurrent lung infections. Cigarette smoking (personal or secondhand) and occupational/environmental exposures (carcinogenic airborne particles, chemicals, and radiation) are leading risk factors in the development of lung cancer.

At present, there are no formal recommendations for screening lung cancer. Screening tests such as chest

Summary of screening recommendations for the early detection of colorectal cancer

At age 50, BOTH men and women should begin screening with at least one of the following:

- Fecal occult blood testing (FOBT) or fecal immunochemical test (FIT) annually to look for the presence of blood in the stool.
- Flexible sigmoidoscopy in every 5 years.
- Combination testing of annual FOBT or FIT along with flexible sigmoidoscopy in every 5 years. (This method is preferred to any single testing alone.)
- Double contrast barium enema in every 5 years.
- Colonoscopy in every 10 years.

x-ray and sputum cytology have not been shown to be effective at reducing mortality. There are current studies underway exploring improved detection techniques, but current recommendations focus on patient education to decrease lifestyle risk factors.

Prostate Cancer

Prostate cancer is a malignant tumor that arises in the prostate of male patients. Females do not have prostates and therefore cannot develop prostate cancer. In 2005, an estimated 232,090 men will be newly diagnosed with prostate cancer in the United States. It is the second leading cause of cancer-related mortality in men, with twice as many deaths reported in African American men as compared with Caucasian men.

Most cases of prostate cancer are found in men above 65 years, but it can be found in younger men also. African American men have a higher incidence of prostate cancer, and the lowest incidence is found in men of Asian or Indian descent. Risk is also higher if there is a family history of prostate cancer in a first-degree relative such as father or brother. Diet has also been implicated, as it is suspected that a diet high in animal fat increases risk while a diet high in fruits and vegetables decreases risk.

Most prostate cancer is asymptomatic and does not produce any specific complaint in a patient during its early stages. As the cancer progresses it may lead to the patient reporting an increased need to urinate more frequently, especially at night, and difficulty in starting and stopping urination. Other findings may include painful urination, blood in urine or semen, and difficulty in having erection. While cancer may cause these symptoms, they are most often caused by benign non-cancerous growth of the prostate known as benign prostatic hypertrophy. Even so, screening for prostate cancer should be routinely done in men above 50 years and patients presenting with potential symptoms and signs of prostate cancer should be given a thorough screening.

Summary of screening recommendations for the early detection of prostate cancer

Starting at age of 50, all men who have a life expectancy of at least 10 years should have the following:

- Annual digital rectal examination by provider as part of health screening.
- Annual prostate-specific antigen (PSA) blood work.

Screening should begin at the age of 45 or earlier for men who are considered to be of higher risk. If prostate cancer is confirmed through testing, the decision to treat and how to treat will depend upon age of the patient and involvement of the disease. In older men, especially if life expectancy is less than 10 years, a decision not to treat may be recommended.

Uterine Cancer

Uterine cancer is seen in two major forms: (1) endometrial (body of the uterus) and (2) cervical. Endometrial cancer is more common, but both forms deserve mention in this chapter as their detection can be improved through current screening guidelines. The type of screening for each cancer varies, and recommendations vary with age.

Summary of screening recommendations for the early detection of uterine cancer

Cervix: screening utilizes a Pap test/laboratory studies as part of gynecologic examination.

- Begin approximately 3 years after first intercourse or not later than 21 years old.
- Repeat annually or biannually (depending on testing method).
- After age 30, women with three normal tests in a row may be screened in every 2–3 years.
- Women above 70 who have had three or more normal tests in the last 10 years may stop testing.
- Endometrium: generally focuses on patient education.
- At time of menopause, educate to report unexpected spotting or bleeding to their provider.

Other Cancers

While there are protocols and testing available to diagnose many cancers, the recommendations outlined in this chapter represent formal guidelines for screening during routine health examinations. Since the aging process itself is often a risk factor for the development of cancer, it is also recommended that all periodic health exams include counseling patients about cancer risks, symptoms, and signs in each age group and gender to screen for other types of cancer. Age and current state of health must also be taken into account when deciding if and how to treat each patient.

Related Topics

[▶ Breast cancer](#), [▶ Cancer screening](#), [▶ Chemotherapy](#), [▶ Colorectal cancer](#), [▶ Ovarian cancer](#), [▶ Prostate cancer](#)

Suggested Readings

Smith RA, Cokkinides V, Eyre HJ (2005) American Cancer Society guidelines for the early detection of cancer, 2005. *CA Cancer J Clin* 55(1):31–44

Suggested Resources

American Cancer Society (2002) Behavioral risk factor surveillance system, 2002. Surveillance Research. American Cancer Society, Atlanta, GA

American Cancer Society (2005) Cancer facts and figures 2005. American Cancer Society, Atlanta, GA

Colorectal Cancer Screening among Adults Aged 50 or Older: implementation of Fecal Occult Blood Testing in Clinical Practice. Center For Disease Control Fact Sheet, Atlanta (January 17, 2005). <http://www.cdc.gov/od/oc/media/pressrel/fs050117.htm>

Facts and Statistics About Skin Cancer, Center For Disease Control Cancer Prevention and Control, October 11, 2005. <http://www.cdc.gov/chooseyourcover/skin.htm>

Prostate Cancer, National Institutes of Health, June 10, 2005. <http://nihseniorhealth.gov/prostatecancer/prostatecancerdefined/03.html#skip2>

Cancer Screening

Elizabeth Fine · Susan R. Kirsh

Almost 46% of men and 38% of women will be diagnosed with cancer over their lifetime. Despite overall decreasing incidence rates (the number of new cases diagnosed per year) and mortality rates (the number of deaths per year) in the last 15 years, cancer remains a leading health burden. This accounts for nearly 23% of all deaths in the United States, second only to heart disease.

Screening tests are designed to detect cancerous cells before they become clinically apparent. To apply a screening test to a whole population, certain disease and test characteristics must exist. Screening is only conducted for common types of cancers with a pre-clinical stage. Tests must be sensitive (a high percentage

of those with the disease will test positive), relatively safe, inexpensive, and effective (i.e., mortality is decreased by the use of the test). While some tests may detect cancer early this does not necessarily mean that fewer people die as a result. The American Cancer Society recommends screening guidelines for breast, colorectal, prostate, and cervical cancers for the general population. This section reviews these guidelines and addresses common concerns and special considerations involved in screening for each of these cancers. Websites to learn more about cancer screening or individual risk for specific cancers are listed at the end of this entry. A discussion with one's physician is recommended to guide testing options.

Breast Cancer

Breast cancer is one of the few cancers shown to have increasing incidence over the past decade. It is also the most common cancer in women. There is about a 13% risk for women to be diagnosed with breast cancer over their lifetime (about one out of every eight women) and a 3% risk of dying from breast cancer. The current screening guidelines recommend:

- Clinical breast examination (CBE) every 3 years for women aged between 20 and 40 and yearly thereafter
- Yearly mammography for women above 40

Past guidelines included self-breast exam (SBE); however, studies show that SBE does not decrease mortality from breast cancer and increases the rate of false positives (or detecting cancer when it is not there). In women with breast cancer, SBE detects around one-half of the cases. Screening mammography remains the mainstay of breast cancer screening, finding cancer in about 75% of women (i.e., 25% of women with breast cancer have normal mammograms). Mammography becomes more effective in less dense (less fibrous tissue and more fatty tissue) breasts. Older women and women in the earlier part of their menstrual cycle (day 1 to 14) have less breast density allowing for a more effective test. Mammography has been shown to decrease mortality by 20–35% in women aged 50–69, speaking to its importance as a screening tool for women as they age. Importantly, many abnormalities found on mammogram are not cancerous (more than 95%). About half of women tested regularly with

mammography over a 10-year period will have at least one false positive result. Lesions found on mammography are biopsied and evaluated for cancerous tissue.

Women who are at high risk for breast cancer—those who have had breast cancer, have first-degree relatives with breast cancer, or have BRCA1 or BRCA2 mutations (genes known to cause breast cancer)—may benefit from magnetic resonance imaging (MRI). The MRI test has greater sensitivity compared to mammography and may be more useful in high-risk young women (where mammography falls short secondary to the breast characteristics mentioned above). MRI has only been tested in high-risk women and as of yet is not appropriate for the general population.

Prostate

Prostate is the most common cancer in men. A high percentage of men will show evidence of growing cancerous prostate cells (42% risk over one's lifetime), though only 10% of men will develop harmful disease; 3% of men will die from prostate cancer. African American men are at higher risk than white men, with a 21% lifetime risk of diagnosis and nearly a 5% chance of mortality. Overall, the incidence and mortality of prostate cancer is decreasing over the last decade. Typically older men are diagnosed (average age is 71 years). Prostate cancer is slow growing; autopsies show that many men have prostate cancer at the time of their death even though prostate cancer was not the cause of death. This becomes an important point when discussing screening for prostate cancer. At present, the recommendations state that screening for prostate cancer should only be performed for men who are expected to live at least 10 more years. The recommendations for men above the age of 50 are:

- Digital rectal examination (DRE) yearly
- Prostate-specific antigen (PSA) test yearly

PSA is an enzyme found in prostate secretions. In men with prostate cancer, the PSA test detects about 70% of the cases. In addition to prostate cancer, PSA levels are elevated in men with prostatitis, enlarged prostate (benign prostatic hypertrophy), and after urinary catheterization. PSA levels also increase as men age. In fact, 70% of elevated values are not due to cancer. Certain medications may lower PSA levels—hiding a true elevation.

Ultimately, the PSA test detects elevated levels in many men who do not have prostate cancer. As a result, many prostate biopsies are performed unnecessarily. Men may undergo invasive or dangerous therapies (prostate resection or radiation therapy) without clear evidence that they have a harmful disease. It is estimated that 25 prostate resections would need to occur to save one life (over a 6-year period). Studies have shown that heavily screened geographic areas do not have different mortality rates compared with less heavily screened areas—lending to the speculation that the PSA test is not as effective a screening tool as once thought. With this in mind, prostate screening should be discussed carefully with a medical provider. African American men and men with first-degree relatives with prostate cancer diagnosed before age 65 are at increased risk and should start annual testing at about 45 years old. Lastly, several different measures of PSA characteristics (e.g., density and velocity) are being studied to help identify elevations from prostate cancer.

Colorectal Cancer

Colorectal cancer (CRC) is the third most common and deadly cancer in both men and women. Men and women have a 5–6% lifetime risk of being diagnosed with CRC and a 2–3% lifetime risk of dying from it. Although some types of CRC are hereditary, there exist environmental factors that are shown to be associated: low intake of fiber, fruits/vegetables, and calcium and high intake of fat, meat, and animal protein. Studies have shown that the typical American diet increases the risk of CRC compared with other diets.

Most screening tests are designed to detect polyps (some of which have a high probability of becoming cancerous and some of which are benign) or masses in the colon (sigmoidoscopy, colonoscopy, and barium enema). The fecal occult blood test (FOBT) and the fecal immunochemical test (FIT) are designed to detect blood in the stool; people with CRC sometimes show rectal bleeding. The current guidelines recommend the following after age 50 in average risk adults:

- Annual FOBT or FIT
- Flexible sigmoidoscopy (a small camera or “scope” is passed through a portion of the large bowel) every 5 years
- Annual FOBT/FIT plus sigmoidoscopy every 5 years—this is the preferred screening method

- Colonoscopy (a scope is passed through the entirety of the large bowel) every 10 years if the examination is normal
- Double contrast barium enema every 5 years

Colonoscopy carries the important benefits of visualizing the entire colon and providing a means to remove polyps during the screening evaluation. There is increased risk of bowel perforation and bleeding compared with other methods. Also the emerging issue of overuse of colonoscopy, relative to other screening methods, creates cost and access dilemmas.

About 25% of people with CRC have a family history of CRC or adenomatous polyps. Individuals with a personal history of adenomatous polyps or resection of past CRC, personal history of ulcerative colitis, history of CRC, or adenomas diagnosed in a first-degree relative before age 60, and individuals with family history of certain hereditary syndromes are at increased risk for CRC.¹ In general, people with the above risks need to undergo colonoscopy at a much younger age and more frequently, though the recommendations differ with disease entity.

Cervical Cancer

Lifetime risk of cervical cancer diagnosis and death in women is less than 1%. Human papillomavirus (HPV)—a very common, usually benign, self-limiting virus of the cervix (acquired during intercourse)—increases risk for cervical cancer. Certain subtypes of the virus cause the infection, which lead to higher risk for cervical cancer. The Papanicolaou (Pap) smear remains the best screening test for cervical cancer. When abnormal, the addition of tests for HPV increases sensitivity of screening. The current ACS guidelines have changed over the past few years:

- Initial Pap smear at age 18 regardless of sexual activity
- Yearly Pap smears for all women below the age of 30 (this can be extended to 2 years if a woman has two consecutive normal Pap smears and is in a monogamous relationship)

¹ Familial adenomatous polyposis, hereditary nonpolyposis colorectal cancer (NPPCC) accounts to 6–15% of all colorectal cancers, Gardner's syndrome, and familial polyposis coli are all associated with CRC.

- After 30 Pap smears every 2–3 years, if the woman has had three consecutive, previously negative smears and does not have a history of cervical cancer or immunocompromised state (e.g., HIV)
- After age 70 screening may stop after three consecutive negative smears within the last 10 years
- After a woman has a hysterectomy screening may stop if she has never had cervical cancer

Often Pap smear results return labeled “unsatisfactory” because of bleeding or inflammation. Repeat testing is recommended in the next 2–4 months. Sometimes the smear did not include any endocervical cells. In this case, repeat testing can be postponed for 12 months, unless the woman is at high risk. The most common abnormal finding on a Pap smear is atypical squamous cells of undetermined significance (ASCUS). This result may lead to a repeat Pap smear, an additional HPV test or a cervical biopsy depending on the woman and her provider. The risk for finding cervical cancer from a result of ASCUS is estimated to be between 5% and 15%. Other abnormal findings usually lead to biopsy (colposcopy).

Women with a history of cervical cancer, DES exposure in utero, HIV infection or immunocompromised should be tested annually. Women diagnosed with HIV should be tested twice in the year after diagnosis.

The above concludes the official list of screening guidelines. Lung cancer (which carries the highest mortality rate of all cancers), remains as an important consideration. No screening tools have proven effective in asymptomatic persons for lung cancer. People at high risk from smoking or environmental exposure should discuss with their physicians about appropriate testing. Although there are no guidelines for endometrial cancer, vaginal bleeding after menopause is very suggestive of endometrial cancer and postmenopausal women should report any bleeding or spotting to their physicians. Lastly, melanoma of the skin accounts for two thirds of the increasing cancer incidence over the past decade. Periodic skin examinations and sunscreen use are essential.

Related Topics

- [Breast cancer](#), ➤ [Cancer](#), ➤ [Colonoscopy](#), ➤ [Colorectal cancer](#), ➤ [Melanoma](#), ➤ [Physical examination](#), ➤ [Prostate cancer](#), ➤ [Sigmoidoscopy](#)

Suggested Readings

- Buechler EJ (2005) Pap tests and HPV infection: advances in screening and interpretation. *Postgrad Med* 118(2):37–46
- Elmore JG, Armstrong K, Lehman CD, Fletcher SW (2005) Screening for breast cancer. *JAMA* 293(10):1245–1256
- Routh JC, Leibovich BC (2005) Adenocarcinoma of the prostate: epidemiological trends, screening, diagnosis, and surgical management of localized disease. *Mayo Clin Proc* 80(7):899–907
- Schwartz K, Deschere B, Xu J (2005) Screening for prostate cancer: who and how often? *J Fam Pract* 54(7):586–596
- Smith RA, Cokkinides V, Eyre HJ (2005) American Cancer Society guidelines for the early detection of cancer, 2005. *CA Cancer J Clin* 55(1):31–44

Suggested Resources

- American Cancer Society (2005). <http://www.cancer.org>
- Harvard University School of Public Health, Harvard Center for Cancer Prevention, Cambridge, MA (July 2005). <http://www.yourdiseaserisk.harvard.edu>
- National Institute of Aging and US National Library of Medicine, Website with health information for older adults, Bethesda, MD (2005). <http://nihseniorhealth.gov>
- University of Pennsylvania, Abramson Cancer Center, Philadelphia, PA (1994–2005). <http://www.oncolink.org>

Capacity

Janet L. Lowder · Sandra J. Buzney · Lisa Montoni

In the health care and legal settings, the term “capacity” is often used with respect to mental competence and the ability to make informed decisions regarding one’s health care, personal matters, financial affairs, or legal matters. The legal standard used by most courts to determine incapacity is whether a person lacks sufficient understanding or capacity to make or communicate responsible decisions concerning him or her. Clear and convincing evidence is required to support a finding of incapacity, which is legally referred to as “incompetence,” because such a finding strips the individual, the proposed “ward,” of his or her ability to make any binding legal decisions in the area in which he or she is declared incompetent, such as matters related to the ward’s finances or person. Guardianship proceedings are a matter of state law, and understanding the terminology used in one’s state is very important. For example, some states have both guardianship

and conservatorship proceedings, which are distinct and applicable in different situations.

Medical and legal professionals should regularly evaluate an individual’s capacity to ensure that he or she is receiving the appropriate level of care and services. The individual should be able to understand the circumstances and information provided to them, as well as recognize how the information applies to their situation. If the individual can paraphrase back to the service provider what has been told to them, they are more likely to be considered competent. The individual should be able to explain how a particular decision may harm or benefit them, and they should also be able to evaluate and express the advantages and disadvantages of different options.

One’s capacity may be diminished by an accident-induced brain injury, chronic drug and/or alcohol dependence, or a physical or mental illness that severely impairs awareness of the environment, intellectual functioning, and/or reasoning abilities. An individual’s capacity may come into question if he or she is diagnosed with a severe mental illness that is not controlled by medication—either due to lack of response to a medication regimen, lack of treatment, or lack of adherence to a treatment plan. Electrolyte imbalances and even reactions to prescribed medications can lead to mental impairment and incapacity, but fortunately in many, if not in most of these cases, the symptoms are reversible if the cause is identified and treated.

A stroke that affects the areas of the brain that control the ability to receive and process information, or other conditions and diseases that interrupt or impair blood flow to the brain, may also lead to diminished capacity or incapacity. Scientists are continuing to gain new insight into diseases of the brain and the causes of dementia, e.g., Alzheimer’s disease, which reduce an individual’s ability to retain and process information accurately.

No individual should be judged to be incapacitated merely due to a disability, advanced age, or being diagnosed with a progressive condition such as Alzheimer’s disease. One’s capacity or incapacity is a functional determination made in a particular context. Some areas of decision making require a higher level of comprehension and reasoning than others. For example, in many states the “test” of competence or capacity to make a will—the required level of demonstrated knowledge and understanding—is lower than that to enter into a binding contract. Several instruments to

measure capacity are presently available to clinicians, but there is no one tool that is universally embraced as a definitive measure of capacity, nor is it reasonable to expect that one reliable, practical, and feasible measure can become the definitive tool to address many variables involved in the determination of capacity, which include variations in state law.

Adults whose cognitive or reasoning abilities are diminished may have the understanding, insight, and willingness to take legal measures such as executing durable general powers of attorney (for finances) and health care powers of attorney to appoint persons of their choice to handle their affairs if they become unable to do so. While assessing whether or not an individual has the ability and willingness to put some safeguards in place in the event that he or she does become incapacitated in the future, it is also important to pursue evaluation and treatment to determine if the individual's deficits are reversible or if further deterioration can be delayed or minimized.

Advanced age can be associated with a greater likelihood of incapacity, although, as stated earlier, a determination of incapacity should not be based on age alone. In 2001, women were approximately 58% of the population at the age of 60 and above and 70% of the population at the age of 85 and above. Since women have greater longevity than men, they are more likely to face a period of infirmity or incapacity. A report of the US Department of Health and Human Services found that older women are three times more likely to be living alone than men, spend more years and a larger percentage of their lifetime disabled, and are nearly twice as likely to live in a nursing home. These statistics show how important it is for women to plan for their future by formally designating surrogate decision-makers for both financial matters and health care while they have the capacity to do so.

When making the decisions of who to name or appoint in durable general powers of attorney, health care powers of attorney, and/or living wills, successors or alternates should also be named so that if the first individual named cannot serve, there is another person identified to act in his or her place. When making these very important choices, the "principal," or person putting these documents into place, should make his or her decisions based on who is best for the job and whose value system is consistent with his or her own rather than automatically choosing a spouse, oldest child, or closest relative. Although it is difficult to contemplate being incapacitated and unable to control

one's personal and financial affairs, advanced planning enables the individual to exert more control over his or her future by appointing trusted individuals to act on his or her behalf when the individual can no longer handle these matters.

Related Topics

➤ Alzheimer's disease, ➤ Conservatorship, ➤ Dementia, ➤ Durable power of attorney, ➤ Guardianship, ➤ Informed consent, ➤ Living will

Suggested Readings

- Alzheimer's Association (2004) Share our vision: information for professional advisors and donors (2004), p 3
- Averill LH Jr (2000) Averill's uniform probate code in a nutshell, 5th ed. Thomson West, St. Paul, MN
- Kapp MB (2000) Measuring client capacity: not so easy not so fast. NAELA Quarterly, 13(3):3-6
- Luisis SA, Lusic RN (2002) Living alone: when is the elder no longer safe? In: Williams ME and Keen P (clinical eds) American Geriatrics Society 2002 Annual Scientific Meeting CME. Medscape Conference Coverage. http://www.medscape.com/viewprogram/1924_pnt
- Spar JE (2000) Attorney's guide to competency and undue influence. NAELA Quarterly, 13(3):7-11

Suggested Resources

- US Department of Health and Human Services (2004) Administration on Aging, A Profile of Older Americans: 2004, Washington, DC. <http://www.aoa.gov/prof/statistics/profile/2004/2004profile.pdf>

Capitation

Scott K. Ober

One of the driving forces to control health care costs in the last decade while increasing patient access to health care clinicians has been the creation of a financial system called capitation. This is the cornerstone of most managed care plans particularly health maintenance organizations (HMOs) or preferred provider organizations (PPOs).

Capitation is the prepayment for health care services, such as office visits, on a monthly basis per patient. This means that for primary care the clinician receives the same amount of money each month irrespective of how many patients they examine or what therapy they provide. This sharply contrasts with the traditional fee-for-service (FFS) plan in which a physician sets a fee for a particular service such as an annual history and physical, and the patient or their insurance company is responsible for reimbursement.

The way capitation works is that an insurance company will contract with physicians to provide care for a group of patients. Patients continue to pay a monthly health care premium and are usually unaware of the arrangement that the insurance company or HMO has brokered. The idea is to encourage preventive care and keep patients healthy since the physicians will receive the same amount whether they see a patient once in a year for a healthy checkup and flu shot, or whether the patient visits every month with a series of episodic illnesses. This differs from FFS plans in that a physician may not receive any reimbursement for healthy care but only collects payment if the patient has an illness.

Unfortunately, the benefits of capitation have not been realized and this form of reimbursement is in retreat in the United States. Capitation often requires that physician groups use sophisticated information technology systems to track their patients and their health and they are penalized monetarily if a few patients develop a chronic or unforeseen illness. This has resulted in physician group failures and financial distress. In addition, during the early models of capitation, physicians were encouraged by HMOs to provide *less* care when given a choice between two alternative therapies, and received financial penalties for exceeding their budget. A notable case occurred when a woman with breast cancer was not told that a bone marrow transplantation, a very costly but potentially life-saving procedure, was available to her. She successfully sued her insurance company for several million dollars.

Today capitation has been shown to work well in many instances and there are many precedents of health plans and physicians forging mutually satisfactory relationships to provide excellent and safe patient care. Currently, most health care plans incorporate some features of this financial system, but now have ensured safeguards for the few patients who require extraordinary but costly interventions.

Related Topics

▶ Health insurance, ▶ Managed care

Suggested Readings

Cutler DM (2004) *Your money or your life*. Oxford University Press, New York

Dacso ST and Dacso CC (2000) *Managed care answer book*, 4th ed. Aspen Publishers, New York

Cardiovascular Disease

Gregory T. Stefano

Cardiovascular disease (CVD) includes dysfunctional conditions of the heart, arteries, and veins that supply oxygen to other vital organs. Coronary artery disease (CAD) is characterized by the hardening and narrowing of the arteries that supply blood to the musculature of the heart. This process, termed atherosclerosis, occurs gradually over time and is asymptomatic until the narrowing impedes enough blood flow of oxygen to the heart muscle (myocardium). Once this occurs chest pain (angina) or even heart attack (myocardial infarction) may manifest. The heart then weakens and may result in heart failure, abnormal heart rhythms, or even sudden death.

An estimated 13 million Americans carry the diagnosis of CAD; it is the leading cause of death of both men and women in the United States. The prevalence of the disease increases with aging from being present in 3% of males aged 45–55, 11.5% in those who are 55–75 years, and nearly 17% in those above 75 years. For women, the estimated prevalence in those age ranges is 1.5%, 4–6%, and 10%, respectively. These rates show that women tend to develop CAD approximately 10 years after men, an effect thought to be secondary to the protective effects of female sex hormones. It is estimated that 1.5 million Americans will experience an acute coronary event this year, one third of whom will die. Those who survive the event have a chance of death and illness that is higher than that of the general population.

Within 6 years of a recognized heart attack, 18% of men and 35% of women have another myocardial



infarction, roughly 22% of men and 46% of women are disabled with heart failure, 7% of men and 6% of women will die of sudden cardiac arrest, and 8% of men and 11% of women will have a stroke. The estimated direct (medical care) and indirect costs (lost earnings) attributable to CVD in 2005 are \$142 billion.

How atherosclerosis occurs is uncertain, but the most widely accepted theory is that it is a response to vascular (blood vessel) injury. This damage to the innermost layer lining the artery (endothelium) is thought to be caused by LDL cholesterol, hypertension, hyperglycemia, toxins of cigarette smoke, hyperhomocysteinemia (elevations in levels of a type 0% amino acid), and possibly infectious agents. The injury allows lipids and inflammatory cells to enter the lining and migrate into the endothelium initiating the process of atherosclerosis by creating a fibrous plaque that impedes blood flow.

The most common symptom of CAD is chest pain called angina pectoris. This is caused by inadequate blood flow to the heart (ischemia) and is classically described as a substernal chest discomfort that radiates to the left arm or jaw and may be accompanied with shortness of breath. Angina is classified by the patient's symptoms and relates to the stability of the underlying atherosclerotic process.

Stable angina is described as predictable chest pain that occurs during exertion, exposure to cold temperatures, or stressful situations, and subsides within 15 minutes with rest or administration of nitroglycerin. In contrast, patients may have new onset or abruptly worsening chest pain, in either frequency or duration; this is called unstable angina and is a medical emergency. These symptoms may also occur at rest or sleep and be associated with shortness of breath. This is related to underlying plaque rupture and subsequent clot formation resulting in an acute closure of the artery. A myocardial infarction may soon ensue if not promptly treated.

The initial diagnostic approach to CAD includes an investigation of symptoms and a detailed individual and family medical history for identification of risk factors. Physical exam findings vary, but may reflect atherosclerosis in other arteries and include a turbulent sound over the carotid artery (bruit) or diminished peripheral pulses.

There is no specific blood test to diagnose CAD, but some substances are associated and include C-reactive protein, fibrinogen, homocysteine, and apolipoprotein (a).

Enzymes such as troponin and creatinine kinase are released from heart muscle cells during injury and are obtained any time a patient presents in the emergency room with an unstable cardiac condition. A resting electrocardiogram (ECG), a test that monitors the electrical conductivity of the heart, also is performed. Certain patterns found on an ECG represent ischemia; however, the test also can be normal with acute injury.

If significant CAD is suspected after this initial assessment, further exploration occurs with stress testing. The most basic modality involves walking on a treadmill or riding a stationary bicycle to increase cardiac oxygen demand. A continuous ECG is taken during the exercise and monitored for signs of ischemia. If one is unable to exercise in this manner, there are a variety of pharmacologic agents available to stimulate the heart to mimic exercise. Stress echocardiography is another type of test in which an ultrasonic image of the heart is taken during activity. If ischemia is present, the image will reflect strain in the heart. Nuclear stress testing is performed with injection of radioactive tracers into the blood stream during exercise and compares an image of the heart during rest and exercise, revealing any blood flow disruptions.

Coronary angiography is the "gold standard" or best diagnostic test for CAD. This test is performed by insertion of a catheter through an artery in the thigh and advancement of the catheter towards the heart allows dye to be injected directly into the coronary arteries. The coronaries are directly imaged under x-ray for flow disruptions. However, the procedure does have small risks of bleeding, infection, and kidney failure.

A new test in the diagnosis of CVD is electron-based computed tomography (EBCT). These scans detect coronary calcium that builds up in CAD, but is not an invasive procedure like cardiac catheterization. The test is controversial though in that it might falsely detect CAD when the patient has normal coronary arteries.

The goals of the treatment of CVD are to slow the progression of atherosclerosis, to relieve symptoms if present, and to prevent future acute coronary events. Preventing the progression of atherosclerosis begins with identification of the risk factors and taking action to control them. Essential lifestyle modifications include smoking cessation, losing weight as needed, eating a healthy diet, and exercising regularly.

The initial treatment of patients with high cholesterol and hypertension is dietary and includes reducing intake of saturated fat, total calories, and salt. Exercise has been shown to increase HDL or good cholesterol in addition to lowering blood pressure and helping patients with diabetes.

However, medical therapy is often needed in addition to lifestyle modifications. There are now a variety of medications available to treat hypertension, diabetes, and other conditions associated with heart disease.

In addition, remarkable progress has been made with the drug therapy for heart disease. Medications such as beta-blockers, cholesterol-lowering drugs called statins, angiotensin-converting enzyme inhibitors, and angiotensin receptor blockers, have been shown to reduce heart attacks and prolong the lives of patients who have coronary heart disease.

When medications fail to improve symptoms or symptoms worsen, special procedures may be needed to ensure adequate blood flow to the myocardium. Percutaneous transluminal coronary angioplasty (PTCA) is a procedure similar to coronary angiography and performed after an area of narrowing in an artery that has been identified. The catheter used for angioplasty has a special balloon on its tip and inflates crushing the plaque into the artery wall and restoring blood flow. A drawback of PTCA is the tendency of a “renarrowing” in the area where the procedure was performed. Therefore, a wire-mesh tube called a stent is often placed in the artery to help the area remain expanded. A new medication, called clopidogrel (Plavix) has been shown to help patients by keeping the stent open or patent for blood flow.

Sometimes, PTCA is not appropriate with patients who have multiple clogged arteries or a large clogged branch of a main artery. In this case a surgical procedure called coronary artery bypass grafting (CABG) may be performed.

CVD is a disease that will affect most people during their lifetime; however, lifestyle modifications and the advancement of new medications and technology have allowed patients to live much longer and enjoy a good quality of life.

Related Topics

➤ [Coronary artery bypass grafting](#), ➤ [Coronary heart disease](#)

Suggested Readings

- Chobanian AV, Bakris GL, Black HR et al (2003) The Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. The JNC 7 report. *JAMA* 289:2560–2572
- Gibbons RJ, Balady GJ, Bricker JT et al (2002) ACC/AHA 2002 guideline update for exercise testing: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Exercise Testing) American College of Cardiology Web site. Available at: www.acc.org/clinical/guidelines/exercise/dirlIndex.htm
- Grundt SM, Cleeman JI, Merz NB et al (2004) Implications of recent clinical trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines. *Circulation* 110:227–239
- O'Rourke RA, Brundage BH, Froelicher VF et al (2000) American College of Cardiology/American Heart Association Expert Consensus Document on electron-beam computed tomography for the diagnosis and prognosis of coronary artery disease. *J Am Coll Cardiol* 36:326–340
- Smith SC Jr, Blair SN, Bonow RO et al (2001) AHA/ACC guidelines for preventing heart attack and death in patients with atherosclerotic cardiovascular disease: 2001 update. A statement for healthcare professionals from the American Heart Association and the American College of Cardiology. *Circulation* 104:1577–1579

Caregiving and Caregiver Burden

Virginia E. Ayres

Caregiving is a term originally found in gerontological literature that refers to the range of ways that people look after, tend to, or aid each other in times of illness/disability. Care recipients range from young to old and may suffer from any number of physical or mental disorders. In addition, they may be frail or disabled in some way, or healthy and in need of care as is the case with children. Nearly one out of four homes in the United States has a caregiver attending an elderly recipient. On the other end of the spectrum, grandparents care for 5.6% of all children under the age of 18 due to events such as death, disability, or divorce of the parents.

Increased longevity means that people are becoming frail at a later age, usually in their eighties and nineties. Within the next decade, as baby boomers age, more than 25% of the US population will be

aged 65 or older. As the number of individuals aged 85 and older continues to grow, the demand for short- and long-term care increases. The burden on society to provide adequate resources becomes paramount. Although a number of formal resources for care exist, including rehabilitation hospitals, nursing homes, and home nursing care, informal, in-home caregiving is the most common. While caregivers may emerge from any part of the social milieu, 80% of the care of disabled or frail elderly is provided by family caregivers, usually women, in the United States. Spouses, adult children, and other relations (siblings, aunts, etc.) are the most frequently cited. These informal caregivers commonly provide care out of love, commitment, and sense of responsibility for the care recipient.

With the rising rate of divorce, increase in number of dual income marriages, and smaller family sizes, finding an available caregiver can become a complicated task. When a caregiver is found among family, it can lead to significant stress and strain as balancing various social roles (spouse, employee, parent, caregiver) requires tremendous adaptability and creativity. Many of today's caregivers have college age or teenage children. This places the pivotal strain of caregiving not between small children and caregiving, but between work responsibilities, college tuition, and caregiving. A large number of caregivers (64%) work either full- or part-time. Managing the responsibility of caregiving with employment requires a great deal of juggling. Some employers are beginning to realize the cost of lost productivity and have begun to make adjustments such as offering more flexible hours, job sharing, and leaves of absences (paid and unpaid).

Caregiving requires a number of associated tasks that will be different for each individual. Needed care may range from minimal to comprehensive. Not only does the caregiver help manage the illness of the care recipient, but may also assist in the day-to-day financial, social, and household issues that may arise. Extensive care often involves the coordination of caregivers from several areas of expertise. Some of these tasks may be assigned to others if financial resources are available, for example, a housekeeper may be hired to clean and cook, and a driver to escort to doctor appointments.

The need for caregiving may emerge suddenly (e.g., someone falls and breaks a hip or parent death/incarceration). This can engender short- or long-term stress as family members scramble to accommodate caring for the individual. In other instances, the amount

and extent of care may change over time as with a progressive illness such as dementia. In these circumstances, making a decision to provide or obtain more comprehensive care can be a difficult and confusing process. When the amount of care needed exceeds the resources available within the family or network of informal caregivers, it is time to consider more formal resources for the care recipient. This is not always an option though, as financial resources may be limited.

A sense of purpose and increased self-esteem can be a gratifying outcome of giving care to others (caregiver gain). Caregivers of elderly parents may feel good about being able to look after or give back to parents who took such good care of them. Still, some may feel guilt that they are not doing enough to ease the pain or to make the individual well again. Those caring for grandchildren may benefit from a closer relationship with the younger generation, even while struggling to manage in the face of their own ill health.

For others, caregiving can be an isolating and lonely experience for both the caregiver and the care recipient. Frequently, the role of caregiver is unwanted, unfamiliar, and therefore anxiety provoking. In some families there may be resentment of the caregiving role, often with its roots in the earlier history of the relationship. For instance, a previously strained relationship between an adult and child caring for a parent may become more resentful as the caregiver feels unappreciated and the care recipient is disappointed about the care. When the care recipient dies, there may also be conflicting emotions about the loss as well as feeling somewhat relieved of the burdens of the caregiver role. Each caregiver will bring his or her own way of coping and grieving to the experience.

Caregiver burden is a term used to refer to the composite stress (economic, psychological, and physical) perceived by those who provide care to others who are ill/disabled or in need of care due to minor status. Other terms used interchangeably include caregiver strain, distress, and stress. The key word in the definition is perceived as when one might feel "burden" is subjective. For instance, caring for an incontinent care recipient may be seen as a small issue easily taken care of for some, while others may report the behavior as cause for institutionalization.

Research indicates that caregivers of those with Alzheimer's or progressive dementia face particular hardships when compared with caregivers of nondementia recipients or their noncaregiving counterparts.

Individuals with dementia are living longer and therefore require extended care and a prolonged use of available resources, thus making it more likely that a drain on resources will eventually occur. Along with greater economic costs, the toll on dementia caregivers may include significant emotional distress, poor physical health, increased family conflict, increased use of psychotropic medications, and employment complications.

When caregivers neglect their own physical and emotional health, i.e., foregoing their own doctor/haircut appointments, the toll can be high as depression is an all-too-common outcome. When compared with those who report little problem in the caregiving role, studies indicate that those who perceive increased stress in providing care experience higher mortality and morbidity. One study indicates that older adults experiencing strain in caring for a disabled spouse were 63% more likely to die within 4 years than noncaregivers. In addition, care recipients face a greater risk of institutionalization and/or functional and cognitive impairment when their caregiver experiences burden. The drawback to this is the increased financial costs both to the society and the family. As care recipients become progressively ill or more difficult to manage due to behavioral problems, perceived stress may increase for the caregiver. Finding a way to intercede before this point is reached may result in an improvement in the quality of life for the family caregiver. If institutionalization of the care recipient can be avoided or delayed, it will have the added benefit of being more cost-effective for those involved.

Care recipients may struggle to cope with growing dependence and a sense of humiliation at having to be cared for. When elderly care recipients become too ill to contribute to the family or society, a sense of powerlessness and low self-esteem may occur. For care recipients, being able to share affection, advice, or small tasks is an important contribution to the caregiver/care recipient relationship. Giving back in these ways can be empowering and provide a boost to self-esteem in care recipients.

Some care recipients and caregivers are at increased risk of abuse. Caregivers may suffer violence from the care recipient such as verbal or physical aggression (i.e., demanding constant care, hitting with a cane, or wheel chair). Care recipients may also exhibit difficulty to manage behaviors such as refusing to take medications or engaging in embarrassing public displays, thus increasing stress on caregivers. Increased strain on

caregivers can, in turn, lead to abuse and neglect. This abuse can be subtle as in nonresponsiveness to requests, or more overt, as in verbal or physical attacks. Care receivers may be at risk as dependency increases (having severe, mental, or physical disorders). It is difficult to intervene in these situations as the care recipient may fear that telling someone could lead to the loss of their only perceived support person.

Efforts to more thoroughly address service utilization problems are warranted as many caregivers are unaware of available resources to assist in caregiving functions. Important in-home services can be provided by paid caregivers and volunteers, such as respite services or other supplemental services (daytime programs and short-term residential programs). Further, a considerable number of caregivers do not know how to evaluate when additional services might be needed. Engaging knowledgeable professionals in a discussion of these issues can help alleviate the strain of making these complex decisions. Another possible avenue to consider is working with primary care providers to obtain support for caregivers/recipients through education regarding the nature of the disease, medications, and to obtain referrals. Educating caregivers through these avenues may not be financially feasible for many primary care offices, however, and other self-education options should also be explored (i.e., health plan hot lines, Internet searches, and national organizations).

While there is no one remedy to mitigate caregiver burden, it is reduced to some extent when caregivers have knowledge about the disease of the care recipient, understand what the caregiving role will involve, and have resources available to assist in caring for the recipient. Assisting the caregiver in problem solving and learning to manage care recipient behaviors can also reduce burden. Some studies indicate that learning a new skill or obtaining information that improves the ability to give care helps caregivers feel better about the role, even though it may have no effect on depressive or anxiety symptoms. Other studies have indicated that caregivers will have better morale if they believe their recipient is well cared for, that they are providing good care when compared with others in a similar situation, and that they have gotten better in coping with the caregiving role. For female caregivers, studies also seem to indicate that engaging in regular exercise can help reduce cardiovascular reactivity and improve sleep. Sharing with other caregivers in a support group or other social setting can also help normalize

experiences associated with caregiving. Sometimes just learning how to manage his or her feelings as a caregiver can help.

As each caregiver/care recipient situation is unique, interventions must be tailored to meet the specific needs of each at the intensity level that is most appropriate. It is important to engage care recipients (when they are able) in an open discussion with caregivers about care options. Having an opportunity to take part in determining what services would be most beneficial or wanted can lead to a more productive and smooth transition into different care arrangements. Involving a professional who is experienced in these matters can facilitate these discussions. To effectively manage the caregiving role, it is important for caregivers to assess their limits in all areas to include the time needed to accomplish the additional tasks, available emotional and social resources for the caregiving role, and financial resources. Learning to balance one's own needs while providing a high level of care is the key.

Related Topics

[Adult day care](#), [Anxiety disorders](#), [Baby boomers](#), [Dementia](#), [Depression](#), [Elder abuse and neglect](#), [Institutionalization](#), [Stress](#)

Suggested Readings

- Berg-Weger M (1996) *Caring for elderly parents: the relationship between stress and choice*. Garland Publishing, New York
- Bumagin VE, Hirn KF (2001) *Caregiving: a guide for those who give care and those who receive it*. Springer, New York
- Carter R, Golant SM (1995) *Helping yourself help others: a book for caregivers*. Three Rivers Press, New York
- Coon DW, Gallagher-Thompson D, Thompson LW (eds) (2003) *Innovative interventions to reduce dementia caregiver distress: a clinical guide*. Springer, New York
- Schulz R (ed) (2000) *Handbook on dementia caregiving: evidence based interventions for family caregivers*. Springer, New York
- Weisstub DN, Thomas DC, Gauthier S, Tomossy GF (eds) (2001) *Aging: caring for our elders*. Kluwer Academic/Plenum, New York

Suggested Resources

- National Chronic Care Consortium. www.nccconline.org/about/alzheimers.htm
- National Family Caregivers Association. www.nfcares.org

Case Management

Zane Jennings

Case management is a method of service provision that involves working collaboratively with clients and their families to access health care and/or social services from multiple sources to address complex needs. This may be particularly important as individuals age and possibly face increasing difficulty due to limited transportation, impaired cognition, few economic resources, and poor physical health.

Case management services are offered as a response to fragmented and highly complex health care and social service systems. In addition, agency and funder priorities may be a poor match for clients' specific needs. The goal of case management is to improve clients' health and well-being by increasing access to care and resources and tailoring services to individuals' needs. Ideally, case management can improve quality of life as services are accessed by those who need them.

Case management typically involves an initial assessment of an individual's functioning, strengths, and needs. Then the case manager and the client develop a plan (sometimes called a service plan or care plan) with specific goals to address the identified needs. Once the goals are established, the case manager assists the client in attaining them. This can involve several different activities on the part of the case manager. Examples of these activities include providing linkages to community and medical resources, advocating with community and medical services on the client's behalf, managing those services provided within the case manager's service site, authorizing and budgeting purchased services that are paid for by the case manager's service site, teaching and strengthening to assist clients or patients in accessing services and informal supports. Finally, the case manager, client, and client's family must continue to evaluate the plan and the services received by the client or patient on an ongoing basis.

Services and resources utilized by case managers can be quite diverse. Case managers can provide linkages to, and coordinate care among, primary care physicians, specialist physicians, adult protective services, home health agencies, mental health providers, delivered meal services, hospice, substance abuse services,

legal services, income maintenance programs, senior housing, transportation services, and respite programs. In addition, case managers are not limited to accessing formal services. Peer and family supports, 12-step programs, and support groups can be important aspects in a client's plan. Resources are not limited to those listed above.

Case managers can be found in a number of sites including hospitals, state and local aging service programs, home care agencies, mental health agencies, medical clinics, hospices, and adult protective service programs. The specific services offered by a case manager may be shaped by the scope of the case manager's agency. Referrals for case management services can come from any informed source. Case management services are most often voluntary for clients, but may be involuntary with adult protective service involvement or some forms of legal guardianship. Crucial to case management success is client investment and involvement in care. While cognitive impairment or involuntary status may limit client involvement, client self-determination is the normal expectation.

Case managers are most often registered nurses or social workers with a baccalaureate or graduate degree in social work. Certification programs for case managers exist but are not universally used.

Related Topics

[▶ Access to health care](#),
 [▶ Adult day care](#),
 [▶ Adult protective services](#),
 [▶ End-of-life care](#),
 [▶ Hospice](#),
 [▶ Managed care](#)

Suggested Readings

Gursansky D, Harvey J, Kennedy R (2003) Case management. Columbia University Press, New York

Suggested Resources

NASW Standards for Social Work Case Management, National Association of Social Workers, 2005, Washington, DC. http://www.naswdc.org/practice/standards/sw_case_mgmt.asp
 Social Work Best Practice Healthcare Case Management Standards, Society for Social Work Leadership in Healthcare, 2005, Philadelphia. <http://www.sswlh.org> Zane Jennings

Cataract

Daniel S. Kiernan

Cataract is the term used to describe a cloudiness of the lens of the eye. It is the leading cause of treatable blindness in the world. The human lens resembles a tiny magnifying glass and is located within the eye, about 3 mm behind the overlying cornea.

Cataract formation is commonly associated with increasing age, as extracellular lens fibers become disorganized. This change in the irregularity of its structures diminishes the lens' ability to transmit light, much like an old graying chipped piece of glass cannot be used as a windowpane. Lens changes leading to cataract may also be due to factors other than age such as medications (prednisone), genetics, and injury.

Visual symptoms of cataract formation may include loss of visual acuity, glare, increasing nearsightedness (thus, "second sight"—when a patient can see and read without glasses after decades of needing them). Rarely cataracts, usually severe ones, can cause glaucoma by leaking lens proteins within the eye. The presence of cataract may prevent the diagnosis of treatment of concurrent diseases.

Cataracts are diagnosed using a slit lamp (biomicroscopy) examination that is done by the ophthalmologist using a special machine. This device is used to determine the type, density of the cataract, and to determine if the cataract is advanced enough to explain the visual symptoms. In the eye examination, other causes of loss of vision are evaluated and if present examination can also provide clues as to which is the greater cause of visual acuity loss, the cataract or the other entity.

The treatment of cataracts is surgical and consists of removing it (recall a cataract is a cloudiness of the human lens) and replacing it with an artificial intraocular lens implant.

The indications for surgery are:

1. The presence of a cataract with both loss of visual acuity and resultant difficulty with lifestyle issues, for example, trouble driving or reading. Surgery is performed with the expectation of improving vision, by taking into account any effects of concurrent disease (e.g., macular degeneration or glaucoma). A common benchmark for surgery is a visual acuity of 20/50 or worse.
2. Diseases such as glaucoma caused by cataract.

3. Inability to diagnose or treat diseases due to lack of seeing the inside of the eye due to cataract. Such diseases whose treatment may require cataract surgery include diabetic retinopathy, retinal detachment, macular degeneration, and intraocular tumor.

Related Topics

🔗 [Blindness](#), 🔗 [Eye care](#), 🔗 [Glaucoma](#), 🔗 [Vision](#)

Suggested Readings

- Brunette DD (2002) Ophthalmology. In: Marx JA, Hockberger RS, Walls RM (eds) *Rosen's emergency medicine: concepts and clinical practice*, 5th ed. Mosby, St. Louis, MO, pp 908–928
- Horton JC (2001) Disorders of the eye. In: Braunwald E, Hauser SL, Fauci AS (eds) *Harrison's principles of internal medicine*, 15th ed. McGraw-Hill, New York, pp 164–178
- Widell T (1998) Eye, ear, nose, throat, and dental emergencies. In: Plantz H, Adler JN (eds). *National medical series for independent study: emergency medicine*. Williams & Wilkins, Baltimore, MD, pp 355–394

Cellular Theory of Aging

Jessica Diggs

Cellular theories of aging propose that human aging is the result of cellular aging, whereby an increasing proportion of cells reach senescence, a terminal stage at which cells will cease to divide. This will limit the body's ability to regenerate and to respond to injury or stress. This process will occur over time in dividing cells; cell division gradually slows with each successive division, until a point of replicative senescence, at which point no further divisions will occur. The mechanism of replicative senescence is thought to involve some type of biological clock within the cell, which measures the number of cellular divisions and signals the cell to discontinue division at some genetically predetermined time.

The Cell Cycle and Cellular Senescence

The process of cell growth and division into two identical daughter cells occurs in a series of regulated steps

called the cell cycle. There are four main stages that cells pass through during the cell cycle: (1) "G1" also called Gap 1, is a growth phase in which cells will prepare to replicate; (2) "S" phase in which DNA synthesis takes place; (3) "G2" phase in which cells prepare for mitosis, the actual division process; and (4) "M" phase where mitosis occurs, resulting in the production of two daughter cells. Stages between mitoses events are collectively referred to as interphase. The cell cycle is highly coordinated and regulated, with particular mediators necessary at each stage to signal the transition between phases and to orchestrate the steps that occur during those phases. The occurrence of errors, such as DNA damage, can signal the cell to cease division, to repair detected errors, or to undergo a process of programmed cell death, referred to as apoptosis. When cells exit the cell cycle, they will move from phase "G1" to a resting stage "G0." In "G0" cells are not actively cycling, but are carrying out normal cellular functions. Upon stimulation by a growth signal, nonsenescent cells can reenter the cell cycle at "G1" and continue dividing as long as there is sufficient growth signal and other regulators present to allow cells to progress through the cell cycle. Senescent cells cease cycling and no longer respond to growth signals.

Hayflick's Limit Theory

This phenomenon of replicative senescence was first described by Hayflick and Moorehead in 1961, when they reported that fibroblasts grown in vitro doubled about 50 times before reaching senescence, or the "Hayflick limit." The rate at which cells completed these divisions and reached senescence was influenced by cellular nutrition, with overfed cell replicating much faster than normally fed and underfed cells replicating much slower, an interesting fact given the effect of caloric restriction on the average life span of experimental animals (see Free Radical Theory of Aging). Although the doubling time of cells can be a function of nutrition and other growth conditions and might not accurately approximate in vivo growth conditions, these findings were replicated and validated by additional research.

This number of replications was theorized to be intrinsic to the cell and to be independent of chronological time, based on studies that showed that cells that were: (1) cultured, (2) frozen for various amounts

of time, and then (3) returned to culture, appeared to resume replication where they left off and to complete the remaining number of replications as expected. The *in vivo* correlate of this is illustrated by further research, which showed that cells taken from older donors tended to undergo fewer divisions in culture than cells taken from younger donors. Another observation made during Hayflick's experiments was the apparent correlation between maximal life span and the number of replications *in vitro*. For example, the cells of longer-lived animals like the Galapagos turtle with a maximum life span of 180 years underwent 120 doublings, humans with a maximum life span of 122 years underwent 50 doublings and rodents with a maximum life span of 4 years underwent 12 doublings *in vitro*. Although this trend does not apply to all organisms that have been studied and there is some variability within organisms, the finding that replication does slow with successive doublings is generally accepted, and forms the basis for the telomere theory of cellular senescence.

Telomere Theory of Cellular Senescence

The telomere theory of cellular senescence offers an explanation of the mechanism by which cells measure the number of divisions and determine when cessation of replication is appropriate. Telomeres are segments of DNA that are positioned at the end of DNA chromosomes. Telomeres do not contain any genetic information, but instead function to protect the ends of the chromosomes from degradation and to prevent the chromosome ends from fusing with each other or with other DNA molecules in the cell. Because of the imperfect ability of the cell replication machinery to copy the entire chromosome, small portions at the end of the chromosomes are not replicated. As a result, the telomeres are shortened with each successive replication. The telomeres will eventually shorten to a limiting length, which is cited as the signal for cell senescence. The ramifications of cellular senescence with aging may be evidenced by impaired wound healing, age-associated cardiovascular disease, and immune dysfunction, due to an increasing proportion of cells reaching senescence with aging, which decreases the ability of cells to regenerate after injury or to rapidly divide, as an immune cell of a younger individual would in response to infection.

Unlike the somatic cells (that are not involved in reproduction), germ cells (that produce male sperm or female eggs for human reproduction) and cancerous cells are capable of undergoing unlimited divisions. This enhanced replicative capacity is attributed to the presence of the enzyme telomerase. Telomerase acts to elongate the telomere, preventing it from reaching the minimal threshold length for senescence. The telomere system has been found to be defective in the cells of patients with the hereditary aging disorders, Hutchinson-Gilford Progeria and Werner's syndrome, which further support a role for telomeres in the process of cellular aging.

Public Health Perspective

Although research on telomerase has shown that telomerase may be present in senescent cells, indicating that the presence of this enzyme alone is not sufficient to prevent cellular senescence, telomerase may be a worthwhile target for cancer treatment or for increasing cellular life span. Many questions about the mechanism of cellular senescence remain unanswered, particularly the correlation between cellular senescence and human senescence. The answers to such questions may reveal a strategy for slowing the "biological clock."

Related Topics

• [Free radical theory of aging](#)

Suggested Readings

- Crews DE (2003) *Human senescence: evolutionary and biocultural perspectives*. Cambridge University Press, New York
- Ishikawa F (2000) Aging clock: the watchmaker's masterpiece. *Cell Mol Life Sci* 57(5):698–704
- Kart CS, Metress EK, Metress SP (1992) *Human aging and chronic disease*. Jones and Bartlett, Boston, MA
- Klatz R, Goldman B (1996) *Stopping the clock: why many of us will live past 100—and enjoy every minute!* Keats Publishing, New Canaan, CT
- Masoro EJ (1999) *Challenges of biological aging*. Springer, New York
- Medina J (1996) *The clock of ages: why we age—how we age—winding back the clock*. Cambridge University Press, Cambridge
- Whitbourne SK (2001) *Adult development and aging, biopsychosocial perspectives*. Wiley, New York

Centenarians

Kristin A. Cassidy

In 2001, there were approximately 50,000 people above the age of 100 in the United States, that is, about one in every 10,000 Americans; 85% of them are women. It is estimated that there will be nearly 850,000 centenarians in 2050 and possibly even one million.

Centenarians appear to avoid or at least postpone age-associated disabilities such as dementia and strokes. In fact, most centenarians are able to live fairly independently for most of their lives. Researchers believe that centenarians' bodies age more slowly than the average person.

What is the secret of living at least 100 years? There are many factors involved and no one knows the perfect formula yet but several centenarian research studies around the world are working on solving this puzzle by studying the lifestyles, habits, and genetics of centenarians. Two of these research studies stand out in particular—the Okinawa Centenarian Study (OCS) and the New England Centenarian Study (NECS).

In Okinawa, Japan there are about 34 centenarians for every 100,000 people (compared with ten for every 100,000 people in the United States). In 1976, when the study first began, there were only 32 centenarians on the island. Today there are more than 400. This larger number of persons above 100 appears to be due to both genetics as well as certain elements in the everyday life of people on this island. The OCS has found that although genes do play a role in what age a person will reach, lifestyle choices are actually the key to successful aging. This is most strongly evidenced by the increased incidence of heart disease and other age-related ailments in Okinawans who leave the island and in turn do not maintain the healthy lifestyle.

The NECS is the largest study of centenarians in the world. The project began by studying all the centenarians in eight towns near Boston, Massachusetts, in 1994 and now includes participants from across the United States and other countries. NECS studies not only centenarians themselves, but also their siblings, children, and spouses to get the full picture of successful aging.

Even though centenarians do not all have the same genetic makeup and environment, there are some common biological lifestyle, and psychosocial characteristics these studies have found. Many participants do not develop Alzheimer's disease and have virtually no

significant change in their thinking skills. In fact, one gene that is associated with Alzheimer's and heart disease (a variation of apolipoprotein E, called *f*) has been found far less frequently in people of advanced age than in the general population. Over time, researchers expect to discover other "disease genes" that centenarians lack as well as "longevity enabling" genes that may aid in centenarians' ability to avoid age-related diseases. Based on data collected in the NECS, women who give birth (without using any fertility technology) after the age of 40 are four times more likely to live to 100 than women who do not have children after 40. Bearing a child later in life may indicate that the woman's reproductive system has aged slower than normal and so has the rest of her body. The majority of centenarians have close relatives who have also reached very old age and their children often have lower incidences of diabetes, cardiovascular disease, and mortality than expected for their age group (65–82 years).

As may be expected, most centenarians do not have a significant history of smoking. Most centenarians are not obese and the men are especially likely to be lean. Diets that are low in calories and high in fruits, vegetables, fiber, flavonoids, omega-3 fats, and monounsaturated fats paired with low body fat level and high levels of physical activity help reduce the risk of developing hormone-dependent cancers such as breast, prostate, and ovarian cancers. Eating fewer calories also appears to be related to lower levels of free radicals in the blood.

Chronic stress has been found to weaken the immune system and contribute to the development of heart disease, cancer, memory loss, problems of the digestive system, and may increase risk of developing autoimmune diseases. Centenarians are thought to be better at handling stress than most of the general population. Their tendency toward being optimistic, adaptable, and easygoing causes them to have what NECS researchers refer to as "stress-resistant personalities."

Having a rich social network and spiritual life also seem to be keys to living longer. Okinawan women have the longest average life expectancy in the world (86 years). Nearly in every country the women outlive the men, but in Okinawa, the difference of 8 years is considered to be a particularly large gap. The researchers of the OCS hypothesize that this big difference between the average life expectancy of the two could in part be attributed to Okinawan women's strong spirituality. In most cultures women are more religious than their male counterparts. However, unlike in many

other countries, in Okinawa the women are also the leaders of the mainstream religion. Based on results of a survey of 325 Okinawan women aged 65 and above, spirituality in Okinawa appears to relieve stress; provide strong social connections; offer a sense of meaning, satisfaction, and purpose to life; furnish coping mechanisms; and provide a respected role in society. Each of these individual traits appear to contribute to healthy aging, strong spirituality just combines them all into one longevity-promoting package.

Although not all people will live to be 100, most have the genetic makeup to live healthy lives well into their eighties. Studying centenarians can lead to a better understanding of what life choices can help people reach their full successful aging potential.

Related Topics

[▶ Anti-aging remedies](#), [▶ Life expectancy](#), [▶ Mortality](#), [▶ Social support](#), [▶ Spirituality](#), [▶ Stress](#), [▶ Weight control maintenance](#)

Suggested Readings

Willcox BJ, Willcox DC, Suzuki M (2001) *The Okinawa program*. Three Rivers Press, New York

Suggested Resources

The Alliance for Aging Research Living to 100 Life Expectancy calculator. <http://www.livingto100.com>

The New England Centenarian Study. <http://www.bumc.bu.edu/Dept/Home.aspx?DepartmentID=361>

The Okinawa Centenarian Study. <http://okinawaprogram.com>
 Quest Network Blue Zones—searching for the secrets to longevity by exploring the four places where people live the longest, healthiest lives (known as the blue zones). <http://www.bluezones.com>

Charismatic Healers

Nancy Mendez

Charismatic healers are people who believe that they have divinely inspired powers that can treat illness. Other charismatic healers believe that they can control the body with the mind and spirit. For many centuries

healing and religion were inseparable. In societies throughout human history priest/shaman and physicians were one and the same. They believed that one had to administer spiritual healing to achieve physical health.

The emergence of scientific medicine in the middle of the nineteenth century began the process of separation of medicine and religion especially in western societies. The soul/spirit was the province of the Church, but the healing of the body was now up to the scientist and the physician. Today a growing number of physicians and scientists believe that there is a direct interrelationship between the body and the mind. Over the past decade there has been a revival in spiritual healing.

Although physicians do not recommend that religious and spiritual healers become a substitute for standard care, there is a growing consensus that religion and spirituality may help reduce physical and mental pain. Spiritual and religious beliefs can at times also help a patient combat depression and suicide.

However, there are some charismatic healers who have ulterior financial motives. They often prey on the elderly and ailing. Some self-proclaimed charismatic healers manipulate the elderly by using their faith against them. Many “healers” services are sophisticated, choreographed productions that generally last for hours. After many hours of music, prayer, offerings, and videos, the pastors begin “healing” people in the audience who have everything from blindness to leukemia. After the euphoria felt during the services wears off many of the “healed” realize that they are still blind or stricken with cancer. One of the most famous charismatic healers in the United States self-disclosed that his ministry generated revenues of more than \$160 million in a 2-year period.

Not all charismatic healers intend to swindle the elderly, but it is important to ask many questions especially if they begin to ask for money. The priest and the physician are no longer the same person; however, the services each provide should complement and supplement each other for the benefit of the patient and the patient’s total well-being during health, illness, and at the end of life.

Related Topics

[▶ Complementary and alternative health practices](#), [▶ Spirituality](#)



Suggested Readings

- Csordas TJ (1997) *The sacred self: a cultural phenomenology of charismatic healing*. University of California Press, Berkeley, CA
- Daaleman TP, Vandecreek L (2000) Placing religion and spirituality in end-of-life care. (commentary) *JAMA* 284:2514–2517
- Frohock F (1992) *Healing powers: alternative medicine, spiritual communities, and the state*. University of Chicago Press, Chicago

Chemotherapy

Polina Fradkina · Bruce Brockstein

Among the multiple medical problems that arise as we age, oncological diseases are the leading cause of death in the elderly patient population. For various cancers, patient's age is considered to be a major prognostic factor for outcome. The relationship between a person's age, treatment options, and tolerance of that treatment is often obvious. For some cancers such as lung cancer, performance status is a better indicator of tolerance and outcome than age. Adjustments in chemotherapy treatment are often made to improve patient's level of tolerance of the treatment. In some types of cancer such as leukemia, biology of the disease varies between older and younger age groups, thus resulting in poorer prognosis in the elderly. Due to multiple contributing factors, side effects of the chemotherapy vary between populations below and above age 65. This article focuses on specific side effects that the elderly population may face with various chemotherapy agents and possible solutions to minimize those detrimental effects on the quality of life.

The antineoplastic agents (cisplatin, carboplatin, and oxaliplatin) disrupt the genetic material (DNA) inside the cell. The kidney removes these drugs; therefore, any kidney problems could add to the toxicity. Major toxicities include renal insufficiency, nausea and vomiting, nerve problems in the fingers and toes, hearing loss, and bone marrow suppression. Acute kidney damage is a serious concern. Aggressive hydration and careful use of diuretics help minimize the side effects. Prevention of dehydration from vomiting is an important goal.

The Taxane medications, (paclitaxel [Taxol] and docetaxel [Taxotere]) are used in lung, breast, and

ovarian cancers, and its metabolism is affected by liver function. Precautions and dose reductions should be used in the elderly to avoid neutropenic (low white cell) fever, fatigue, mucositis, and nerve damage.

Gemcitabine (Gemzar) is used in pancreatic, bladder, lung, and breast cancers. Its activity is limited by the bone marrow suppression. When combined with cisplatin, the effect is multiplied. Reduction of the dose, specifically of cisplatin, will minimize those side effects.

Anthracyclines (doxorubicin [Adriamycin] and daunorubicin [Cerubidin]) are used in breast cancer, lung cancer, and sarcoma and childhood cancer. The most serious toxicity is the cardiac toxicity that is cumulative dose dependent. Preexisting cardiac conditions increase the risk. Cardiac evaluation prior to initiating treatment is standard. Mitoxantrone has a better toxicity profile; however, liver functions must be monitored. Daunorubicin causes alopecia, fatigue, mouth sores, anemia, nausea, and vomiting. Epirubicin, used in Europe may have a slightly safer cardiac profile.

Fluorouracil (5-FU) is used in combinations for gastrointestinal, head and neck, and breast cancers. The side effects include mouth sores, diarrhea, and rash and bone marrow suppression. The drug may have increased toxicity in patients above the age of 70.

Topotecan (Hycamtin), a topoisomerase inhibitor, is used for ovarian and small cell lung cancer. The dose is decreased in patients with moderate kidney dysfunction. Bone marrow suppression is the major side effect and does not seem to be age specific.

Irinotecan (Camptosar) has been approved for 5-FU refractory colorectal cancer, as well as glioblastoma multiforme (central nervous system malignancy). The major toxicity, more common in the elderly, is diarrhea.

Etoposide (Etopophos, Vepesid) used for non-Hodgkin's lymphoma, lung, and ovarian cancer is widely used in geriatric population. Dosing of the drug needs to be adjusted for renal insufficiency. The major side effects include bone marrow depression and mouth sores.

The vinka alkaloids (vincristine, vinblastine, and vinorelbine [Navelbine]) are used in metastatic non-small cell lung and breast cancer with a favorable side effect profile with no adjustments necessary in the elderly. The neurotoxic side effects are significantly lower than other drugs in the same class. Constipation and ileus occur in the elderly.

Alkylating drugs, which include chlorambucil, melphalan, cyclophosphamide, and carmustine, are frequently used in the elderly because of lower toxicity and oral delivery.

A new class of “targeted therapies,” which target specific molecules of specific cancers allows enhanced efficacy and decreased toxicity. Imatinib (Gleevec) is utilized for gastrointestinal tumors and chronic myeloid leukemia. It turns off an enzyme that promotes cancerous cell reproduction. The most common side effects include fluid retention (specifically swelling around the eyes or legs), fatigue, diarrhea, nausea, vomiting, muscle cramps, muscle or bone pain, and rash. Taking Gleevec with a meal and a large glass of water may reduce the risk of nausea and vomiting. Patients should avoid taking the medication with grapefruit juice. Bleeding is a serious side effect.

Gefitinib (Iressa) is another targeted therapy with side effects including skin rashes (which look like acne or dry skin), diarrhea, and nausea. Lung toxicity may occur in patients with prior radiation history and prior chemotherapy use. Erlotinib (Tarceva) is like Gefitinib, and used in the treatment of lung cancer but shown better survival rates. The use of the mild soap, mild lotion, and avoiding sun exposure may help with the rash. An eye examination should be done prior to starting the drug because of potential corneal damage. Wearing contact lenses during treatment is not recommended. The use of coumadin, rifampin, phenytoin, phenobarbital, St. John’s wort, carbamazepine, itraconazole, ketoconazole, clarithromycin, and HIV medications may need closer surveillance.

Rituxan (Rituximab) is a monoclonal antibody used in the treatment of B-cell lymphomas. With the exception of hypersensitivity reaction during infusion, side effects are mild. Trastuzumab (Herceptin) is a monoclonal antibody, utilized in “HER 2-neu” positive metastatic breast cancer. Herceptin causes flu-like symptoms including fever, chills, and muscle aches. If Herceptin is taken alone, side effects of low white and red blood cell counts are rarely seen, however, congestive heart failure (CHF) occurs in a small percent of the patient population. The risk of heart failure increases if taken with Adriamycin. Pulmonary side effects include allergic-like reactions and lung reactions.

Bevacizumab (Avastin), used to treat metastatic colon, rectal, and lung cancers by inhibiting formation of the blood vessels that supply cancer cells, has a

serious side effect profile that includes impaired wound healing, bowel perforation, bleeding or clotting, high blood pressure, fatigue, and loss of appetite, diarrhea, mouth sores, and headache. Patients with pre-existing heart and kidney disease need to be cautious when utilizing it.

There are multiple approaches to reduce the toxic effects of various chemotherapy drugs. Myelosuppression (lowering of blood count) management includes prevention and prompt treatment of infection. In subsequent cycles, patients may have dose reduction or a “colony-stimulating factor” (csf) that may be used to stimulate specific cell groups including white cells, platelets, and red cells.

Nausea and vomiting are very common side effects that impair quality of life, ability to take chemotherapy as scheduled, and cause complications in the form of dehydration, malnutrition, and imbalance of chemicals in the body (electrolyte imbalance). Medications for nausea should be started before chemotherapy administration and continued for the time period of nausea risk.

Inflammation of the mucous membrane surfaces, which leads to painful ulcers, local infection, and inability to eat, is another common problem. Preventive measures include good oral hygiene, and dental evaluation prior to the treatment. Once the mucositis has developed treatment is mainly supportive. Local infections of *Candida* or herpetic infection need to be treated with appropriate antifungals and antivirals. In the gastrointestinal tract, mucositis may cause significant diarrhea.

Related Topics

➤ [Breast cancer](#), ➤ [Cancer](#), ➤ [Ovarian cancer](#), ➤ [Prostate cancer](#)

Suggested Resources

www.cancer.org
www.drugs.com
www.nlm.nih.gov/medlineplus
www.cancerbacup.org.uk
www.uptodate.com



Chest Pain

Clyde Sullivan

According to the Center for Disease Control's National Hospital Ambulatory Medical Care Survey, more than 5.8 million emergency department visits and more than 700,000 outpatient office visits are due to chest pain. The costs of these visits are estimated in tens of billions of dollars annually. People of all ages may have symptoms of chest pain, though it is more prevalent in older populations. This symptom is so common that many hospitals across the country have dedicated chest pain centers. Their purpose is to properly triage and treat patients in a timely and economically efficient manner. Since chest pain may be caused by something as simple as heartburn or as life-threatening as rupture of a major blood vessel, it is important to have accurate and prompt diagnosis. This also illustrates that not every patient with chest pain needs to be admitted to a hospital, as it would be a poor use of resources.

Chest pain, in people above the age of 50, is often first associated with a heart attack (myocardial infarction). As one of the more life-threatening causes of chest pain, it is easy to understand why. However, chest pain may be caused by a wide variety of medical conditions. Many of these are easily corrected and not life-threatening. In the following paragraphs, some of the more common or life-threatening causes of chest pain will be discussed.

Aortic dissection is most common in males between 40 and 70 years and occurs in approximately two out of every 10,000 people. Patients commonly describe a tearing or ripping chest pain that comes on suddenly with maximal intensity that does not abate. Patients typically have markedly elevated blood pressures. If not treated, this condition is fatal in approximately 50% of cases within the first 48 hours. It is a condition where a portion of the inner wall of the aorta, the vessel that exits blood from the heart, develops a tear that disrupts flow. The diagnosis is established by patient history and imaging studies. Various imaging studies are used including chest x-ray, computed tomography (CT), and transthoracic echocardiogram. Due to the higher sensitivity (98%), the American College of Cardiology recommends using transesophageal echo for evaluation of suspected dissection. Depending on the region of the aorta involved,

the treatment is either surgery to remove the damaged portion or medical therapy. Medical therapy involves using beta-blockers and nitroprusside to optimize blood pressure control. The optimal blood pressure is the lowest level compatible with adequate cerebral, coronary, and renal perfusion.

Acute myocardial infarction (AMI) is a rapid reduction in oxygen supply versus the oxygen demand of the heart that may lead to cell death. This is commonly caused by rupture of atheromatous plaques within the coronary arteries or their branches that occludes blood flow to the portion of the heart supplied by the artery.

Pulmonary embolus (PE) is an obstruction of the pulmonary artery or branches by a blood clot (thrombus), air bubbles, fat droplets, amniotic fluid, or tumor cells. Pulmonary emboli account for approximately 500,000 hospitalizations each year. The mortality rate of PE is 30% if untreated and 10% when treated. PE is most common among men above the age of 55. People have an increased risk of PE if they are above the age of 55, have had recent surgery, been immobilized for extended periods of time (e.g., long plane flight or car trip), or have cancer.

Over 90% of pulmonary emboli originate from clots in the deep veins of the pelvis and leg. Symptoms of PE include cough, bloody sputum, sudden onset of shortness of breath, chest pain that is sharp or stabbing and made worse with deep breaths or cough, tachycardia, and tachypnea. A high level of suspicion, laboratory tests, and imaging studies confirm the diagnosis of PE. The physical exam is often unrevealing with PE. The D-dimer blood test is helpful for determining whether a patient has a PE. Frequently, spiral CT or ventilation/perfusion studies will also be used.

A spiral CT is very effective for identifying thrombus in the larger pulmonary arteries. Ventilation/perfusion scan is a nuclear imaging test that compares the area of the lung ventilation versus the area of blood perfusion. A shortcoming of the test is that it is not accurate in people who already have moderate to severe pulmonary disease and may give an indeterminate result.

Treatment is dependent upon the patient's condition and thrombus location. Thrombus in the large pulmonary arteries is more likely to lead to cardiogenic shock, which is a life-threatening emergency. Supplemental oxygen is administered along with thrombolytic therapy. Medications currently used include streptokinase, urokinase, or tissue plasminogen activator; these

increase the rate of blood clot breakdown (thrombolysis). Patients are also started on low molecular weight heparin, which primarily inhibits factor Xa in the coagulation cascade and has been shown to have less adverse outcomes than standard heparin. Warfarin is used to thin the blood for long-term treatment and prophylaxis. Warfarin does this by reducing the production of clotting factors II, VII, IX, and X.

Patients with thrombus, who have stable blood pressure and pulse, are given supplemental oxygen, low molecular weight heparin, and warfarin. Patients unable to take warfarin may have a filter placed in a large vein that drains the legs called the inferior vena cava; this will prevent clotting of the deep veins from reaching the lungs.

Pneumothorax is the presence of air within a region that separates the lungs from the chest wall called the pleural space. Pneumothorax may be caused by trauma such as a car crash or accident, or by surgical or medical procedures. Patients may have an underlying lung disease such as obstructive lung disease from smoking; this makes them more prone to having a pneumothorax and also carries a higher mortality rate.

Most of these cases occur while a person is resting. It is believed to occur due to the lung rupturing and releasing air into the pleural space. Chest pain is a common complaint along with shortness of breath. The diagnosis is determined by chest radiograph; if chest radiograph is not diagnostic, a chest CT may be obtained. Treatment usually involves simple observation as most spontaneous pneumothorax will resolve without intervention. If the pneumothorax is >20% of lung volume, then aspiration with a catheter or chest tube is performed.

Stable angina is a common cause of chest pain. It is caused by chronic narrowing of the coronary arteries and differs from myocardial infarction, which is an acute narrowing or blockage. This leads to a state where oxygen demand by the heart exceeds the supply upon exertion. Angina affects approximately 15% of the population above the age of 65. The treatment for angina is long-acting nitroglycerin, beta-blockers, aspirin, and cholesterol-lowering medications.

Muscle strain may cause chest pain. Usually a history of exercise, lifting, or using the chest wall muscles is reported. The pain is described as a sharp pain that is worse with movement or breathing. The pain is often reproduced when pressure is applied to the chest wall. The treatment is rest, ice (for the first 24–48 hours), compression, and elevation of the affected area.

A nonsteroidal anti-inflammatory drug, like ibuprofen, should be taken to reduce inflammation and pain.

Costochondritis is an inflammatory process of the costochondral or costosternal joints. It causes chest pain that is localized across the breastbone. Costochondritis is believed to cause 10–30% of emergency department visits with complaints of chest pain. Patient history frequently includes activities they are not accustomed to doing routinely. The physical finding of pain reproducible when pressure is applied to the affected joint is observed in all cases. The course is usually self-limited and is treated with ibuprofen.

Gastroesophageal reflux disease (GERD), commonly referred to as heartburn, is the excessive movement of gastric or duodenal secretions into the esophagus. According to the Gallup Organization National Survey approximately 44% of the population experiences symptoms of GERD once a month and 7% on a daily basis. The incidence of GERD dramatically increases above the age of 40. GERD is commonly caused by transient lower esophageal sphincter (LES) relaxation or decreased LES tone. Some medications (calcium channel blockers, nitrates, and beta-blockers) or hormones (progesterone) may decrease LES pressure. Other causes include delayed stomach emptying, ineffective esophageal clearance, and diminished salivation.

GERD frequently occurs within 1–2 hours after eating and is described as a substernal burning pain that migrates toward the neck. GERD is treated with medications called proton pump inhibitors and lifestyle modifications including avoidance of alcohol, elevation of the head of the bed, decreased fat intake, quitting smoking, and avoiding lying down for at least 3 hours after eating. If symptoms persist, more specialized tests such as ambulatory pH monitoring, endoscopy, or esophageal manometry may be performed.

Related Topics

- ▶ [Cardiovascular disease](#), ▶ [Coronary heart disease](#),
- ▶ [Gastroesophageal reflux disease](#)

Suggested Readings

Beers MH, Fletcher AJ, Jones TV, Porter R, Berkwitz M, Kaplan JL (eds) (2003) *The merck manual*, 2nd ed. Merck Research Laboratories, Whitehouse Station, PA



Braunwald E, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL (eds) (2004) *Harrison's principles of internal medicine*, 15th ed. McGraw-Hill, New York

Suggested Resources

www.emedicinehealth.com

Chiropractic Care

David Johnson

Chiropractic is a healing art based on the principle that spinal misalignments cause diseases and the manual correction of these misalignments corrects the disorder. Although this principle has never been proven, chiropractors have proven themselves effective in the management of lower back pain, neck pain, and tension headaches. The cost savings from these three conditions alone afforded by chiropractic care has led to the expansion of both government and third-party coverage for chiropractic care.

There are approximately 50,000 chiropractors practicing in the United States. They are trained primarily at private institutions. The chiropractic education includes all the basic medical sciences with a strong emphasis on anatomy. Unlike their medical counterparts, chiropractors are trained in nutrition and many employ nutritional supplementation as part of their practice. There is a strong emphasis on radiology in chiropractic school, with most chiropractors having x-ray machines in their offices. Chiropractors are trained to diagnose medical conditions that are not appropriate for chiropractic care and are trained to refer these conditions out of their practices. Chiropractors do not traditionally prescribe medications and their training and licensure reflects this fact. For most chiropractors medications would only be considered as a last resort, after other conservative measures had failed in patient care.

Chiropractic care is safe to receive. In 2005, a typical chiropractor could receive a \$1,000,000 worth of malpractice insurance coverage for roughly the cost of \$3,000–\$5,000 per year. When this figure is compared with some of the staggering costs of medical malpractice coverage in the United States, it is easy to understand that chiropractors get sued very infrequently for injuries sustained in their offices.

Recently, there has been a push in the medical literature to link chiropractic cervical manipulation to cerebral vascular accidents secondary to the dissection of the vertebral artery. Although this does occur, it is extremely rare with an occurrence of roughly one event in one million patients. Furthermore, many of these patients may have actually been experiencing problems with their vertebral arteries before presenting for chiropractic care as a result of trauma, insult, or congenital weakness in the arterial wall. Chiropractors are trained to look for warning signs and symptoms with these types of patients and know not to manipulate these patients. Given the rare occurrence of these events physicians and patients should not be afraid to seek care from chiropractors for relief of pain using cervical manipulation.

On a wider public health picture chiropractors have saved thousands of lives in the United States alone. There are approximately 30,000 deaths per year from nonsteroidal anti-inflammatory use in the United States. For many years these medications have been available over the counter and were given as free samples in many medical practices. Chiropractors have helped to limit the use of these medications by helping their patients to relieve pain with manual therapies, physical therapies, and other common sense approaches. By limiting the use of these medications, and by helping patients to avoid spinal surgeries, chiropractors as a whole have benefited the American public by limiting morbidity and decreasing exposure to potentially fatal interventions.

As the population in the United States ages the use of chiropractic care will likely increase due to its effectiveness in limiting the common aches and pains that older individuals often suffer. Chiropractors are well trained to modify their manual therapies to accommodate the older patient. Although these patients often have limited rehabilitation potential, they can make functional gains when placed in the right environment for healing. Chiropractors can play a vital role in helping older patients lead active and more productive lives in the later stages of their lives.

Related Topics

[▶ Acupuncture](#),
 [▶ Arthritis](#),
 [▶ Back pain](#),
 [▶ Body composition](#),
 [▶ Chronic pain](#),
 [▶ Complementary and alternative health practices](#),
 [▶ Massage](#)

Suggested Readings

- Haldeman S, Chapman-Smith D, Petersen D (1993) Guidelines for Chiropractic Quality Assurance and Practice Parameters. Proceedings of the Mercy Center Consensus Conference, Aspen, MD
- Terrett A (2001) Current concepts in vertebrobasilar complications following spinal manipulation, 2nd ed. NCMIC Group, Inc., Clive, IA

Suggested Resources

- The American Chiropractic Association web site. <http://www.amerchiro.org>
- The Council on Chiropractic Education web site. <http://www.cce-usa.org/>
- The National Chiropractic Mutual Insurance Company web site. <http://www.ncmic.com/>

Cholesterol

Asra Kermani

Cholesterol is a multifunctional molecule that is integral to life. It is a waxy substance that is an essential component of the cell membrane and the nervous system, as well as a precursor for steroid hormones such as hydrocortisone, estrogen, and testosterone. Other cholesterol-related products are bile acids and vitamin D. Cholesterol is transported in the blood by lipoproteins.

Most disorders related to cholesterol result from its accumulation. This may occur due to either alterations in production or removal. Disorders resulting from a deficiency of cholesterol are rare and may either result in no symptoms or manifest at a younger age. Excess amounts of cholesterol in the body cannot be effectively removed, and are deposited in blood vessels. This results in blockage to the organs supplied by the blood vessels, leading to a variety of events including stroke, heart attack, impaired kidney function, aortic aneurysms, poor circulation in the limbs, and even gangrene. Therefore, excess cholesterol accumulation can be potentially fatal. According to the third National Health and Nutrition Examination Survey (NHANES III), 20% of the US population had elevated total cholesterol levels. However, in the older age groups, more than 20% of men and more than 30% of women

had high cholesterol. In contrast, the prevalence of low high-density lipoprotein (HDL) cholesterol was not significantly affected by age.

Cholesterol is produced in the liver from small precursor molecules. These combine in a multistep process to eventually produce cholesterol. Once cholesterol is synthesized, it is transported and utilized for many of its myriad functions. Proteins, called lipoproteins, transport cholesterol. They are named according to their density as: very low-density lipoprotein (VLDL), low-density lipoprotein (LDL), and high-density lipoprotein (HDL). VLDL predominantly carries not only triglycerides but also cholesterol; however LDL is the main cholesterol carrier protein, and is responsible for cholesterol deposition. HDL, in contrast, is the major cholesterol remover protein. LDL is therefore considered to be the “bad cholesterol” and HDL, the “good cholesterol.”

Causes of Excess Cholesterol

Cholesterol excess is known as hypercholesterolemia. Many patients do not have any symptoms and are diagnosed by their primary care provider during a fasting lipid profile, a blood test that provides measurements of total cholesterol, LDL, and HDL cholesterol levels. Normal levels are based on criteria determined from a large group of patients extensively studied for a prolonged time period, called the Framingham cohort. Guidelines for target cholesterol levels are established by the National Cholesterol Education Program. Based on these estimates and clinical judgment, the primary care provider may determine whether the patient needs treatment for an elevated cholesterol level. In an individual without significant cardiac risk factors an LDL cholesterol level of less than 130 mg/dL is appropriate; LDL cholesterol below 70 mg/dL is desirable for extremely high-risk patients. HDL cholesterol more than 40 mg/dL is favorable for men and more than 50 mg/dL for women.

Cholesterol levels are determined by both genetics and environment. However, age-related changes in metabolism occur that interact with environmental factors such as diet. Diets rich in saturated fat are most effective in raising LDL cholesterol levels. Excessive cholesterol intake (more than 300 mg daily) as well as reduced exercise may also be detrimental. Dietary influences, however, are more important compared to lack of exercise.



Consequences of Excess Cholesterol

Excess cholesterol is deposited in blood vessels, creating occlusion to organs supplied by blood vessels. Cholesterol accumulates in the form of plaques that are incorporated into the internal lining of the vessel. Some of these plaques are covered with fibrous tissue and are called “hard plaques”; these cause a gradual narrowing of blood flow. Other plaques are “soft plaques”; these can ulcerate and liberate free cholesterol in the form of crystals. In doing so, they cause a potent inflammatory response, injuring the blood vessel and promoting blood clot formation. As a result of a diminished blood supply, patients may develop symptoms of angina, transient stroke-like attacks, impotence, poor circulation in the legs, abdominal pain after meals, and high blood pressure. Complete occlusion of blood vessels can cause permanent damage and organ death, in the form of a stroke, heart attack, kidney failure, or gangrene.

Treatment of High Cholesterol

Diet and Exercise Reduced saturated fat intake, limited cholesterol intake, and consumption of monounsaturated fats are helpful steps for reducing LDL cholesterol. Foods rich in saturated fats are milk, cream, butter, and red meat. Monounsaturated fats are predominant in canola and olive oils. *Trans* fatty acids, which are found in cakes and many fried goods, are created by solidifying natural oils. Unfortunately, these fats raise LDL cholesterol while reducing HDL cholesterol. The food industry is attempting to minimize *trans* fatty acid use. Regular aerobic exercise, including walking, is also able to reduce LDL cholesterol by up to 10% and raise HDL cholesterol by 3–4%. Other factors that raise HDL cholesterol are estrogen intake in the form of hormone replacement therapy, and alcohol intake. Alcohol intake does not result in HDL elevation in all individuals and risks must be weighed against benefits in a given individual. Therefore, a uniform recommendation to consume alcohol is ill-advised. Individuals who have been sedentary must consult their physician before beginning an exercise program.

Medications When dietary changes and exercise alone are not effective, medications may be prescribed

to lower cholesterol. Statins are one of the most effective drugs, resulting in a 15–55% lowering of cholesterol. Statins inhibit the production of cholesterol, which in turn increases its clearance. The main side effects are muscle pains or inflammation and liver toxicity. These effects can be minimized by following patients closely and adjusting the dose if other lipid-lowering medications are used or if the patient has kidney disease.

Other agents include cholestyramine, colestipol, and ezetimibe, which are all effective in reducing cholesterol levels. Cholestyramine and colestipol increase conversion of cholesterol to bile acids; they lower LDL cholesterol by 15–20% and raise HDL cholesterol by 3–8%. Cholestyramine use may lead to bloating and/or constipation; it may also interfere with the absorption of other medications such as warfarin and thyroid hormone. Ezetimibe works by reducing cholesterol absorption, and lowers LDL by 18%. It is well-tolerated, but may cause fatigue, muscle pain, and diarrhea; it is also available in combination with a statin for patients who have difficulty in responding to statins alone. Niacin is a useful agent that reduces LDL cholesterol up to 16% and is also highly effective in raising HDL cholesterol by 22%. Its main side effects are flushing, high blood sugars, and hepatitis. The choice of agent depends on the presence of vascular disease and other coexisting cardiovascular risk factors, the type of cholesterol profile (determined through blood tests), and the patient’s ability to tolerate a particular medication.

Related Topics

▶ Cardiovascular disease, ▶ Diet, ▶ Exercise, ▶ Heart disease, ▶ Stroke

Suggested Readings

Malloy MJ, Kane JP (2004) Disorders of lipoprotein metabolism. In: Greenspan FS, Gardner DG (eds) *Basic and clinical endocrinology*, 7th ed. McGraw-Hill, New York, pp 766–793

Suggested Resources

National Heart, Lung, and Blood Institute. National Cholesterol Education Program. Bethesda, MD. <http://www.nhlbi.nih.gov/about/ncep/index.htm>

Chronic Fatigue Syndrome

Lori B. Siegel

Chronic fatigue syndrome (CFS) is a condition that falls under the category of chronic pain syndrome. CFS is defined as a severe fatigue lasting 6 months or longer that cannot be explained by any other medical disorder. There are eight possible clinical points, four of which must be met, to make this diagnosis. The eight criteria, also present for at least 6 months include: (1) short-term memory or concentration deficit; (2) sore throat; (3) tender lymph nodes; (4) muscle pain; (5) joint pain (without swelling or redness); (6) new onset or change in headache pattern or variation; (7) unrefreshing sleep; and/or (8) malaise after exercises lasting 24 hours or more.

Objective muscle weakness or known psychological or physical disorders rule out the diagnosis of CFS. It is commonly confused with myofascial pain syndromes and fibromyalgia. Myofascial pain syndromes are more localized to the upper or lower extremity, often only on one side of the body. Fibromyalgia, like CFS, is widespread, but the fatigue associated with CFS is much greater and a positive history or serology consistent with Epstein Barr viral infection is seen in CFS and not fibromyalgia. CFS is of unknown etiology and it may affect any age group and become quite debilitating. Due to concurrent medical illnesses and medications, CFS may be overlooked or not considered in the elderly and may go undetected.

Although the exact cause of CFS remains unknown, there are many theoretical causes that include disorders of the neuropsychological, immune, and metabolic systems.

Infections, predominantly viral infections, are the most agreed upon association with CFS. The likely organisms are Epstein Barr virus, coxsackie B virus, cytomegalovirus, enterovirus, retrovirus, human herpes virus type 6, and human T-cell lymphotropic virus. Unfortunately, there are no conclusive data to associate the infection with CFS.

Immune system abnormalities are associated with CFS and more than 65% of patients who carry this diagnosis have a history of allergy. Endocrine disorders associated with CFS patients include lower adrenalin levels, which may account for the mood and energy

alterations. Other metabolic theories such as oxygen perfusion and brain blood flow remain unproven.

Patients with CFS experience debilitating fatigue and daily function is impaired. Patients may also note alcohol intolerance, bloating, cough, dizziness, diarrhea, chest pain, dry eyes and mouth, earache, irregular heartbeat, jaw pain, morning joint stiffness, nausea, night sweats, shortness of breath, tingling sensations, and weight loss. The onset is associated with a flu-like syndrome with extreme fatigue, sore throat, and sinus or pulmonary infection. Stresses, such as physical exertion, other illness, or mental stress may exacerbate the symptoms.

The neuropsychological symptoms of CFS are distinct from typical anxiety or depression. Depression may accompany CFS because patients feel bad for a long time, but some people think that depression is the root of the condition and the immune, neurologic, and endocrine disorders arise as a consequence of the underlying psychiatric disorder. This is not always the case, since many previously healthy people are diagnosed with CFS. This may, however, explain a subset of cases.

Before making the diagnosis of CFS, a careful evaluation of other medical reasons for fatigue must be done. A complete history and physical investigation will determine the appropriate laboratory evaluation. Complete blood count, chemistries, and thyroid evaluation may be indicated. The diseases that must be considered and ruled out by either history or the laboratory investigation include: fibromyalgia, chronic mononucleosis, Lyme's disease, parvovirus, sleep disorders, psychiatric disorders, irritable bowel syndrome, anemia, occult celiac disease, chronic sinusitis, rheumatic disease, substance abuse, sick-building syndrome, drug reactions, cancer, and chemical sensitivities.

Once the appropriate diagnosis is made, the treatment is slow and patients should expect a slow recovery. Sometimes ineffective or unnecessary treatment will do more harm. The best treatment strategy is education, pain control, exercise, optimal diet, and good hygiene sleep. Low-dose antidepressants (for pain) combined with cognitive behavior therapy may be best. Treatments aimed at promoting good sleep such as muscle relaxants and low-dose antidepressants help relieve the symptoms of fatigue in general. Stress reduction is also helpful. A multidisciplinary approach is best and most effective in allowing the patient to work and lead a productive life.

Related Topics

[▶ Chronic pain](#),
 [▶ Fibromyalgia](#),
 [▶ Regional rheumatic pain](#)

Suggested Readings

Klippel JH (ed) (2001) *Primer on rheumatic diseases*. Arthritis Foundation, Atlanta, GA
 Klippel JH, Dieppe PA (1998) *Rheumatology*, 2nd ed. Mosby, St. Louis, MO
 Klippel JH, Dieppe PA, Ferri FF (2000) *Primary care rheumatology*. Harcourt, London

Chronic Pain

Stephen K. Sponagle

Pain is a normal part of human experience. It warns us of injury and protects us from further injury. We pull our hand away from a hot stove. The International Association for the Study of Pain (IASP) defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” But pain can sometimes become maladaptive and do more harm than good, like if that burned hand still hurts years later and makes it hard to cook. The IASP defines chronic pain as “pain without apparent biological value that has persisted beyond the normal tissue-healing time (usually 3 months).” Chronic pain is a complex syndrome with emotional and behavioral components that are at least as important as the sensory component. Chronic pain is common, especially among older adults, is often undertreated, and wreaks havoc on the individual suffering from it and on society as a whole.

Epidemiology

In population-based studies, 25–50% of elders living in the community report pain-related problems. In nursing homes, 49–83% of residents have important pain problems and 25% experience pain on a daily basis. There is debate in the literature about whether chronic pain becomes more common as people age. Some studies suggest that pain complaints are twice as likely among people older than 60. Other studies suggest that

chronic pain is slightly less common among older adults. Many medical conditions that lead to chronic pain are overrepresented in the elderly. On the other hand, work-related injury and stress are less common as we age and older patients are less likely to report pain. While chronic pain is common among the elderly, it is very poorly studied. Roughly 4,000 papers are published each year on pain management. Less than 1% involves elderly subjects.

Causes

Chronic pain among older adults is most often musculoskeletal. Among those older than 65, joint pains are most commonly followed by headaches and muscle pains. In nursing homes, arthritis, old fractures, or prosthetic joints cause 83% of pain. Low back pain is another very common cause of chronic pain. Neuro-pathic pain is also frequent in older adults and is the result of injury to nerves (diabetic neuropathy, post-herpetic neuralgia, trigeminal neuralgia, and phantom limb pain) or the brain (post-stroke pain syndrome or chronic pain associated with Parkinson’s disease). Other chronic pain syndromes include chronic recurrent headaches (migraine headache and tension headache), claudication due to peripheral vascular disease, chronic pelvic pain, and fibromyalgia. Sometimes, unremitting pain is the result of cancer or other life-threatening illness and pain that does not go away or respond to the usual treatments can be the first symptom of these illnesses.

Chronic complaints of physical pain may also be psychiatric in nature. The stigma associated with mental illness may make symptoms of depression or anxiety consciously or unconsciously unacceptable, especially among the elderly who often view psychiatric symptoms as signs of weakness or character flaws. The expression of physical pain may help a person get love, sympathy, and care without injury to self-esteem. There are other important relationships between the mind and the body when it comes to pain. Both depression and anxiety can make existing pain worse. Pain can also lead to depression, anxiety, and even suicide.

Consequences

For the individual, chronic pain causes immense suffering, loss of function, and decreased quality of life. In

one study, people 65 years or older were three times more likely to report difficulties performing day to day activities such as housework, standing up from a chair, and dressing independently if they had musculoskeletal pain. Chronic pain often leads to financial strains from health-care costs and lost income. Decreased socialization, sleep disturbance, and impaired ambulation are also common. The stigma associated with chronic pain contributes to poor self-esteem, shame, and reluctance to discuss the problem with others. People suffering from chronic pain are up to ten times more likely to be depressed than the general population and two to three times more likely to attempt suicide.

Pain costs an estimated \$100 billion per year in worker's compensation, health-care costs, and lost productivity. Lower back pain alone is the single most expensive medical condition when these factors are considered together. During a 2-week period, 13% of the US workforce experienced a loss in productivity due to a common pain.

Treatment

Despite the devastating effects of chronic pain, it often goes undiagnosed and untreated. It is critical for patients to realize that above all, pain is a medical symptom that their doctors need to know about in order to properly diagnose and treat them. Nevertheless, older patients often do not report pain symptoms. This may be due to stoicism, the belief that pain may represent atonement for past transgressions, or fear of approaching death. Patients with chronic pain are stigmatized as psychiatrically unstable, drug-addicted, and even psychopathic. Fear of this stigma may also silence patients with persistent pain. Patients may also fear that treatment will be dangerous, addictive, or unhelpful. Cognitive impairment, aphasia, and multiple medical problems may make it difficult for patients to report pain to their clinicians. Most of these barriers can be overcome. While chronic pain can be an indicator of impending death or life-threatening illness, most often it is not. While there is a psychological component to chronic pain, most patients are not psychopathic or addicted to their pain medications or other drugs. Chronic pain and the disability associated with it often respond quite well to treatment. Pain has been called "the fifth vital sign" and inquiry about pain should be a part of every medical encounter. Clinicians should educate patients about pain and debunk the

myths that prevent patients from talking about it. In patients with cognitive impairment, simple direct yes/no questions about pain symptoms are often effective. Visual pain scales can aid assessment in patients with aphasia. Clinicians should also be sensitive to other symptoms such as altered mental status, functional decline, or depression. Sometimes these are the only indicators of an underlying painful condition.

Treatment of chronic pain begins with a thorough evaluation to determine the underlying cause. Clinicians must learn the history of the painful symptoms and perform a thorough physical examination concentrating on the musculoskeletal and nervous systems. Evaluation of functional status and psychosocial impairments is important as well. The goal of treatment is to improve function and quality of life. It is important for patients and clinicians to understand that complete remission of all symptoms is often not possible, but that significant improvements can be made. Treatments for chronic pain may include medications, nerve-blocking injections, surgery, and nerve stimulators. Noninvasive techniques such as cognitive behavioral therapy, relaxation, biofeedback, hypnosis, massage, and physical therapy are useful as well. While a complete discussion of treatments for chronic pain is beyond the scope of this article, a few important points follow.

Treatment of pain should be targeted to the specific diagnosis. For example, musculoskeletal and other nociceptive pain responds well to opiate and nonopiate analgesic medications. Anticonvulsants and antidepressants are useful in the treatment of neuropathic pain. Psychological pain syndromes are best treated with specific psychological interventions. The use of opiates is well accepted for treatment of chronic pain from cancer or at the end of life. Opiates are much more controversial for the treatment of nonmalignant chronic pain, mostly due to fears of drug addiction. Nevertheless opiates may be invaluable when more conservative treatments have failed, the cause of the pain is known, and measures are taken to prevent improper use of the drugs.

As people grow older they become more sensitive to the effects of most medications. It is important to "start low and go slow" when using medications to treat pain in older adults. Following this principle, most medications for pain can be used safely and effectively in elderly people. It is also important for clinicians to be aware that many older adults take multiple medications and that there are significant risks of drug-drug interactions as new medications are added.

For complicated chronic pain syndromes, multidisciplinary pain clinics are probably the most effective treatment settings. In these clinics a team of health professionals including a physician specializing in pain medicine, a psychologist, and physical and occupational therapists work together to evaluate and treat the patient. Emphasis is on recovery of function and improved quality of life. Access to these centers is limited due to the small number of clinics and the fact that insurance companies often do not cover the costs.

Older adults with pain should tell their primary care doctor about it right away. Anyone working with older adults should inquire about their pain and offer referral to a physician. Pain may be a symptom of a serious but often treatable condition. More often it is not. Nevertheless the pain itself can and should be treated in order to improve quality of life and reduce suffering among older adults.

Related Topics

[Arthritis](#), [Cancer](#), [Depression](#), [Neuropathy](#),
[Pain](#), [Pain management](#), [Psychosomatic disorder](#), [Stigma](#)

Suggested Readings

- Clark MR, Chodynicky MP (2005) Pain. In: Levinson JL (ed) *The American psychiatric publishing textbook of psychosomatic medicine*. American Psychiatric Publishing, Washington, DC, pp 827–867
- Ferrell BA, Chodosh J (2003) Pain management. In: Hazzard WR, Blass JP, Halter JB, Ouslander JG, Tinetti ME (eds) *Principles of geriatric medicine and gerontology*, 5th ed. McGraw-Hill, New York, pp 303–321
- Won A (2004) Pain in the elderly. In: Warfield CA, Bajwa ZH (eds) *Principles and practice of pain medicine*, 2nd ed. McGraw-Hill, New York, pp 571–580

Clinical Trials

Donna T. Chen

A clinical trial is a type of medical research often used to determine whether a promising new strategy for treatment or prevention of illness is safe and efficacious in humans. Sometimes clinical trials also assess

whether and how other factors—like illness subtype, co-occurring illnesses, or different metabolic rates in different individuals—affect various treatments and prevention strategies.

Although older adults are large consumers of medications and other health-care services, historically they have been excluded from many clinical trials. Thus, little directly relevant data are available regarding safety and effectiveness of treatment and prevention strategies for older adults. This is changing as more clinical trials seek to include older adults.

Structure and Purpose

A clinical trial might test an experimental drug or medical device that looks promising in laboratory and animal studies, but has not yet been studied in humans. It might test a new delivery system (i.e., nasal preparation, extended action pill, or injectable form) for a medication already shown to be safe and efficacious for humans. Some clinical trials compare different treatment and prevention strategies to provide information about which is the better one. For example, a clinical trial may test how combining medication and psychotherapy compares with medication alone and/or psychotherapy alone to guide treatment decisions for clinical depression. A clinical trial might also study genetic predisposition for adult onset diabetes or various cancers in order to lay the groundwork for discovering new, more targeted, treatment and preventive strategies.

Clinical trials that test new treatment and/or prevention strategies are generally divided into four phases or steps on the path toward determining safety and efficacy (see [Table 1](#)). These four phases are defined for medication trials. However, research design is so complex that many trials do not fit nicely into one of these four phases. Nevertheless, these phases illustrate the basic stages involved in establishing new treatment and prevention strategies.

While there are many different types of clinical trials, they have a common objective: to advance the scientific knowledge base for treatment and prevention strategies. Sometimes, “new” and “promising” experimental treatments or prevention strategies are thought to be better, just because they are new. However, until well-designed and well-conducted clinical trials are completed, we do not know if a promising experimental treatment or prevention approach will be safe and efficacious.

■ Table 1

Four phases of medication clinical trials^a

Phase I	Phase I trials assess <i>safety</i> and <i>toxicity</i> of experimental agents in healthy volunteers or, sometimes, in individuals with the medical condition of interest. Phase I trials are conducted if data from laboratory and animal studies are adequate to justify testing the experimental agent in humans. These studies generally enroll a small number of participants, each for a relatively short period of time (weeks to months).
Phase II	Phase II trials further assess for safety and start to look for efficacious doses and other preliminary evidence of efficacy. These studies generally enroll 50 to several hundred individuals, each for a relatively short period of time. However, overall phase II studies may take up to a couple of years to enroll enough research participants.
Phase III	Phase III trials are designed to <i>test for efficacy</i> and also to gather further data on frequency and severity of side effects. Phase III trials are comparison trials—they compare results from a group of participants receiving the experimental agent with a group receiving a “control” agent, either a standard available treatment or a placebo (a sugar pill). They usually involve random assignment to these different groups; thus, research participants do not get to choose which group they will be in nor do their research physicians. In addition, neither the research participant nor the researchers themselves are allowed to know in which group a participant is until the trial is completed—a research design aspect known as “blinding” or “masking.” “Randomized, controlled, double-blind” clinical trials are the gold standard for minimizing bias and providing evidence for efficacy. Phase III trials may enroll thousands of individuals and take several years to complete.
Phase IV	Phase IV trials are conducted to answer questions about <i>longer-term effectiveness</i> (for example, how well medications perform in regular clinical settings for longer periods as opposed to the more controlled environment of a phase III clinical trial) and to gather information about <i>longer-term and rare side effects</i> . These studies are much less standardized in design and depend on the questions being asked.

^a Experimental agents must pass through each stage to get to the next one. FDA approval requires phases I–III but not phase IV. Phase IV trials are conducted after FDA approval to answer important remaining questions.

In the United States, companies seeking to market medications or medical devices must get approval from the Food and Drug Administration (FDA). In order to get FDA approval, these companies must provide data from clinical trials showing that the investigational drug is safe and efficacious and/or the medical device is safe. However, just because a medication or medical device is approved for marketing, it does not mean that it is necessarily safer or more effective than other available options. For example, in many medication trials for agents seeking FDA approval, the experimental agent is compared with placebo (a sugar pill used to decrease bias in the clinical trial); the intent is to show that the experimental agent is safer and more efficacious than no active treatment. Other trials that directly compare different treatments may be needed to help determine if one is safer or more effective than another and/or if different treatments work better for different groups of individuals.

Considerations for Participants

Although the main purpose of a clinical trial is to generate new knowledge, individuals sometimes view

participation in clinical trials as an important option for accessing promising, albeit unproven and uncertain, alternatives to available treatment or prevention strategies. This is especially true for some illnesses for which no good treatments are available. For individuals seeking to participate in a clinical trial for personal benefit, and for their loved ones and their health care providers helping them decide whether to participate, it is essential to understand that participation in the trial may not provide the desired medical benefits. It is also important to remember that even though there is a chance of receiving direct medical benefit from being in a clinical trial, receiving care in a clinical trial is different from receiving treatment outside a trial.

Regular medical care is intended to provide individualized help to those seeking treatment; clinical trials are designed to answer scientific questions. Experimental “treatments” tested in clinical trials benefit future patients and society as a whole by advancing medical knowledge. Individual research participants may or may not receive medical benefit from the experimental interventions and “treatments” administered in a clinical trial.

Informed Consent

Some individuals enroll in a clinical trial because they hope for medical benefit, even with the uncertainty involved. Some participate because they feel a sense of support and camaraderie from being with other individuals with the same medical condition who are all being closely monitored and cared for by a team of research physicians and nurses. Others take part because they wish to contribute to medical science and help future patients. Most individuals have multiple motivations for enrolling in research; some might hope for personal benefit, but also understand that their participation contributes to advancing science and may help future patients even though they themselves might not directly benefit.

While it is natural for individuals to have many different motivations for considering clinical trial participation, it is critical that they have enough information and time to make an informed decision about whether or not to enroll. Although research undergoes scientific and ethical review, determining that a clinical trial is appropriate to conduct does not mean that it will be appropriate for every individual.

Individuals thinking about enrolling in a clinical trial are encouraged to learn about clinical research more generally and the specific trial they are considering. This process of gathering information and making decisions is called the “informed consent process.”

During the informed consent process, individuals should read carefully the consent form and any other information available about the trial. Individuals should discuss the trial with the research team. They should feel comfortable with answers given to all questions about the study, including who is funding it and whether the researchers have a financial stake in the outcome of the study. Individuals should also feel free to confer with family and friends and their own personal health care providers about this decision.

Clinical Equipoise

It is widely held that in order to be ethical, clinical trials must satisfy a condition known as “clinical equipoise”—that is, a genuine uncertainty and lack of consensus exists within the medical community about whether the experimental treatment is as good

as or better than standard treatment or placebo, when no efficacious treatment is available. However, many trials do not fit this description and are still considered to address important research questions and to be ethical. Independent scientific and research ethics committees frequently evaluate research studies to assess whether they should be conducted. Potential participants may wish to ask whether the study they are considering has undergone independent scientific and ethical review.

Even when clinical trials meet the condition of “clinical equipoise,” they still have features that depart in important ways from standard medical practice. For example, to increase scientific rigor, treatment alternatives (or placebo) are frequently assigned randomly to participants. Neither the participants nor the research team know which alternative is received (referred to as “blinding” or “masking”), and protocol-driven limitations are placed on the types and doses of interventions. The flexibility for individualized clinical decision-making that patients might experience with their personal physicians is generally not possible in clinical trials.

Potential Risks

Clinical trials may include research procedures that impose discomfort or risk of harm to participants that are not compensated by personal diagnostic or therapeutic benefits; instead, they are justified by the importance of the knowledge to be gained from the study. For example, some trials may include overnight hospital stays, imaging studies with radiation exposure, medication washout periods, biopsies, blood draws, and questionnaires—not because something learned will benefit the participant, but because the data are needed to test hypotheses.

Individuals participating in clinical trials are closely monitored by the research team for adverse events that are potentially linked to their participation; it is expected that the research team will not keep people in a trial if it looks like they are experiencing significant adverse events as a result of participation. However, despite efforts to minimize discomfort and potential for harm, some individuals have been harmed by their participation in a clinical trial—either by a research procedure or by the experimental intervention itself. These types of

risks exist in addition to the risk of not receiving medical benefit from participation. After all, clinical trials are conducted to see how well experimental interventions work and whether they are safe for humans.

Medicare Coverage

Some people with Medicare coverage worry that they might lose their coverage if they participate in a clinical trial. This is not true. In fact, Medicare pays for routine costs associated with some clinical trials, even though it does not cover costs of experimental interventions or costs associated with gathering research data (these are generally paid for by the research sponsor). However, this differs with trial; questions about coverage are best answered by the research team and each individual's Medicare health plan provider.

Deciding to Participate

The decision to participate in a clinical trial should be voluntary, and deciding against participation should not affect an individual's ability to get the medical care that is otherwise available. Moreover, after enrolling in a clinical trial, individuals are free to decide at any time that they wish to leave the study for any reason. It is important to remember that individuals who volunteer for clinical trials lay the groundwork for the evidence that many of us rely on to assess the safety and effectiveness of various treatment and prevention strategies that we and our loved ones are considering.

Related Topics

➤ [Education](#), ➤ [Informed consent](#), ➤ [Medicare](#), ➤ [Patient-provider communication](#), ➤ [Patients' rights](#)

Suggested Readings

Chen DT, Miller FG, Rosenstein DL (2003) Clinical research and the physician-patient relationship. *Ann Intern Med* 138(8): 669-672

Getz K, Borfittz D (2002) Informed consent: the consumer's guide to the risks and benefits of volunteering for clinical trials. Center-Watch, Boston, MA

Suggested Resources

Centers for Medicare and Medicaid Services, 2005, Medicare and Clinical Trials Pamphlet <http://www.medicare.gov/Publications> (access verified December 14, 2005). or call 1-800-MEDICARE (1-800-633-4227)

ECRI, 2002, Should I Enter a Clinical Trial? A Patient Reference Guide for Adults with a Serious or Life-Threatening Illness http://www.ecri.org/Patient_Information/Patient_Reference_Guide/Patient_Reference_Guide_Detail.aspx?File=Clinical%20Trial.htm (access verified December 14, 2005)

Cognitive Behavioral Therapy

Melisa Moore

Cognitive behavioral therapy (CBT) is a type of psychotherapy that integrates behavioral and cognitive therapy techniques. CBT is based on the theoretical foundations of learning theory and cognitive science. While there are different approaches and techniques within CBT, all are based on the assumption that cognitions can impact behavior change and vice versa. CBT has garnered empirical support for a variety of psychological disorders including depression, obsessive compulsive disorder, panic disorder, and posttraumatic stress disorder.

Foundations for CBT were laid in the 1950s and 1960s when psychologists like Joseph Wolpe and Arnold Lazarus began to study behavioral interventions (or behavior therapy) rooted in learning theory. Behavior therapy includes techniques such as behavior modification, token economy, and exposure, which are based on principles of classical and operant conditioning. Unlike earlier forms of psychotherapy, behavior therapy focuses more on directly changing maladaptive behavior, rather than gaining insight into early relationships and events. In the 1970s, behavioral interventions began to incorporate ideas from cognitive science. Psychologists like Albert Ellis and Aaron T. Beck developed interventions that focused on client's interpretations (i.e., cognitions) of events in hopes that behavior and emotion change would result. Cognitive therapy is designed to help clients identify and change maladaptive, negative thoughts, beliefs, and assumptions to be more positive



and realistic. In the 1970s and 1980s, interventions began to include both cognitive and behavioral components. At present, there are cognitive behavioral interventions that address most psychological problems.

CBT is short term, from a few sessions to several months. Sessions are usually weekly and often last for 60 minutes, though sessions can be longer or more frequent if the problem is complex, or a technique such as in-session exposure is used. Unlike insight-oriented therapies, CBT is problem or goal oriented and grounded in the present. Treatment typically focuses on current problems and contributing factors. The therapist assesses the cause of the disorder or maladaptive behavior, including reinforcement from the environment, maladaptive thoughts and beliefs, repetitive unhelpful behaviors, skill deficits, and behavioral avoidance. Homework is an important component of CBT, and clients are often asked to complete tasks at home or in related environments outside the therapy session. Homework includes practicing relaxed breathing each day, monitoring specific behaviors, and keeping thought records. Although the format and techniques used in CBT vary, a typical session might begin with the client and therapist setting an agenda for the hour. A review of the week's events, client's current functioning, and progress with homework would follow. A skill discussed in a previous session would be reviewed or a new skill or strategy would be introduced, and then the client and therapist would collaboratively decide on homework for the week.

Specific techniques used in CBT include relaxation, psychoeducation, hypothesis testing (behavioral experiments), exposure, problem solving, social skills training, self-control/self-management training, cognitive restructuring, and stress inoculation.

Related Topics

• Behavioral modification, • Psychotherapy

Suggested Readings

- Beck JS (1995) *Cognitive therapy: basics and beyond*. Guilford Press, New York
- Clark DM, Fairburn CG (eds) (1997) *Science and practice of cognitive behaviour therapy*. Oxford University Press, New York
- Dobson KS (ed) (2001) *Handbook of cognitive-behavioral therapies*. Guilford Press, New York
- Hersen M, Rosqvist J (eds) (2005) *Encyclopedia of behavior modification and cognitive behavior therapy*. Sage Publications, Thousand Oaks, CA

The Cognitive Theory of Aging

Jessica Diggs

Cognitive theories of aging seek to explain differences in measured cognitive ability between younger and older people. These differences may be due to a myriad of factors that include: real physical and sensory age-related changes, cohort effects, characteristics of cognitive tests, or differences in the mechanisms by which older and younger people process information. According to the American Heritage and *Stedman's Medical Dictionary*, cognition is defined as "the mental faculty of knowing, which includes perceiving, recognizing, conceiving, judging, reasoning, and imagining." Cognition is often divided into smaller components that include intellectual ability, learning, and memory. Intelligence, defined as "the capacity to acquire and apply knowledge, especially toward a purposeful goal" can also be subdivided into "fluid" and "crystallized" intelligence. Fluid intelligence refers to knowledge and skills that are determined biologically, independent of experience or learning and may include abstract reasoning, spatial orientation, and perceptual speed. Crystallized intelligence is acquired through experience and education and includes tasks like verbal comprehension, word association, and social judgment.

Studies of Cognition in Aging Individuals

Research based on studies of aging adults using the Wechsler Adult Intelligence Scale found that, on an average, adults above 65 scored lower on scales measuring fluid intelligence, while measures of crystallized intelligence did not show differences with age. Generally, the performance scales used to measure fluid intelligence are timed tests; therefore, the differences between older and younger adults may be an indicative of a differential effect of time pressure on the older person. Timed tests may be associated with increased anxiety or an exaggeration of differences due to deficiencies in sensory abilities, perceptual skills, and psychomotor skills, which have been shown to decrease with aging. However, some age-related differences remain when these tests are not timed.

Theories of Cognitive Aging

Many theories to explain cognitive aging have been proposed, some of which are reviewed by Kevin Eva in the manuscript, “Stemming the Tide: Cognitive aging theories and their implications for continuing education in health professions,” including explanations based on decreased working memory, difficulty in inhibiting irrelevant information, declines in neurobiological processes, and processing speed. Other explanations of cognition in aging have also been proposed, and are reviewed in the *Handbook of the Theories of Aging*. Some theorists believe that the process of changing cognition with age is related to a cohort effect that allows successive generations to perform better on cognitive testing, simply based on environmental differences without any real difference in cognition between the groups. For example, a person born in the 1940s was not exposed to computerized testing systems and the Internet during youth, while a person of the younger generation has been exposed to this type of technology and may, therefore, have an unfair advantage on cognitive testing due to the amount of information available to them and the types of skills they have obtained by living in a time where this technology was commonplace. Longitudinal studies have in part discounted this theory by showing individual cognitive declines over time.

Another theory involves the use/disuse perspective to explain differences between younger and older persons in cognitive test performance, whereby the older individual does not have recent experience with the tasks to be performed. A third class of theories suggests that there are differences in (1) the methods employed by younger and older people to solve problems, which would lead to differences that result because older people tend to use a less efficient strategy or (2) differences in information processing, either for certain processing steps that will effect performance on specific types of tasks only, or for more basic processing steps that will effect a wide variety of tasks.

One of the most influential researchers in this field of cognitive aging theory is Timothy Salthouse, who proposed the processing rate theory of cognitive aging, which specifically explains the process by which the decline in fluid cognition occurs. Salthouse defines fluid cognition as cognition that “refers to the efficiency or effectiveness of processing at the time of assessment and is typically evaluated with task of learning memory, reasoning, and spatial abilities.” According to this theory, as a person ages, the speed of mental processing

decreases; this affects both the quantity and quality of cognitive performance.

Factors Affecting Cognitive Performance

Factors that can adversely affect cognition include poor health status, poor nutritional status, anxiety, depression, and several sociocultural factors. The effect of real or perceived deficiencies in cognition can lead to personal frustration due to the inefficiencies or to anxiety related to decreased performance. Some of this anxiety might be fueled by fears of dementia, or by the way aging individuals are portrayed in the media or viewed by the society. Changes in cognition can have detrimental effects on the aging person’s self-esteem and can lead to depression or decreased quality of life.

Responding to Cognitive Decline

There are methods for responding to cognitive decline in a way that is positive, empowering, and beneficial for the older adult. Some forms of cognitive decline can be delayed or prevented by focusing on improving health through early detection and treatment of disease and through prevention of chronic conditions such as heart disease. Studies have also shown that those taking dietary supplements to improve nutrition performed better on cognitive tests. Experience and practice has also been shown to help aging individuals maintain their cognitive skills. Older people who continue to use cognitive skills in daily life through work or activities had higher cognitive test performance as well. For those older people who are faced with difficulties in other components of cognition, such as memory or learning, which have also been shown to decline with age, the use of memory aids like mnemonics or visual association techniques can help to increase retention and recall. Interventions to reduce the effects of sensory deficits on cognition can also be employed, for example, large print on prescription medications and patient instructions, choosing environments with minimal background noise, and the use of external memory tools like timers and pill organizers.

Public Health Perspective

Public health professionals must be sensitive to the personal meaning of cognition and memory to the aging individual and be cognizant of the anxieties that might

be associated with real or perceived loss of certain capabilities. Health professionals must also acknowledge and understand that there are differences in the way younger and older people communicate and integrate information as well as potential differences in sensory capabilities such as vision or hearing. Knowledge of these potential differences is essential to ensure that information is communicated in the most beneficial, appropriate, understandable, and patient-specific form.

Related Topics

[▶ Abstract thinking](#),
 [▶ Dementia](#),
 [▶ Alzheimer's disease](#),
 [▶ Adult education](#),
 [▶ Vision](#)

Suggested Readings

- The American Heritage® Stedman's Medical Dictionary (2002) Houghton Mifflin, Boston, MA
- Eva KW (2003) Stemming the tide: cognitive aging theories and their implications for continuing education in the health professions. *J Contin Educ Health Prof* 23(3):133–140
- Hooyman NR, Kiyak HA (1999) *Social gerontology: a multidisciplinary perspective*, 5th ed. Allyn & Bacon, Boston, MA
- Salthouse TA (1985) *A theory of cognitive aging*, 28th ed. North-Holland, Amsterdam, The Netherlands
- Salthouse TA (1999) Theories of cognition. In: Bengtson VL, Schaie KW (eds) *Handbook of theories of aging*. Springer, New York, pp 196–208

Cohousing

Sheila Simon · Jay Curtis

Cohousing is an innovative, collaborative housing concept that attempts to change the culture of community by offering an environment of close-knit, shared neighborhood living. The concept was born in Denmark in the early 1970s in order to provide dual income professionals, better day care, and safer neighborhoods. The first cohousing project in the United States was completed in Davis, California in 1991. Now, more than 80 sites in 35 states provide living for more than 5,000 Americans.

Movement Toward Elder Cohousing

Originally, cohousing was a multigenerational concept, but in recent years age-targeted cohousing models,

commonly known as elder cohousing, are developing. At present there are five elder cohousing models either in operation or in the later stages of development in the United States. These models are designed to be a part of either traditional cohousing villages or as a separate undertaking altogether. Elder cohousing is presented as an option that offers adults aged 55 and above with the opportunity to live and age interdependence in a cohesive community neighborhood. The goal is to provide elder living that is different from the norms that surround aging in today's culture. Developers and future residents seek to provide opportunities for independence, community, and active contribution in the later stages of life by incorporating more aspects of social activism, community service, and mutual assistance in a supportive peer-oriented environment. Many believe that this type of living allows for a more healthy aging process and provides greater support during poor health.

Common Characteristics of Cohousing

Most cohousing communities have chosen the condominium legal ownership structure, or limited equity cooperatives, as a matter of legal and financial convenience. This means that members jointly own common property, but are sole owners of the lot on which they build their private dwellings. This type of ownership goes against the ideal of the collective community and many prefer to be organized as cooperative housing associations that are more consistent with the goals of shared resources and the mutual community experience.

Cohousing developments vary in size, design, and ownership, but do share common defining characteristics. First, the “participatory process” allows future residents, with the aid of developers, to design the community to meet their needs. The developments have an “intentional neighborhood design” that encourages a sense of community through clustered private dwellings, shared open spaces, and pedestrian streets with cars on the periphery. Another integral part of the community is extensive “common facilities and amenities,” including dining, laundry, recreation, and libraries, to supplement private living areas. The residents of these villages also “manage” the property through maintenance, policy development, and community meetings. There is no “hierarchical structure or

decision-making” as decisions are made without defined leadership roles based on community consensus. Finally, there is “no shared income or common ideology” necessary for residency in the community.

In contrast to traditional continuing care retirement communities and other preplanned elder communities, residents have the opportunity to develop, design, construct, and maintain the community. The community provides a more intimate setting for living size between 12 and 40 residential units as compared with larger retirement homes that reach into thousands.

Challenges Related to Cohousing

The elder cohousing movement is in its early stages and the ability to care for many frail elders at once without a supporting health care staff presents concerns about the concept of long-term aging “in place.” It has been suggested that developments integrate some of the support systems found in traditional elder housing and home health care services in order to have a more efficient and comprehensive provision of care. There is a need to balance the presence of care services with the freedoms and autonomy that are essential elements of such communities.

This new community development movement presents other problems as well. The cohousing process is a group process that can be difficult, involve much risk, and include a wide array of elements. These elements require some expertise and include finance and budgeting, land acquisition, permits and approval, design and construction considerations, marketing, and membership recruitment. There are, however, cohousing developers and consultants available to assist in these projects. Although difficulties can arise, they are offset by the opportunity for choice and freedom in the quality of life and aging for residents.

The most glaring problem that exists is the cost associated with becoming a member of a cohousing community. Due to the fact that these communities are new, customized constructions offering extensive common facilities, they are usually expensive. Also, due to limited government support for these projects, they have been offered at market rate rather than at low income levels. There are possibilities for those who believe they cannot afford this living option. Some state and local governments require by law that multi-family housing developments have a certain percentage

of the units that meet affordability standards. Also, a few communities offer shared households and renting options contingent upon agreement to fully participate in the community.

Despite a few challenges, the industry of elder cohousing is gaining in popularity and providing those above 55 with an option to age gracefully and independently. All the while, individuals, friends, and families are able to avoid traditional institutionalized aging methods by providing the elderly persons the opportunity to lead dignified, active, and comfortable lives.

Related Topics

▶ Assisted living, ▶ Elder hostel, ▶ Housing, ▶ Retirement, ▶ Social support

Suggested Readings

Durrett C, McCamant K (1994) *Cohousing: a contemporary approach to housing ourselves*, 2nd ed. Ten Speed Press, Berkeley, CA
 Durrett C (2005) *Senior cohousing: a community approach to independent living*. Ten Speed Press, Berkeley, CA

Suggested Resources

The Cohousing Association of the United States. <http://www.cohousing.org>
 The Elder Cohousing Network. <http://www.elderhousing.org>

Coitus and Vaginal Dryness

James Carter

It is well known to our patients that vaginal dryness has caused considerable discomfort. There can be dryness associated with fear of pain and while certainly that is not insignificant, it is not the subject of this discussion. With the publication of the *Women's Health Initiative* in July 2002, a large majority of postmenopausal women stopped taking their hormone replacement. Within weeks and certainly months, many of these women were back in our offices with multiple complaints including vaginal dryness during coitus. This

was a very significant problem that seemed to fly under the medical radar, since it was not life-threatening and it was only addressed by the gynecologic community and just a small subset of those practitioners willing to take the “risk” of explaining and treating this problem. Yet, it is a very significant quality of life issue.

There are relatively few serious reviews regarding vaginal dryness, but there have been a number of them recently that have not been afraid to discuss the issue in spite of the *Women’s Health Initiative*. One of the best discussions has been made by Murray Freedman. He has recently shown that embryologically the highest estrogen receptors are at the distal one-third of the vagina. This clearly accounts for the dryness when estrogen is naturally removed at the menopause or surgically removed by ovarian excision. Worrying about osteoporosis (which is by no means insignificant) about 50% of postmenopausal women will develop osteoporosis, while as many as 97% of women will develop significant signs of genital atrophy in less than 12 months of the onset of estrogen deficiency. This is an alarming statistic and clearly one that the majority of physicians does not have to or do not want to address this problem.

In women experiencing vaginal dryness during coitus, a number of studies have shown that the estrogen level above 50 pg/mL seems to solve a number of issues. First, the vaginal dryness is reduced or eliminated as the estrogen level allows for the pH of the vagina to return to the normal acidic range, allowing for the healthy ecosystem of the vagina to return. This level of estrogen thickens the basal layer of the vaginal epithelium and generally in a few months (often weeks) the vaginal moisture is returned and the symptoms of vaginal dryness that leads to dyspareunia with all of its varieties of intensity and on penetration along with at times significant burning sensation is resolved.

There are local estrogen preparations like vaginal tablets, vaginal estrogen ring, estrogen creams, and oral and transdermal routes. All of these preparations can be effective for the individual who is experiencing this embarrassing and frustrating problem. There are other nonhormonal preparations that are frequently espoused in treating this symptom from soy to the cohashes, and various gels. These preparations are certainly not harmful and may alleviate the less intense forms of the dryness. When compared with placebo none of them can return the vagina to the low, healthy

pH and ecosystem that subsequently supports the thicker and healthier basal layer of the vagina.

It is perfectly fine to attempt to use any preparations that can help the patient’s symptoms of coitus and vaginal dryness; however, in studying these symptoms for more than 25 years, it has been repeatedly observed that there is a subset of women who will not be significantly affected by vasomotor symptoms, but 99% will experience vaginal dryness. In surveys of sexuality after the menopause, 50% of the women list sexual dysfunction as one of these top three complaints. (The most common reason for not being sexually active is lack of available partner.) With respect to the quality of life issues of pain, social function, physical function, perception of well-being and sexuality, all may respond to estrogen replacement; some may need testosterone, but that is not going to affect the vaginal dryness. The vaginal dryness will cause painful coitus, decreased perception of well-being and clearly a decreased desire for sexual function. It should be a very important educational and medical goal to help alleviate a symptom that occurs in 99% of postmenopausal women. Estrogen treatment can alleviate this problem and educate our patients not to be afraid of the hormone that they have had all of their lives should be a driving force to extend our patient’s quality of life in all phases. Our patients deserve no less.

Related Topics

[Dyspareunia](#), [Hormones](#), [Menopausal health](#),
[Sexual dysfunction](#), [Sexuality](#)

Suggested Readings

- Freedman M (2002) Quality of life and menopause: the role of estrogens. *J Women’s Health (Larchmt)* 11(8):703–718
- Leiblum SR et al (1983) Vaginal atrophy in the postmenopausal woman: the importance of sexual activity and hormones. *JAMA* 249:2195–2198
- Molander U et al (1993) Effect of oral oestradiol on vaginal flora and cytology and urogenital symptoms in elderly women. *Acta Obstet Gynecol Scand* 72 Suppl 158:3–17
- Nactigall LE (1994) Comparative study: replens versus local estrogen in menopausal women. *Fertil Steril* 61:178–180
- Palacios S (2005) Low dose vaginal administered estrogen may enhance local benefits of systemic therapy and treatment of urogenital atrophy. *Maturitas* 50(2):98–104

Colonoscopy

Jennifer Kimble · Gregory Cooper

A colonoscopy is a noninvasive means of directly examining the lining of the entire colon and lower portion of the small bowel known as the ileum. It may be ordered for colorectal cancer screening or to investigate the cause of a patient's bright red blood or black tarry stools, unintentional weight loss, abdominal pain, unexplained diarrhea or constipation, or fatigue due to anemia.

The quality of the information gained from a colonoscopy is directly related to a patient's preparation prior to arriving the day of the procedure. The preparation begins 1 week prior to the procedure. If the patient is taking medications such as aspirin, ibuprofen, naprosyn, clopidogrel (Plavix), or warfarin (Coumadin), they should call their primary care physician, at least 1 week prior to the procedure date, to see if it is safe to stop these medications to avoid potential bleeding complications. Iron supplements must be stopped 5 days prior to the procedure. If the patient is diabetic, the patient should contact their primary care provider for instructions on how to take their oral medications and insulin during the day prior to the procedure as well as during the day of the procedure. Because sedation is given, the patient should also arrange for a driver to transport them to and from the procedure.

In order to visualize the lining of the colon, it is important to clear the colon of stool. This is done by the patient altering their diet and by taking a strong laxative. The day prior to the procedure, the patient should not eat any solid food. Liquids are allowed, but are limited to clear liquids without red coloring, including ginger ale, plain coffee (without cream or milk), fat-free bouillon or broth, popsicles, or Jell-O.

There are a few alternatives for a laxative purge. The most common is an oral laxative that is electrolyte balanced with polyethylene glycol to avoid interfering with electrolyte concentrations in the blood. The standard medications of this type are Golytely, Nulytely, and Colyte. Four liters of solution should be consumed in 4–6 hours. In general, this solution is not pleasant tasting and flavors have been added to mask the taste. Although this type of preparation has a larger volume, it does have added benefits in not causing preparation-related ulcerations in the colon or electrolyte imbalances in the blood.

A second commonly used preparation is oral sodium phosphate (Fleet phospho-soda). This preparation is

also not pleasant tasting, but is consumed in smaller quantity. In general, the night before the procedure the patient mixes 1½ oz of solution in a 4 oz. glass of water and drinks it. It is followed by four 8 oz glasses of clear liquids. The morning of the procedure the patient repeats a second dose of the medication followed by one 8 oz glass of liquid. The drawbacks of this preparation are the taste, the potential cause of medication-related colonic ulceration and the potential electrolyte abnormalities. Patients with a history of kidney disease, chronic liver disease, congestive heart failure, electrolyte abnormalities or suspected inflammatory bowel disease should not take this medication.

Patients who are used to taking many oral medications may prefer a sodium phosphate tablet preparation called Visicol. However, a total of 20 pills are taken the night prior to and repeated on the day of the procedure. The same complications and patient restrictions apply to using this preparation as the Fleet phospho-soda preparation.

Other combinations of laxatives and dietary restriction may need to be considered if the patient cannot tolerate the above preparations.

The day of the procedure, the patient will arrive at the endoscopy suite. An IV will be placed for medication administration. The gastroenterologist (endoscopist) will speak to the patient. The patient should notify their medical history to the endoscopist, especially if they receive antibiotics prior to a dental procedure or if they have a pacemaker or defibrillator. The patient should also bring their medication list. After a short conversation, the patient will sign the consent form and the sedation medications will be given.

Once the patient is sedated, the endoscopist will perform a rectal exam and insert the colonoscope that is a long flexible tube approximately the diameter of an index finger with a camera lens and light. The colonoscope will be advanced to the farthest part of the colon and possibly into the small bowel. The physician can see the images on a television screen. Biopsies of the colonic tissue may be taken or polyps may be removed with cautery using a snare loop to lasso the polyp. During the procedure the patient may feel abdominal pressure from air insufflation, which helps with visualization or brief periods of abdominal pain if there are sharp turns in the colon, but they will not feel the biopsy or polyp removal.

After the procedure, the patient may feel abdominal bloating but this will improve as the patient expels the remaining air that was insufflated during the procedure.



As with any procedure there are potential complications but these are very rare. They include bleeding, infection, adverse reaction to the sedation medications, a tear in the bowel wall (perforation) that could require surgery, cardiac or pulmonary complications, or death. However, these are very rare complications and the physician who referred the patient for the procedure believed that the risks were outweighed by the benefits of the information gained from the procedure.

After the procedure, the patient is monitored in the recovery area for 30 minutes to an hour and then be driven home by their driver. Prior to discharge the patient should have a discussion with the physician regarding the endoscopic findings. It may be helpful for the driver to be privy to this conversation since the patient may forget the conversation due to the sedation medications. During this time, if the patient stopped aspirin, Motrin, Plavix or Coumadin they should ask the physician when it is safe to restart these medications. Pathology results from biopsies or polyp removal should be available within 1 week.

If the patient has fever, a distended firm abdomen, severe abdominal pain (not gas cramps), bloody bowel movements greater than a half cup in volume, nausea or vomiting, they should call the endoscopist or the physician on call and may need to be evaluated.

Related Topics

[Endoscopy](#)

Suggested Resources

American Cancer Society. <http://www.cancer.org>

American Gastroenterological Association. <http://www.gastro.org>

Colorectal Cancer

Jennifer Kimble · Greg S. Cooper

According to the American Cancer Society, an estimated 145,290 new cases of colorectal cancer will be diagnosed and an estimated 54,290 people will die from it in 2005. Colorectal cancer is the third most commonly diagnosed cancer and the second most deadly cancer, when skin cancers are excluded. Because of increases in the use of colorectal cancer screening and improved treatment after cancer diagnosis, over

the past decade, there has been a trend toward fewer new cases and fewer deaths due to colorectal cancer.

Risk factors that increase a person's chances of getting colorectal cancer include above-50 years, sedentary lifestyle, obesity, smoking, heavy alcohol use, prior personal history of colorectal cancer, history of polyps (excluding non-precancerous polyps called hyperplastic polyps), history of inflammatory bowel disease (ulcerative colitis or Crohn's disease), a personal history of ovarian, endometrial, or breast cancer, a first-degree relative (parent, sibling, or child) who has had colorectal cancer, or a familial syndrome such as hereditary non-polyposis syndrome or familial adenomatous polyposis. There has been conflicting data regarding dietary factors that decrease the rate of colorectal cancer.

Symptoms of colorectal cancer are nonspecific and include bright red blood or black tarry stools, unintentional weight loss, abdominal pain, unexplained diarrhea or constipation, or fatigue due to anemia. If these symptoms occur a patient should consult their health-care provider. In asymptomatic individuals colorectal cancer screening should begin without increased risk factors (previously discussed) at the age of 50. In patients with a family history (first-degree relative) of colorectal cancer, screening should begin at the age of 40 or 10 years prior to the family member's diagnosis, whichever is earlier.

The goal of colorectal cancer screening is to remove precancerous polyps before they develop into cancer or to diagnose a cancer in its early stages when survival is greatest. Accepted screening modalities have recently emphasized colonoscopy that examines the whole colon to remove precancerous polyps (polypectomy). If there are no polyps or other risk factors, screening with repeat colonoscopy occurs every 10 years. If precancerous polyps are found, screening will be more frequent, typically every 3–5 years. Other recommended cancer screening strategies include yearly testing for blood in the stool with cards, flexible sigmoidoscopy (which only examines the rectum and lower colon) every 3–5 years, yearly stool cards and sigmoidoscopy every 3–5 years or barium enema every 5 years. At this time, there are not enough data to recommend CT scanning or "virtual colonoscopy." Virtual colonoscopy requires the patient to take the same oral laxative as an endoscopic colonoscopy, the colon is insufflated with air through a tube in the rectum, and the patient has to undergo a CT scan. This procedure also does not allow for polyp removal and can miss smaller polyps detected by endoscopic colonoscopy.

Staging of colorectal cancer will help to determine the best treatment strategy, and to predict long-term survival rate. Staging consists of determining whether the tumor has metastasized to other organs or lymph nodes, and it has spread into the deeper layers of the bowel wall. Preoperative staging usually consists of an abdominal CT scan and possibly, a chest x-ray or chest CT scan. Before surgery, a blood sample may be sent to determine the level of a tumor marker known as carcinoembryonic antigen (CEA), which may be useful in monitoring recurrence. For colon cancer, surgical removal of the tumor is almost always performed through an abdominal incision, though recent data suggest that laparoscopic removal may have equivalent results. For an early stage cancer contained within a polyp, colonoscopy with polypectomy may be curative. For colon cancer removed by elective surgery, a colostomy is usually not necessary, but may be needed for emergency procedures due to bowel perforation. If the tumor has extended beyond the colon wall to one of the ovaries, both ovaries will be removed as both ovaries are at risk of metastasis.

Rectal cancer staging consists of a CT scan of the abdomen and pelvis, and an x-ray or CT scan of the chest because unlike colon cancer, rectal cancer has a different blood supply and can travel to the lungs, bypassing the liver. Regional lymph node and tumor wall depth can be assessed by magnetic resonance imaging (MRI) or endoscopic ultrasound that is similar to the colonoscopy, yet only requires an enema preparation and examines only the rectum using sonographic (sound) waves. Depending on how close the tumor is to the anus and how deep the tumor has spread, the surgeon may choose a transanal, abdominopertoneal or low anterior resection. Information on these procedures can be obtained from the web sites cited at the end of this chapter.

The stage of colorectal cancer is given a numerical value. The larger the number, the more advanced the cancer.

■ Approximate 5-year survival can be predicted by the following:

	Colon cancer (%) [*]	Rectal (%)
Stage 1: extension into colon wall (submucosa)	93	92
Stage 2: extension deeper into muscular layer	72–83	73
Stage 3: lymph node involvement	44–64	56
Stage 4: distant metastasis	8	8

Chemotherapy has proven beneficial in improving long-term survival of stage 3 and advanced stage-2 colon and rectal cancer. In addition, radiation therapy may be considered for stage 2 or 3 rectal cancer, but is generally not used for colon cancer. Chemotherapy for stage-4 disease will not be curative, but may reduce symptoms and/or prolong survival.

It is important to remember that colon cancer can recur, even at a different location in the colon. If the entire colon was not visualized by colonoscopy prior to surgery, a colonoscopy will need to be performed within 6 months after surgery. Assuming this does not reveal another cancer, or the first colonoscopy was complete, it is recommended that a patient have a colonoscopy 1–3 years after surgery to detect new polyps or tumors. CEA monitoring is also recommended in follow-up. In addition, office visits at least three times a year for the first 2 years are recommended because symptoms are often the first indicator of cancer recurrence.

The patient's first-degree family members (parents, brothers, sisters, and children) should be made aware of the patient's colorectal cancer diagnosis and they should tell their physician in order to ensure appropriate colorectal cancer screening in hopes of preventing colorectal cancer in that person. There are many excellent support groups and references that the patient's physician will be happy to share.

Related Topics

▶ [Cancer](#), ▶ [Cancer screening](#), ▶ [Chemotherapy](#)

Suggested Readings

- American Society of Gastroenterology (2005) ASGE Guideline: the role of endoscopy in the diagnosis, staging, and management of colorectal cancer. *Gastrointest Endosc* 61(1):1–7
- Gloeckler Ries LA, Reichman ME, Lewis DR, Hankey BF, Edwards BK (2003) Cancer survival and incidence from the surveillance epidemiology, and end results (SEER) program. *Oncologist* 8:541–552
- Jemal A, Murray T, Ward E, Samuels A, Tiwari R, Ghafoor A, Feuer E, Thun M (2005) Cancer statistics, 2005. *CA Cancer J Clin* 55:10–30
- O'Connell JB, Maggard MA, Ko CY (2004) Colon cancer survival rates with the new American Joint Committee on Cancer sixth edition staging. *J Natl Cancer Inst* 96:1420–1425
- Otchy D, Hyman NH, Simmang C et al (2004) Practice parameters for colon cancer. *Dis Colon Rectum* 47:1269–1284
- Otchy D, Hyman NH, Simmang C et al (2005) Practice parameters for the management of rectal cancer (revised). *Dis Colon Rectum* 48:411–423



Otchy D, Hyman NH, Simmang C et al (2004) Practice parameters for surveillance and follow-up of patients with colon and rectal cancer. *Dis Colon Rectum* 47:807–817

Suggested Resources

The American Cancer Society can address cancer related questions 24 hours a day at 1-800-ACS-2345

American Cancer Society. www.cancer.org

American College of Gastroenterology. www.acg.gi.org

American Gastroenterological Association. www.gastro.org

American Society of Colon and Rectal Surgeons. www.fascrs.org

National Cancer Institute. www.cancer.gov

Communication Disorders

John Tomkowiak

Speaking, hearing, and understanding the spoken and written words are the foundations for every human communication. A disorder of communication has been defined as, “any interference with an individual’s ability to comprehend or express ideas, experiences, knowledge, and feelings.” Communication disorders are generally classified into disorders of speech, hearing, language, voice, and fluency. The American Psychiatric Association (2000) lists five communication disorders in their book of disorders called the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition, Text Revision (DSM-IV-TR). These disorders include expressive language disorder, mixed receptive–expressive language disorder, phonological disorder, and stuttering and communication disorder not otherwise specified. Practically speaking, the disorders that are most commonly seen in the elderly include significant hearing loss and deafness, aphasia, a disorder of speech or language, that is usually secondary to a cerebral vascular accident (stroke) or trauma, language and memory deficits that are associated with dementias, and visual problems. All of these problems have the ability to interrupt communication in a significant way with potentially serious consequences. Early recognition and an understanding of the most common causes of communication difficulties in the elderly can lead to substantial improvement in the quality of life of an individual who has a communication disorder.

Hearing disorders are part of the class of disorders referred to as problems with receptive communication.

More than 25% of persons above 65, and 50% of people above 75 will have a hearing impairment. Hearing impairments in the elderly are usually in the high frequency or high pitched range and can interfere with normal conversation. Some causes of hearing loss that can be reversible include impacted ear wax, infections of the ears, or specific ear tumors (cholesteatomas and acoustic neuromas). Noise-related cochlear damage (otosclerosis) can sometimes be treated with bone removal or cochlear implants. Presbycusis (a gradual decline in hearing) is due to degeneration of the organ of Corti. This results in the inability to hear high frequency sounds or discriminate complex sounds. The primary treatment for sensorineural hearing loss is a hearing aid, along with an aural rehabilitation program. A hearing rehabilitation program may incorporate lipreading, the use of hand signs, and writing boards to overcome communication barriers.

A study done by the National Council on Aging revealed that hearing loss is a major health concern of the elderly. Health care professionals should avoid telling patients that their hearing loss is just a part of old age. Even if hearing impairment is due to the aging process, significant advances in treatment offer improved quality of life for individuals with severe deficits. Screening for hearing loss is a valuable tool and should be done early if it is suspected or reported as a problem. Careful assessment of a patient’s hearing loss should be performed, and potential therapeutic options can then be discussed with the patient. For example, hearing aids can significantly improve an individual’s quality of life. Users who have reported improvements in their overall well-being, were more socially active, and had less worry than non-hearing aid users. Even so, hearing aid use among the elderly is declining, despite advances in technology.

Visual problems are present in 15% of persons 65 and older and 30% in patients above 85. Presbyopia (the inability to focus on near objects) is present in more than 90% of patients above 75. Cataracts, macular degeneration, glaucoma, and diabetic retinopathy are the other most common causes of eye problems in the elderly. Since many of these conditions usually have a gradual onset, patients may be slow to realize or admit their deficits. Patients might make comments that they have lost interest in reading the newspaper or magazines that they have previously enjoyed. Management of visual impairments can include corrective eyewear, surgery, large printed material, and tactile feedback.

What are the consequences of having both a hearing and visual impairment? According to the 1999 surveillance for the sensory impaired study, older adults who report both vision and hearing loss were more likely to have falls, hip fractures, hypertension, heart disease, and stroke than those without sensory impairment. Disorders associated with producing speech and language are referred to as expressive disorders. The size of the speech and language areas in the brain is large and this makes those areas of the brain susceptible to damage. The most common problem in the elderly patient that may affect speech and language production often involves decreased blood flow in the brain. Aphasia, a disorder of speech or language, is the primary language impairment among older adults. It most often results from a cerebrovascular accident, but other causes include bacterial or viral infection (e.g., meningitis), brain tumor, head trauma, lack of oxygen to the brain, or extra fluid on the brain due to blockage (obstructive hydrocephalus). Aphasia, which is usually caused by a specific lesion, can affect spoken and written language, auditory comprehension, and reading ability but by itself does not affect intellectual and problem-solving abilities. Aphasic language impairments may be in different parts of the brain (left thalamic or basal ganglia lesion) and are commonly classified as nonfluent (left anterior frontal lobe focal lesion) or fluent (left posterior temporal or parietal lobe focal lesion). In addition, voice and speech impairments may lead to self-imposed social isolation and depression.

Underlying cognitive impairments in memory, attention, or visual perception affect the ability to communicate. Yet cognitive communicative disorders may be deceiving, because on the surface the person's basic language skills appear intact. Alzheimer's dementia (AD) is an example of an illness that may result in either a language comprehension or production problem. The patient may present with communication difficulties such as a disorganized conversation, unemotional demeanor, and lack of attention to the listener's needs, and may demonstrate focusing on one thought or word (perseveration), speaking indirectly (tangentiality) and/or making up things or situations to mask any problem (confabulation). Frontal lobe pathology in individuals with AD diminishes working memory by reducing span capacity, limiting attention, and disturbing search and retrieval functions. Because language comprehension and expression rely on the integrity of these functions, individuals with AD

perform poorer than normal population on communication tasks. Clinicians may improve communicative function by reducing the encoding, storage, and retrieval demands. However, because of the memory deficits that also accompany AD, these patients may not respond to the usual forms of linguistic therapy. Thus, a focus on training caregivers in a better understanding of the disease process and appropriate communication is recommended to help ensure positive interactions in these patients.

In summary, communication disorders are common in the elderly. Deficits in hearing, vision, or speech should not be attributed to "old age." Early identification and appropriate treatment can lead to significant improvements in the quality of life of individuals with these impairments. In the case of AD, attention to caregiver needs regarding communication is helpful to decrease both the patient's and the family's burden. Early identification by primary care providers with appropriate referral to qualified speech therapists, audiologists, and ear, nose, and throat specialists can make a significant and positive difference in the quality of life for individuals with communication disorders.

Related Topics

▶ [Alzheimer's disease](#), ▶ [Aphasia](#), ▶ [Vision](#)

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of disorders, 4th ed, Text revision. American Psychiatric Association, Washington, DC
- Clark LW (1994) Communication disorders: what to look for, and when to refer. *Geriatrics* 49(6):51–58
- Johnson CE, Danhauer JL (2002) A transdisciplinary holistic approach to hearing health care. *Geriatric Times*. Online (2005) vol III, 5
- Nicolosi L, Harryman E, Kresheck J (1978) Terminology of communication disorders: speech, language, hearing. Williams & Wilkins, Baltimore, MD
- Sadock BJ, Sadock VA (2000) Kaplan and Sadock's comprehensive textbook of psychiatry, 7th ed. Lippincott Williams & Wilkins, Philadelphia, PA

Suggested Resources

- American Association of Retired Persons (AARP): overview of hearing loss. <http://www.healthwise.net/aarp/Content/StdDocument>

aspx?DOCHWID=hw107979&SECHWID=tf3056 Communicating with impaired elderly persons. ElderCare online. <http://www.ec-online.net/Knowledge/Articles/communication.html>

National Institute on Deafness and Other Communication Disorders. <http://www.nidcd.nih.gov/health/hearing/index.asp>

Weinrich B, Jensen S (2005) Assessing the effects of communication counseling for caregivers of individuals with dementia of the alzheimers type (Revision, 2005). <http://www.asha.org/NR/rdonlyres/31B4E625-DB2B-4752-85DB-851348C3384C/0/712>

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Complementary and Alternative Health Practices

Marcello Maviglia · Paul Tiger

Complementary and alternative health practices are those that are outside the scope of conventional medical training and practice. Complementary therapies are used in addition to conventional (also called allopathic) medicine. Alternative therapies are used as a sole treatment in lieu of conventional therapies.

Complementary and alternative therapies (also called complementary and alternative medicine [CAM]) tend to be gentle and natural (naturopathy and herbal remedies), and tend to focus on health promotion and illness prevention (vitamin and herbal therapy) as opposed to treatment of disease. They often integrate mind, body, and spirit, such as yoga and chinese traditional medicine. Some of these therapies are considered conventional in the culture or country of origin. The National Institutes of Health (NIH) National Center for Complementary and Alternative Medicine recognizes five general categories of CAM (see [Table 1](#)): alternative medical systems, mind body interventions, biologically based therapies, manipulative and body-based therapies, and energy therapies.

The use of complementary therapies has expanded greatly since the early 1990s, including nearly 35% of US adults and almost 40% of adults above 50. It increased substantially between 1990 and 1997, but leveled off between 1997 and 2002. Highest use occurs among females, people aged 40–64, and those who identify themselves as white. Among some urban communities of women, nearly half have used a complementary treatment. CAM users are actually more likely to be users of

Table 1

Five general categories of complementary and alternative medicine

Alternative medical systems	Homeopathy
	Chinese traditional medicine and acupuncture Naturopathy Ayurveda
Mind–body interventions	Meditation Hypnosis Biofeedback, relaxation Prayer Music, art, and dance therapy
Biologically based therapies	Herbs Supplements Special diets
Manipulative and body-based therapies	Massage Chiropractic
Energy therapies	Reiki Therapeutic touch Electromagnetic therapies

conventional medical care and are neither more nor less likely to have health insurance. They have attained a higher education level.

For older adults, pain relief, improved quality of life, and health maintenance/fitness are the most common reasons for CAM use. Chronic illnesses like osteoarthritis, depression, and cancer also predict CAM use among the aging. Adults also seek therapies for anxiety, chronic pain, and back problems. Spiritual healing or prayer is the most commonly practiced CAM, followed by herbal medicines, relaxation techniques, and chiropractic care. In samples of adults aged 60–100 who obtain routine medical care, 64% are using complementary therapies.

Commonly used herbs and the conditions they aid include saw palmetto (prostate health), black cohosh (menopausal symptoms), dong quai (general female tonic), Ginseng (energy), ginkgo biloba (cognitive enhancement), St. John's Wort (depression), kava (anxiety), cranberry (urinary health), valerian root (sleep and anxiety), and echinacea and garlic (for immune function). Chiropractic treatment is also popular among aging patients. Techniques are modified to take into account the patient's functional status and bone strength. Some reports indicate that patients who receive chiropractic care have less comorbid illness and less medication requirement. Music therapy is effective in managing pain and behavioral problems in nursing

home patients. Acupuncture is well accepted as a CAM approach to chronic pain. Alternative systems like Ayurveda and Homeopathy involve detailed examinations and history taking. Often lifestyle changes and spiritual practices are recommended.

In recent times, conventionally trained US medical doctors have not received significant training and education in the use of these therapies. Many of these therapies have their own practitioners with independent education, training, and licensing. The National Center for Complementary and Alternative Medicine has outlined a strategic plan to develop training and research programs.

Many of the biologically based therapies (herbals and vitamins) have not undergone rigorous safety testing. Other CAM therapies have been tested and show an effect not much different than placebo. The NIH web site keeps up-to-date information on the most effective and well-validated therapies. Often the use of these therapies is not shared with a person's conventional doctor. Some argue that this poses a serious health hazard as many commonly used herbs are reported to interact with conventional medications either enhancing or blocking their effects (especially anticoagulant effects) and that some herbal preparations have been found to have dangerous contaminants.

Advocates of these health practices generally argue that they are preventive or health-promoting in nature, are not disease specific, and may not show the kind of effectiveness as conventional therapies. Increasingly, many therapies have been validated by clinical trials. Many people continue to seek out these treatments because they seem gentle and humanistic, involve treating the whole patient—body, mind, and spirit, involve people taking an active role in their health, and focus on “wellness” and not merely disease. Physicians are advised to ask their patients about CAM use as well as to improve their knowledge about these therapies. Patients should feel comfortable in sharing this information with their conventional doctor. CAM offers an opportunity to reconsider the goals of conventional US health care to include quality of life, independence, and patient satisfaction.

Related Topics

[▶ Acupuncture](#),
 [▶ Chiropractic care](#),
 [▶ Homeopathy](#),
 [▶ Massage](#),
 [▶ Preventive care](#),
 [▶ Spirituality](#),
 [▶ Yoga](#)

Suggested Readings

- Cherniack P, Cherniack N (2003) *Alternative medicine for the elderly*. Springer, New York
- Flaherty JH, Takahashi R (2004) The use of complementary and alternative medical therapies among older persons around the world. *Clin Geriatr Med* 20:179–200
- Killinger LZ (2004) Chiropractic and geriatrics: a review of the training, role and scope of chiropractic in caring for aging patients. *Clin Geriatr Med* 20:223–235
- Williamson AT, Fletcher PC, Dawson KA (2003) Complementary and alternative medicine: use in an older population. *J Gerontol Nurs* 29(5):20–28

Suggested Resources

- National Center for Complementary and Alternative Medicine. <https://nccam.nih.gov>

Confidentiality

Marshall B. Kapp

In the course of providing care, health care professionals routinely learn very sensitive information about their patients. Professionals begin with a fiduciary, or trust, obligation to hold in confidence all intimate patient information entrusted to them. This ethical obligation, based on the patient's important interest in maintaining personal privacy and avoiding the social stigma and potential discrimination that a breach of one's medical privacy might entail, is enforced legally through civil damage suits based on both statutory and common law (judge-made precedent), and is embodied in the licensing provisions of virtually all state professional practice acts and accompanying regulations.

Federal regulations that become effective in 2003 (45 Code of Federal Regulations Parts 160 and 164) to implement the Health Insurance Portability and Accountability Act (HIPAA) of 1996 (Public Law No. 104–191, title XI, Part C) impose very specific requirements on covered health-care entities and their business associates regarding the handling of personally identifiable medical information contained in patient records. These regulations impose severe criminal and civil sanctions for unauthorized disclosures of personal health information (PHI).



However, there are numerous exceptions to the general confidentiality rule and the state and federal statutes supplementing it. One exception occurs when a patient voluntarily and knowingly waives, or gives up, the right to confidentiality of particular information. Such waivers are done daily to make information available to third-party payers (for instance, Medicare claims processors and private health insurers), quality of care auditors (such as surveyors of the Joint Commission on Accreditation of Healthcare Organizations) and other public and private entities (like health care proxies authorized to make medical decisions under a patient's durable power of attorney). In addition, the usual confidentiality obligation may be outweighed in circumstances of jeopardy to innocent, vulnerable third parties, which happens when a patient with serious sensory or cognitive impairments insists on driving a motor vehicle or a dangerous psychiatric patient threatens to harm a specific victim and appears to have the present ability and intent to carry out that threat. State statutory and case law varies regarding the health care provider's obligation to report a believable threat of harm to public health or law enforcement authorities.

The patient's expectation of privacy must yield when the health care provider is mandated by state statute to report to specified public health or law enforcement authorities the health care provider's reasonable suspicion that certain conditions or activities (e.g., elder mistreatment or neglect, domestic violence, infectious diseases, births, and deaths) are present or have occurred. Mandatory reporting statutes embody the state's exercise of its inherent police power to protect the general health, safety, welfare, and morals of the community or its *parens patriae* authority to protect individuals (such as severely, cognitively, or emotionally impaired persons) who are not capable of protecting themselves.

Further, a health care professional may be compelled to reveal otherwise confidential information about particular patients by the force of legal process, that is, by a judge's issuance of a court order requiring such release. This is a possibility in any lawsuit involving a factual dispute about a patient's physical or mental condition. A court order (as opposed to a subpoena or subpoena *duces tecum*, which are issued simply as an administrative matter by the court clerk rather than by a judge) compelling one to produce personally identifiable patient information may overrule the

state's provider/patient testimonial privilege statute. Every testimonial privilege statute provides for court-compelled testimony by the health care provider when, for instance, the patient has placed his or her own health condition and medical treatment in issue in a lawsuit.

Since the modern delivery of health care frequently is a team endeavor, each patient implicitly gives permission for the sharing of certain otherwise private information among the members of the treatment team. Information sharing of this nature is essential to optimal care. However, only information that is directly relevant and necessary to facilitate the contribution of each team member should be available to the various team members. Moreover, each team member who is privy to identifiable patient information is bound fully by all applicable legal and ethical constraints on the inappropriate revelation of such information.

Related Topics

- Durable power of attorney, ➤ Medical malpractice, ➤ Patients' rights

Suggested Readings

- Annas GJ (2003) HIPAA regulations—a new era of medical-record privacy? *N Engl J Med* 348(15):1486–1490
- Annas GJ (2004) *The rights of patients*, 3rd ed. Southern Illinois University Press, Carbondale, IL, pp 246–272
- Dalin HS (2004) Advocacy in a post-HIPAA world. *Bar Associations in Focus on Aging and the Law (BIFOCAL)* 25(2):1–9
- Lo B, Dornbrand L, Dubler NN (2005) HIPAA and patient care: the role for professional judgment. *JAMA* 293(14):1766–1771
- Sankar P, Moran S, Merz JF, Jones NL (2003) Patient perspectives on medical confidentiality: a review of the literature. *J Gen Intern Med* 18(8):659–669
- Sullivan JM (2004) *HIPAA: a practical guide to the privacy and security of health data*. American Bar Association, Chicago
- United States General Accounting Office (2004) *First-year experiences under the federal privacy rule*. GAO-04-965, Washington, DC

Suggested Resources

- www.hhs.gov/ocr/hipaa
www.privacyrights.org

Congestive Heart Failure

Sudeshna Banerjee

At present, five million Americans have been diagnosed with congestive heart failure (CHF) and this number is expected to double by 2030 as the baby boomer population ages; similar trends are seen worldwide. Heart failure results in 280,000 deaths annually, principally in those patients above 50 and is the largest single expense of Medicare. Unfortunately, moderate disease has a 50% 5-year mortality while severe disease carries a 2-year mortality, mainly as a result of sudden cardiac death.

Heart failure is a syndrome of structural, functional, and biologic alterations. It is defined by the inability of the heart to pump sufficient blood to meet the demands of the body. Normally, the upper chambers (atria) drain through valves into the lower chambers (ventricles), which are muscular structures that contract and send blood throughout the vascular network. The right ventricle pumps blood to the lungs to be reoxygenated while the left ventricle (the main pumping chamber of the heart) sends blood bearing this oxygen to the entire body. The emphasis of heart failure is on the loss of function of the left ventricle.

A complex process termed remodeling occurs in heart failure and involves changes in the heart muscle cells or myocytes. Commonly, these cells are damaged during periods of compromised blood flow to the heart such as with a heart attack. Some cells then may die and the remaining survivors enlarge and become less effective at contracting. This causes disturbances in the ability of the heart to pump blood throughout the body.

Heart failure is most commonly a result of uncontrolled hypertension. Other causes include heart attack, alcohol abuse, thyroid disorders, arrhythmias, uncommon viruses, and some genetic diseases.

The diagnosis of heart failure is based on the signs and symptoms of the patient coupled with the physician's clinical suspicion. The primary symptom of a heart failure patient is exercise intolerance. This may be subtle such as becoming short of breath while walking up steps or mowing the lawn. Patients may also notice the shortness of breath at night (nocturnal dyspnea) and need to use more pillows in order to sleep comfortably (orthopnea). Other symptoms include weight gain from retention of fluid, particularly in

the ankles and legs, and shortness of breath. These symptoms are related to the backup in flow through the left side of the heart, which results in lung congestion.

Once heart failure is suspected, several confirmatory tests are completed. An electrocardiogram (ECG), an electrical tracing of the heart, is used to assess conduction abnormalities between the atria and the ventricles and may also detect changes in the size of the heart. A blood test called a brain natriuretic peptide (BNP) (though it is found in the heart) becomes elevated as the heart fails and may be used to assess the success of treatment. A chest x-ray is useful for many signs including the size or shape of the heart (e.g., cardiomegaly), evidence of fluid in the lungs called pulmonary vascular congestion, or effusions, which occur when the heart cannot pump properly. If any of these tests are abnormal, an echocardiogram is completed. This is a specialized ultrasound of the heart that allows evaluation of structure, function, and contractility, and can also assess volumes of each chamber as well as image the associated heart valves. A normal ejection fraction is above 50% and means the outflow from the left ventricle is at least half of the blood that was in the chamber. A lower value suggests dysfunction and a patient may undergo a cardiac catheterization to help find any narrowing in heart arteries that could have occurred during a prior heart attack.

There are two staging approaches to heart failure. The New York Heart Association (NYHA) classification is based on functional limitations and patients may move between stages with changes in treatments and hospitalizations. The American College of Cardiology/American Heart Association (ACC/AHA) guidelines are based on structural heart changes and do not change with treatment.

Treatment of heart failure consists of a broad approach including diet, risk factor modification, exercise, medication, electrical devices, and surgery. The goals of treatment are clinical stability, decreased hospitalizations, and improved quality of life.

Patients with heart failure should follow a salt- or sodium-restricted diet and use daily weight monitoring. This will help control changes in fluid accumulation and also quickly alert the patient when to call their primary care physician and avoid hospitalization.

During the past decade, remarkable advances have been made with the development of new types of medications. Angiotensin-converting enzyme inhibitors (ACE-I) decrease afterload (the pressure the heart is

pumping against) making it easier for the heart to pump adequate volume forward and decreasing the backup that leads to lung congestion. ACE-I medications may also decrease hypertrophy remodeling and improve blood flow to the kidneys. Aldosterone antagonists decrease salt retention while also limiting hypertrophy. Diuretics, commonly known as water pills, decrease preload (the volume entering the heart) and maintain fluid control, improving many of the symptoms associated with heart failure. Digoxin and other inotropes aid the failing heart in its pumping ability. Beta-blocker therapy results in decreased heart rate and decreased blood pressure, which, in turn, leads to decreased “stress” on the heart and improved function. Vasodilators, such as isosorbide and hydralazine, also decrease afterload although they do not provide the other benefits of ACE-I medications. Nesiritide, or synthetic BNP, decreases both preload and afterload and is reserved for patients with severe, decompensated disease.

When disruption of the conduction system has caused the atria and ventricles do not contract in a normal pattern. Instead of pumping in sequence to move the blood forward, this disruption may lead to backup of blood and worsen the symptoms of heart failure. Cardiac resynchronization therapy tries to reconcile the actions of the atria and ventricles. It results in improvement in ventricular function. Both conduction system disturbances and stretched heart muscles can predispose heart failure patients to arrhythmias. Implantable cardiac defibrillators provide a shock when the heart is in a dangerous rhythm. They have been shown to decrease all causes of mortality by 40% and are used only for those patients with severe heart failure.

Exercise intolerance is a primary symptom of heart failure. Regularly scheduled exercise, also known as cardiac rehabilitation, increases exercise tolerance by improving peripheral blood flow and improving skeletal muscle physiology and has become an important component of heart failure therapy.

Related Topics

➤ [Cardiovascular disease](#), ➤ [Coronary heart disease](#)

Suggested Readings

Caldwell M, Dracup K (2001) Team management of heart failure: the emerging role of exercise and implications for cardiac rehabilitation. *J Cardiopulm Rehabil* 21(5):273–279

Dosh S (2004) Diagnosis of heart failure. *Am Fam Phys* 70(11): 2145–2152.

Hobbs R (2004) Guidelines for diagnosis and management of heart failure. *Am J Ther* 11(6):467–472

Jessup M, Brozena S (2003) Medical progress: heart failure. *N Engl J Med* 348(20):2007–2018

Magner J, Royston D (2004) Heart failure. *Brit J Anaesth* 93(1):74–85

Conservatorship

Marshall B. Kapp

Ordinarily, the person who will be most directly affected by any specific decision about health care, finances, residential issues, or other personal matters is the person who is empowered to make that choice. There may be times, however, when the individual is not intellectually and emotionally capable of making and communicating difficult personal decisions. This may occur, for instance, as an individual suffering from Alzheimer’s disease experiences increasing dementia. In those cases, the legal system may need to intervene on behalf of the incapacitated individual. This may be accomplished through a variety of legal devices that vary in terms of their intrusion into personal autonomy. One of these legal devices is guardianship/conservatorship.

Every state has enacted statutes authorizing designated courts to appoint a surrogate with the power to make decisions on behalf of a cognitively or emotionally incompetent ward. Numerous other countries also have various systems in place to deal with this social/legal situation. The terminology for the court-appointed surrogate decision-maker varies among jurisdictions; although “conservator” and other terms are used in some states (e.g., California), “guardian” is the term employed in the majority of jurisdictions.

Guardianship/conservator statutes are predicated on the state’s inherent power to protect those who cannot take care of themselves in a manner that society thinks is appropriate (power *parens patriae*). The origin of some form of guardianship based on the state’s benevolent intentions toward the dependent and vulnerable can be traced back beyond thirteenth-century England.

Every adult person is presumed to be legally competent to make personal life decisions, even though this

presumption may be rebutted. A surrogate decision-maker may be appointed by the court, but only by showing clear and convincing evidence that the individual is cognitively and/or emotionally unable (e.g., because of severe dementia or depression) to participate authentically (i.e., consistent with previously held values) and self-sufficiently in a rational decision-making process.

State guardianship statutes contain a two-step definition of competence. First, the person must fall within a particular diagnostic category like old age, mental illness, or developmental disability. Second, the individual needs to be found impaired functionally—in other words, actually unable to care appropriately for person or property—as a result of being within that first category. The requirement of substantial functional impairment is emphasized in those states, such as California, whose statutes restrict eligibility for guardianship/conservatorship to those who are “gravely disabled” or the equivalent.

In disputed, adversarial guardianship proceedings, medical and psychological experts usually are called to testify, either live or by sworn affidavit, by each side about the proposed ward’s categorical problem and its impact on the proposed ward’s functional abilities. In practice, this medical and psychological testimony frequently becomes the primary, if not the exclusive, basis for adjudicating incompetence.

A court appoints a guardian or conservator as substitute decision-maker for an incompetent person. The incompetent person for whom a guardian/conservator is appointed is a “ward,” and the relationship created between the guardian/conservator and ward is called “guardianship” or “conservatorship.” Judicial appointment of a guardian/conservator typically occurs in response to a petition filed by the family, a health-care facility, or the local Adult Protective Services agency. The performance of the guardian/conservator as a fiduciary or trust agent of the ward remains subject to continuing oversight by the appointing court.

The individual or entity appointed to act as a guardian/conservator ordinarily is a private person (relative, friend, or attorney), financial institution (bank or trust company), or agency. The majority of guardians/conservators are related to the ward in some way. Almost all the states have developed some form of “public guardianship” system under which a governmental agency, acting either directly or through contract with a private not-for profit or for-profit organization, functions in the guardian/conservator

role for a ward who has no one else willing and able to act in that capacity. Elsewhere, some private corporations and organizations (often sectarian) offer their services as guardians/conservators directly to the courts, either for a fee or on a voluntary, pro bono (donated) basis.

The legal system historically has treated guardianship as an all-or-nothing proposition, global findings of incompetence being accompanied by virtually complete disenfranchisement of the ward. Recently, however, states have amended their statutes to recognize the concept of limited or partial guardianship, which accounts for the decision-specific nature of mental capacity and the ability of some people rationally to make certain kinds of choices but not others. Because creating total or “plenary” guardianship usually entails an extensive deprivation of an individual’s basic personal and property rights, the “least restrictive/least intrusive alternative” doctrine makes limited or partial guardianship preferred.

The modern trend in surrogate decision-making has been toward the substituted judgment standard. Under this approach, the guardian is required to make the same decisions that the patient would make, according to the patient’s own preferences and values to the extent they can be ascertained, if the patient currently were able to make and express competent decisions. The substituted judgment standard is highly consistent with respect to patient autonomy. When it cannot reasonably be ascertained what the patient would have decided if competent, the guardian is expected to rely on the traditional best interests standard. That test mandates that decisions be made in a manner that, from the guardian’s perspective, would confer the most benefit and the least burden on the ward.

For a growing number of older persons whose cognitive impairments would technically qualify them for guardianship, plenary, or limited, the most pressing practical problem is the unavailability of family members or close friends who are willing and able to assume guardianship responsibilities. In the absence of a state public guardianship system, local volunteer guardianship program, or sufficient assets to hire a private, proprietary professional guardian, the cognitively incapacitated individual with no family or friends (the “unbefriended”) often literally “fall between the cracks.” Important decisions, including those involving medical treatment, may by default go without being made until an emergency has developed and the doctrine of presumed consent applies.

A guardianship/conservatorship may be discontinued when it is no longer needed; in some states, continued appropriateness must be reviewed according to a set schedule. The party arguing for termination bears the burden of proving that competence has been restored.

Related Topics

▶ Advance directives, ▶ Guardianship, ▶ Informed consent, ▶ Probate

Suggested Readings

- Doron I (2002) Elder guardianship kaleidoscope: a comparative perspective. *Int J Law, Policy Fam* 16(3):368–398
- Quinn MJ (2005) *Guardianship of adults: achieving justice, autonomy, and safety*. Springer Publishing, New York
- Symposium (2002) Wingspan—the second national guardianship conference. *Stetson L Rev* 31(3):573–1055
- United States General Accounting Office (2004) *Guardianships: collaboration needed to protect incapacitated elderly people*. GAO-04-655, Washington, DC
- Wright JL (2004) Protecting who from what, and why, and how? A proposal for an integrative approach to adult protective proceedings. *Elder L J* 12(1):53–118

Suggested Resources

www.guardianship.org

Constipation

Rajkumari Richmonds

Constipation is a symptomatic disease with decreased frequency of bowel movement, difficult passage of hard stools, or a sense of incomplete evacuation. Constipation has different meanings for different people. Regularity may mean twice a day for some people or just twice a week for others. Every individual has different bowel habits. Constipation may be defined as having two or lesser bowel movements per week or excessive difficulty or straining with bowel movements. Constipation is more common in elderly people. They also incorrectly assume that they are constipated if they do

not have a daily bowel movement. The overall self-reported prevalence of constipation is 24–37% with women reporting more constipation than men due to their slowed intestinal transit rate.

Causes of constipation include diet, behavior, psychology, lifestyle, colorectal disorders, neurological disorders, metabolic disorders, overuse of laxatives, and several drugs including iron supplements and cough suppressants. Two mechanisms of chronic constipation are known: (1) a decrease in bowel motility and (2) disordered defecation, that is, repeatedly ignoring the urge to have a bowel movement.

Mild and intermittent constipation is not a cause of concern. Rectal examination for the elderly is required to diagnose if there is any fecal impaction. The major complication of constipation in the elderly is fecal impaction. Fecal impaction can lead to intestinal obstruction, colonic obstruction, and overflow incontinence (leakage of stool around obstructing feces). This condition is present in patients who have limited mobility or mental capacity and who are presented with alteration in bowel habit. Further investigation and diagnosis are needed if:

- There is a new onset of signs and symptoms without any changes in lifestyle, diet, or drug therapy
- Symptoms are severe and unresponsive to treatment
- Alarm symptoms are present—constipation alternating with diarrhea, rectal bleeding, abdominal pain, weight loss, and anorexia

Treatment begins with evaluation of the patient. Find out the beliefs and attitudes of bowel habits and the psychosocial status. Colorectal cancer should be suspected in any adult aged above 45, who has alarm symptoms and they should be referred for further investigation.

The first line of management involves identifying and changing the offending medication. Dietary and behavioral changes along with cautious use of laxatives and enemas should be followed. Encourage the elderly patient to eat at least one serving of fiber-rich food at every meal. Counsel the individual to drink adequate fluid to prevent cramps, bloating, and flatulence. This dietary modification may take up to a month before any beneficial effects could be seen. Sources of dietary fiber include fresh fruits, dry beans, oatmeal, and leafy vegetables.

Exercise caution in counseling patients to drink a large volume of fluid while on a high-fiber diet. This

goal is not only difficult to achieve but also contraindicated for individuals with a history of congestive heart failure or impaired renal function. A high-fiber diet should be avoided for patients with fecal incontinence. In patients with a hypotonic colon or megacolon/rectum, an intake of high-fiber diet is not likely to result in peristalsis and a bowel movement.

Enemas and suppositories are used if fecal impaction is present. Plain tap water or sodium phosphate enemas can be used. Soapsud enemas are not generally recommended because they can cause rectal damage. Since the rectal volume increases with age about 500–1,000 mL enema is needed. After the initial blockage is cleared, colonic cleansing can be done with polyethylene glycol with or without electrolyte solution either orally or through nasogastric tube. Frequent use of enemas should be avoided because the individual can lose normal bowel function.

Tips to avoid constipation:

- Be active. If medical conditions limit the mobility, try to do chair or bed exercise. Walking is a good exercise.
- Set aside a definite time for bowel movement every day. Going for a bowel movement after eating breakfast will help because of body's natural urge (gastrocolic reflex).
- Do not postpone or ignore the urge for bowel movement.
- Include foods like wheat bread, corn bread, whole grain cereal, fresh fruits, and vegetables in the diet that are high in fiber.
- Avoid eating large amounts of high-fat meat and dairy products like cheese.
- Eat regularly.
- Do not expect to have a bowel movement everyday. Regularity differs from person to person. If the bowel movements are usually painless and occur regularly (whether two times a day or three times a week) constipation is not present.

Related Topics

▶ [Abdominal pain](#), ▶ [Colorectal cancer](#)

Suggested Readings

Harari D, Gurwitz JH, Minaker KL (1993) Constipation in the elderly. *J Am Geriatr Soc* 41(10):1130–1140

Helvanayagam S, Norton C (2000) Quality of life with fecal incontinence problems. *Nursing Times* 96 Suppl 31:15–17

Norton C (1996) The causes and nursing management of constipation *Brit J Nurs* 5(20):1252–1258

Ratnaike RN (ed) (1999) *Diarrhoea and constipation in geriatric practice*. Cambridge University Press, New York

Romero Y, Evans JM, Fleming KC, Phillips SF (1996) Constipation and fecal incontinence in the elderly population. *Mayo Clin Proc* 71(1):81–92

Tramonte SM, Brand MB, Mulrow CD, Amato MG, O'Keefe ME, Ramirez G (1997) The treatment of chronic constipation in adults. A systematic review. *J Gen Intern Med* 12(1):15–24

Suggested Resources

United States Department of Health and Human Services, National Institutes of National Health, Digestive Diseases Information Clearinghouse (2003)

What I need to know about constipation [electronic resource]

The Continuity Theory of Aging

Jessica Diggs

The continuity theory of aging states that “in making adaptive choices middle-aged and older adults attempt to preserve and maintain existing psychological and social patterns by applying familiar knowledge, skills, and strategies.” George Maddox was the first researcher to use the idea of continuity to describe the behavior of aging individuals in 1968 when he observed that people tended to engage in similar activities and to continue familiar lifestyle patterns as they age; however, the continuity theory of aging was not introduced until 1989. Robert Atchley is credited with the development of this theory. Continuity theory takes a life course perspective in which the aging process is shaped by history, culture, and social constructs. According to this theory, continuity in aging is seen as a dynamic and evolutionary developmental process in which individuals grow, adapt, and change; however, these changes are consistent with the person's underlying ideology and past experiences. The degree of an individual's life satisfaction is linked to how consistent their current activities are with their past experiences and self-perception.



Internal and External Continuity

Atchley describes continuity in terms of both internal and external continuity and describes how aging individuals are motivated toward maintaining both a self-concept and a social pattern that is consistent with the person's history and their perception of themselves and their social environment. Internal continuity refers to a persistence of an individual's unique internal structure over time, which is comprised of a person's self-perception, belief system, goals, and past experiences and would include their skills, ideas, personal preferences, and temperament. Maintenance of internal continuity is driven by an individual's desire for predictability in life that provides a sense of security and stability for the individual. Maintenance of self-esteem and self-identity is also an important driver for internal continuity. As people are faced with change they adapt themselves by adding to their existing perception of who they are and by using their existing identity to help provide the framework for making future decisions.

External continuity is dependent on a remembered physical and social environment that includes a person's relationships, social roles, and activities. A person is motivated toward external continuity by their desire to be consistent with the expectations of others that are based on the individual's past roles and behaviors. Following familiar patterns of activity and social interaction also affords a certain level of predictability and can aid in decision-making and adapting to change. The ability to consult a set of criteria and set of resources based on past experiences, internal, and external structures is instrumental in allowing aging people to successfully interpret physical, mental, social, and environmental changes and integrate change into their lives in an adaptive manner without causing disruption.

Limitations of Continuity Theory

A limitation of continuity theory is its focus on people who are aging "normally"; in this context, "normally" aging people are considered to be those without disabling conditions who are capable of meeting their needs both economically and physically. "Normally" aging adults have meaningful, productive lives and have established social networks. This theory may not be suitable for those adults who are undergoing

"pathological" aging. Since these adults may be disabled or poor or have lack of social networks, the ability to maintain external continuity may be limited by their life situation, although internal continuity may be unaffected. In cases where people have illnesses affecting cognition or memory, internal and external continuities are likely to be affected. Maintenance of internal continuity is dependent on a person having knowledge of himself or a self-identity and personal history that they can draw upon to aid them in decision-making. External continuity also depends on memory, as it relies on the person having a familiar set of relationships, environments, and activities.

As with most individual characteristics, continuity exists on a continuum from too little continuity (discontinuity) to too much continuity, with an optimum level of continuity in between. Too little continuity can be undesirable for aging individual because of the lack of predictability that may make life seem out of control or chaotic. If severe enough, discontinuity can cause individuals to experience anxiety or depression secondary to their inability to predict the outcome of any given situation. Discontinuity that causes a person to lose a role in which they strongly identify (e.g., "teacher," "mentor," and "boss") or an environmental change (e.g., moving to a retirement village, skilled nursing facility, or with children) leading to the loss of familiarity with their environment can erode a person's self-identity and cause significant stress to the individual as well. Residing at the opposite end of the continuity spectrum can also be undesirable in that too much continuity can cause a person to lack any type of stimulation or need to adapt to change, which can make life monotonous and potentially unfulfilling. While using maintenance of continuity as a coping and adaptive mechanism can often aid the aging person in responding to life changes, an overemphasis on continuity can be maladaptive as well. For example, a person who refuses to seek necessary medical treatment in a new environment or away from familiar doctors or relatives in an attempt to maintain external continuity when faced with disease.

Public Health Perspective

It is essential for health practitioners and public health professionals to have an understanding of continuity theory and how individuals are motivated toward preserving internal and external continuity. Approaching

individual change from the perspective of the patient and incorporating their perceptions of themselves and their personal history into the decision-making process can aid health providers and patients in making decisions that will allow the patient to maintain optimal continuity in their lives. Aiding the patient in making sense of their situation and to seeing how change can be incorporated into their lives without causing discontinuity or disruption can reduce the stress on the individual patient, strengthen the provider–patient relationship, and increase the likelihood of patient adherence to recommendations. This cooperative and holistic approach is also a mechanism for showing respect and regard for the individual patient and their unique personality and set of skills, desires, and beliefs, allowing providers to offer the most patient specific and clinically appropriate recommendations to their patients.

Related Topics

[Activity theory of aging](#),
 [Coping](#),
 [Exchange theory of aging](#),
 [Identity](#),
 [Retirement](#),
 [Self-esteem](#)

Suggested Readings

- Atchley RC (1989) A continuity theory of normal aging. *Gerontologist* 29(2):183–190
- Atchley RC (1999) Continuity and adaptation in aging: creating positive experiences. Johns Hopkins University Press, Baltimore, MD
- Kelly JR (1993) Activity and aging staying involved in later life. Sage, Newbury Park, CA
- Onega LL, Tripp-Reimer T (1997) Expanding the scope of continuity theory. Application to gerontological nursing. *J Gerontol Nurs* 23(6):29–35

Coping

David Carroll

The process of adaptation throughout the life span requires effective coping skills. As the demands and challenges of life evolve, coping skills must remain strong and flexible. “Coping” can be viewed as both

the desired outcome of successful aging and the process by which that outcome is attained. It refers to the state of having or finding adequate resources to meet the demands and challenges of life or finding ways to modify or negotiate those demands so as to bring them in line with available resources. Although the process of coping often involves an element of struggle (mental, physical, or emotional), in the end, it is typically associated with a positive emotional state—at least with a sense of reassurance, if not a sense of pride and/or successful accomplishment.

Effective coping requires a balance between life’s demands and a person’s behavioral responses. The psychologist Jean Piaget described the process of adaptation as the interaction between the two processes of assimilation (incorporating a stimulus or demand into an existing structure or routine) and accommodation (creating a new structure or routine in response to a stimulus or demand). Assimilation and accommodation are vital to the development and maintenance of the sense of self. Dependence on either process alone will not lead to a successful outcome. Rigidity and irritability stem from an overreliance on assimilation, and impulsivity and chaos are the outcome of an overreliance on accommodation. The individual must use both processes in tandem throughout life; for example, holding onto coping skills that work and letting go of those that are no longer effective.

Resilience and Mindfulness

Effective coping is often achieved without much attention or even awareness, but recently there has been interest in a related concept, resilience. At least for some, being resilient may require more deliberative effort than merely coping. The study of resilience has been fueled by events such as 9/11, ongoing terrorism and the fight against it, and major natural disasters around the world. Why do some individuals fare well in response to these events, while others do not? Resilience, the process of adapting well in the face of adversity, provides one explanation. In the current context, resilience represents a high level of coping ability. The American Psychological Association has developed a number of resources related to resilience (see suggested readings), including a list of ways to build resilience such as making connections with others, accepting the reality of change, taking care of oneself, and keeping a sense of perspective. Like

coping, resilience is a skill that can be practiced and learned by all.

A second recent, coping-related concept is mindfulness. There are many formal and informal ways to practice mindfulness, which is characterized by achieving and maintaining a clear focus on the present moment and inward experience, being at peace in the present moment. Mindfulness yields positive results ranging from reduced stress, increased pain control, and improved health outcomes, to a greater openness to new experience. Mindfulness can be learned and practiced by those who are robust as well as those who are terminally ill nearing the end of life.

Strategies for Coping

Coping skills encompass a wide range of behaviors (keeping to a set routine and exercising), thought processes (modifying expectations and seeking out additional information), and emotions (accepting the presence of negative emotion and seeking the support of others). The literature indicates that all these strategies are available to and effective for older adults, and the notion of a balanced approach remains important. While it may be necessary to learn a new routine in the wake of major medical event or loss, maintaining personally valued activities promotes positive adjustment.

Practicing Coping

The most effective coping behaviors are those that are incorporated in daily life and practiced on a daily basis. Social and productive activities, in particular, seem to yield positive health benefits. Coping is not state of being that can be achieved on a permanent basis. It refers to a skill set that needs constant practice in order to be well maintained. There is some evidence to suggest that men may need to pay more attention to positive coping behaviors later in life than women, but overall age does not seem to have a protective or harmful impact on coping skill. Finally, it is important to recognize when coping is an appropriate response and when it is not. Psychological disorders such as depression or anxiety should not be regarded as “expected” or “just something you have to cope with”; they are treatable at any age. Comprehensive care and support for the affected person and the family from multiple resources are critical.

Older Adults

Effective coping skills do not appear to be age-dependent. Among healthy adults, the oldest old cope at least as effectively as younger adults across multiple challenging demands in the laboratory and in daily life. However, the range of needed skills may increase over the life span. Stubborn self-reliance and increasing effort peak earlier in life, but they often give way to accepting more assistance from others, modified expectations of acceptable outcomes, and greater attention to self-care behaviors. In general, coping refers to a skill or set of skills rather than an enduring personality trait, and, as such, coping skills can be learned at any age or in any circumstance. Although longitudinal studies suggest that some elements of positive aging and coping in late life can be predicted by certain positive coping behaviors earlier in life, there is ample evidence to indicate that coping skills can be enhanced throughout life.

The personal, social, and economic costs of ineffective coping are tremendous. Although the majority of older adults enjoy good mental health, it is anticipated by 2030 that 15 million older adults will have significant mental and behavioral health problems. These mental health problems will lead to increased emotional suffering, increased burden on individuals, families, and other social support systems, and increased health-care costs. In the general population, it is estimated that 50–70% of primary care medical appointments are related to mental health conditions including stress and depression. Rates of depression among older adults are high, with 20% among those living in the community and up to 50% among those in nursing care facilities. Older adults have the highest suicide rate when compared to any age group, which accounts for 20% of all suicides. Effective coping in later life is further complicated by the rapidly growing number of older adults near or below the poverty level, age-related increases in functional impairment, and the loss typically associated with longevity of important roles and support systems.

Among the most challenging times is when a loved one develops Alzheimer’s disease. Approximately 4.5 million Americans are affected by this disease. A coping response is demanded on multiple levels, for the affected person, the spouse/caregiver, and the entire family system. Information gathering/sharing and social support are primary coping mechanisms. Often new coping resources are needed, particularly in

helping to establish a range of expectations related to the disease, its course, care management strategies, and the emotional reactions the disease triggers in all those affected. In addition to expert professional resources, there is a large, growing literature and a comprehensive support network focused on caregiver coping.

Cultural Considerations

Coping needs to be understood and practiced within the cultural context or group in which the individual lives. Different groups place differing emphasis on individual autonomy, social ties, and the role of religious beliefs and traditions. Much of the literature on coping is focused on individual persons, but social systems also have an active role in effective coping. Some older adults can afford to expand and extend their coping resources by moving into assisted living; but the majority cannot. Therefore, many may be faced with the dilemma of either “aging in place” or entering a nursing care facility. The more society develops and invests in community resources, the more likely older adults will be able to age in places that are familiar and draw upon coping resources that remain effective in supporting self-esteem.

Related Topics

- ▶ [Adaptation](#), ▶ [Caregiving and caregiver burden](#),
- ▶ [Generativity](#), ▶ [Midlife crisis](#), ▶ [Psychotherapy](#),
- ▶ [Quality of life](#), ▶ [Social support](#), ▶ [Stress](#)

Suggested Readings

- American Psychological Association (2002) *The road to resilience*. American Psychological Association Press, Washington, DC
- Kabat-Zinn J (1994) *Wherever you go, there you are: mindfulness meditation in everyday life*. Hyperion, New York
- Snyder CR (2001) *Coping with stress: effective people and processes*. Oxford University Press, New York

Suggested Resources

- Alzheimer’s Disease Education and Referral Center (ADEAR). <http://www.alzheimers.org>
- American Psychological Association Help Center. <http://www.apahelpcenter.org>

American Psychological Association Online, Aging Issues. <http://www.apa.org/pi/aging>

The National Council on the Aging Online. <http://www.ncoa.org>
The National Council on Aging Online, Center for Healthy Aging. <http://www.healthyagingprograms.org>

The National Institutes of Health, National Institute on Aging. <http://www.nia.nih.gov>

The National Institutes of Health, National Institute on Aging, Publications Page. <http://www.niapublications.org>

Coresidence

Jason S Keri

The term coresidence can be defined as a multigenerational living arrangement where members of a family, other than a married couple and their nonadult children, reside together in the same household. Reasons of coresidence vary and are determined by a multitude of health-related, economic, and cultural factors.

Over the last century, dramatic changes have occurred in the living patterns of older Americans. Between 1850 and 2000, the percentage of older adults living alone increased fivefold, rising from 5% to 30%; this trend can be linked to sweeping economic and sociocultural change. In 1850, 70% of elders and married couples lived with one of their adult children. The percentage of older adults residing with their children has steadily declined over the decades. The late nineteenth and early twentieth centuries were marked by a reduction in farming and a rise of wage of labor; these new developments challenged the economic logic of the preindustrial family. The older generation no longer needed the lifelong labor their children once provided, and the younger generation had less of a need for the assets and trade skills of their older relatives. The modern era has brought a continued decline in coresidence patterns in America.

Cultural Considerations

The census data of 2000 demonstrates that 30% of Caucasians above 70 reside independently, 50% reside as couple, 13% live with one of their adult children, and 6% reside with other relatives, friends or in group living situations. The following factors have been implicated in the continued decline in patterns of

coresidence: increased economic resources available to older individuals, changes in social norms toward a greater preference for independent living, and demographic changes in family structure reducing the availability of desired cohabitants.

Older persons from ethnic minorities are more likely to have coresidential living arrangements, but this too has declined over the last century. Ethnic differences in prevalence of coresidence are attributed to individual economic resources, a greater number of childbirths, cultural preferences for intergenerational duties, and an emphasis on mutual assistance. Among African-Americans, a higher likelihood of widowhood, functional impairment and lower education also contribute to coresidence patterns. The number of African-Americans above 70 living with an adult child decreased from 59% in 1870, immediately after the Civil War, to 30% in 2000. A higher immigration rate among Hispanics may help to explain the high likelihood of coresidence in this group. The 2000 census showed that 34% of Hispanics above 70 reside with adult children and 13% are in other coresidential living situations. Asian minorities have the highest rate of coresidence with adult children, namely 37% of those above 70, while 15% reside in other coresidential living situations.

Adult Children

Adult children are leaving the nest later and are more likely to return than in previous generations. Of the small proportion of older adults considered frail, 40% reside with caregiving children; however, most modern coresident arrangements reflect the needs of adult children for financial and emotional support. Only 5% of coresident arrangements involve the parent moving into the home of the adult child. When a parent does move into an adult child's home, the older adult is more likely to have a low income, not to own a home, to have suffered the recent death of a spouse, to have impaired health, or to require assistance with their activities of daily living (ADLs). In such cases, the older adult is more likely to be a widowed mother and the child is more likely to be a daughter than a son. The greatest predictor of coresidence of children and their older parent is if the child is unmarried; analysis from the 2000 census suggests that the number of children is less likely to influence the likelihood of coresidence.

The effect of coresidence for adult children and their elderly parents usually results in satisfaction with the living arrangement and positive relations. Adult children may contribute to the household income or perform household work. This relationship is not without conflict and may include mixed feelings about expectations. Some parents may feel that the adult child should learn to live independently or that the child's delay in independence reflects poorly on the parents. Studies show that time spent together as a married couple decreases with the addition of an adult child and increases somewhat with the child's departure. Marital quality, however, is not compromised by the child's presence in the home.

Grandparents

Coresident grandparents comprise 3.6% of adults above 30 and their caregiving roles with coresiding grandchildren were first addressed in the US population census of 2000. Similar to coresidence with adult children, 94% of these grandparents were considered the heads of their household, or the spouse. Although the western United States had the largest amount of coresiding grandparents, the southern states have the most caregiving coresiding grandparents. In particular, 31% of coresiding grandparents above 60 years of age were the primary caregivers for the grandchildren who lived with them, the "skipped generation" phenomenon. Approximately, 39% of surveyed grandparents reported this residential and caregiving relationship existed for more than 5 years. Only 2% of the non-Hispanic Caucasian population aged 30 and over lived with their grandchildren, compared to 6–10% of other racial and ethnic groups. Nineteen percent of grandparent caregivers were living in poverty in 1999.

Related Topics

[▶ Activities of daily living](#),
 [▶ Caregiving and caregiver burden](#),
 [▶ Caregiver burden](#),
 [▶ Extended family](#),
 [▶ Family relationships](#),
 [▶ Generation gap](#),
 [▶ Grandchildren](#),
 [▶ Home health care](#)

Suggested Readings

Simmons T, Dye J (2003) Grandparents living with grandchildren: 2000. US Census Bureau Publication # C2KBR-31, US Census Bureau, Washington, DC

- Speare Jr A, Avery R (1993) Who helps whom in older parent-child families. *J Gerontol* 48(2):564–573
- Tomassini C, Glaser K, Wolf DA, Broese van Groenou MI, Grundy E (2004) Living arrangements among older people: an overview of trends in Europe and the United States. *Popul Trends* 115:24–34

Suggested Resources

US Census Bureau. www.census.gov

Coronary Artery Bypass Grafting

Gus Theodos

Coronary artery bypass grafting (CABG), a surgical technique performed by cardiothoracic surgeons, is the most common “open-heart” surgery performed in the United States today. Blood vessels are used from other parts of the body to bypass narrowed or blocked coronary arteries to restore blood flow to the areas that were supplied by the blocked arteries. Any or all of the main coronary arteries and secondary blood vessels can be bypassed.

CABG is often described by the number of bypassed blood vessels such as one-vessel or two-vessel CABG. By restoring blood flow to the heart muscle, CABG is able to relieve symptoms of chest pains (angina), and in some cases, prolong life. The success of the surgery depends on the location and the amount of coronary artery disease, the time over which it has occurred, and the blood vessels used for bypass.

The decision to perform CABG involves a patient’s symptoms and the location and extent of the plaques. Patients with increasing amounts of chest pain, chest pain that occurs while at rest or with lesser activity than previously, and chest pain that does not respond to medications are termed to have unstable angina. These patients and those who sustain a heart attack (myocardial infarction) may be referred to CABG if their blood vessels cannot be opened with less invasive procedures, such as using a catheter with a balloon or stent.

A viability study is done prior to CABG to ensure that the damaged heart muscle would benefit from having blood flow restored. This nuclear medicine test images the heart and assesses which parts would benefit from the operation.

The surgery begins after the patient has been placed under general anesthesia. An incision is made below the breastbone or sternum, known as median sternotomy. Grafts are veins or arteries taken from elsewhere in the body (known as harvesting) and these vessels are sewed onto the coronary artery to bypass the diseased or blocked section. This process is performed by cardiothoracic surgeons, and takes several hours to complete. The blood vessels chosen for graft purposes are usually taken from the leg, chest, and arm, and less commonly from the abdomen. Saphenous vein grafts are taken from the calf or thigh. These have been the most common grafts for several years; however, the development of postsurgical narrowing of these grafts may lead to significant blockages within 5–7 years in approximately half of the patients. The same risk factors causing coronary artery disease such as smoking, hypertension, high cholesterol, and diabetes can also lead to narrowing of the saphenous grafts.

Using the internal mammary arteries as graft material has become more common and is ideal. These are dissected from the chest wall and attached to the diseased coronary arteries. These arterial grafts have been shown to improve long-term survival and are less frequently blocked with plaques. Patients with arterial grafts need fewer repeat operations and have a lower rate of myocardial infarction or recurrent angina when compared with vein grafts.

Radial arteries can be used as graft material, and are taken from the inner forearm. These arteries have similar results when compared with the mammary arteries. Afterward, patients may notice small changes in hand function, usually as minimal numbness and tingling in the hand with no loss of motor function. These symptoms also are short-lived. The gastroepiploic artery, which comes from the stomach, has been used less commonly as a bypass graft, but shows promising results.

The heart must be stopped, usually with chemicals and by cooling the body temperature, before the grafts are attached. Circulation is continued with the use of a heart-lung machine (HLM), or cardiopulmonary bypass machine. The surgeon sews one end of the graft onto the aorta and the other end to a part of the coronary artery below the narrowing bypassing the diseased area.

Newer surgical approaches are available that use smaller chest incisions or “ports,” do not involve a sternotomy, and allow the heart to continue beating during surgery. The surgeon uses specially designed



equipment including flexible fiberoptic scopes to perform the operation. These techniques may offer less discomfort than traditional CABG, but must be used in the appropriate patients.

After the surgery, the patient remains in an intensive care unit for an average of 2–3 days, while blood pressure, heart function, and breathing are monitored. As soon as the patients begin to breathe on their own, they are removed from the ventilator. Current management encourages patients to awake a few hours after surgery, sit in a chair the day following surgery, and begin to walk a few days afterward.

There are many complications in CABG, with the most serious including bleeding requiring further operation, myocardial infarction, heart failure, arrhythmias, stroke, pulmonary problems, wound infection, renal failure, and death. A number of surgical risk factors have been identified, including emergency surgery, damage to the heart or the vessels used for surgery, diabetes, lung disease, and kidney failure. The diameter of the coronary arteries is also important and is related to surgical outcome. Women and smaller people have smaller coronary arteries and have a less favorable outcome than men or individuals with a larger body mass who have larger arteries.

After surgery, about 95% of people will have improvement in their symptoms, while 85–90% of people remain symptom-free for 1–3 years. Meanwhile, 75% of people remain symptom-free for 5 years after surgery. Recurrent symptoms may be secondary to the development of blockages in the grafted blood vessels, or new or progressing blockages in the native coronary arteries. Studies have shown that arteries used for the grafts remain open longer and have less recurrence of symptoms. When new blockages do occur, a second bypass surgery may be required, though these blockages may also be improved with balloon angioplasty or stents.

CABG may improve symptoms of angina and life span. Prognosis depends on the graft itself, and on how long it remains open. Although a graft can restore blood flow to an area of the heart, it does not halt progression of the disease process, i.e., atherosclerosis; it means the patients must continue to maintain lifestyle modifications including diet and exercise.

Patients absolutely need to stop smoking, and high cholesterol, blood pressure, and diabetes should be aggressively treated. New medications have been developed that will also help prevent the grafts from premature clotting. After bypass surgery, several pills

are typically prescribed, and if the patient is compliant with both their medications and lifestyle modifications, they may enjoy a long and high-quality life.

Related Topics

[Cardiovascular disease](#),
 [Coronary heart disease](#)

Suggested Readings

- Eagle KA, Guyton RA, Davidoff R et al (1999) ACC/AHA guidelines for coronary artery bypass graft surgery: executive summary and recommendations. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1991 Guidelines for Coronary Artery Bypass Graft Surgery). *Circulation* 100:1464
- Lerner DJ, Kannel WB (1986) Patterns of coronary heart disease morbidity and mortality in the sexes. A 26-year follow-up of the Framingham population. *Am Heart J* 111:383
- Myers WO, Blackstone EH, Davis K et al (1999) CASS registry: long-term surgical survival. *J Am Coll Cardiol* 33:488
- Williams MA, Fleg JL, Ades PA et al (2002) Secondary prevention of coronary heart disease in the elderly (with emphasis on patients 75 years of age). An American Heart Association scientific statement from the Council on Clinical Cardiology Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention. *Circulation* 105:1735

Coronary Heart Disease

Abdul M. Sheikh · Nanette K. Wenger

Epidemiology of Coronary Heart Disease in the Elderly

In 1994, there were 33.2 million persons of 65 years or older in the United States, nearly 500,000 (1.5%) of whom sustained a myocardial infarction (heart attack). By 2030, it is expected to be more than 70 million persons in this age group, accounting for more than one million myocardial infarctions. At age 65, coronary heart disease (CHD) is more prevalent in men than in women; by age 80 symptomatic CHD is nearly equivalent in men and women. The anatomic prevalence of CHD (narrowing of the coronary arteries at autopsy) approaches 70% among those who die in their eighth decade. The coronary atherosclerotic

involvement is typically more severe and diffuse in the elderly than younger patients.

Hypertension is the most important risk factor in the elderly. Over two-thirds of individuals older than 65 years have hypertension. Both isolated systolic hypertension (increased upper blood pressure number) and combined systolic/diastolic hypertension (both upper and lower blood pressure levels increased) impart increased coronary risk. Treatment of both isolated systolic and systolic/diastolic hypertension reduces cardiac events. In terms of relative benefit, treated elderly patients have a 22% reduction in cardiovascular mortality and a 30% reduction in all cardiovascular events.

Large clinical trials have shown that treating elderly individuals with hypercholesterolemia (elevated cholesterol) results in significant reductions in cardiac morbidity and mortality. Elderly patients treated with cholesterol-lowering medications, such as HMG CoA-reductase inhibitors (statins) had reduced mortality and major cardiac events. As the absolute risk for CHD increases dramatically with age, the absolute risk reduction from cholesterol lowering is much greater in older than younger patients.

Smoking is associated with significant increases in the risk of cardiac disease. Current smokers have a 73% increase in the risk of CHD. Smoking cessation in the elderly provides comparable survival benefit to that in younger populations. Interventions effective in younger patients are also effective in the elderly, including physician's advice, behavioral counseling, and nicotine replacement therapy. Both nicotine replacement therapy and other pharmacological agents are safe in elderly patients.

Diabetes mellitus occurs in approximately 20% of persons above 70 and CHD is the leading cause of death in elderly patients with diabetes. The appropriate therapeutic goal for the treatment of diabetes should be decided on an individual basis in the elderly, but generally should have a target of reducing hemoglobin A1c (a blood test value) to <7% and achieving near-normal fasting blood glucose levels.

Disease Presentation

Typical clinical manifestations of myocardial ischemia (inadequate blood supply to heart muscle) such as chest pain occur in only 50% of elderly persons with CHD. Even when a history of chest pain is elicited, it often is

not described in the classic terms of "squeezing or crushing" pain. The pain is frequently vague and poorly localized or localized to the abdomen rather than the chest. Exertional shortness of breath is the most common symptom in the elderly. Other common symptoms include fatigue, syncope (passing out/becoming faint), nausea, anorexia, confusion, and shortness of breath at rest. In addition, complete absence of symptoms is common in the elderly. In the Framingham Heart Study, a prior unrecognized heart attack was present in 22% of patients of 65 years and 40% of those aged 75–84.

Diagnostic Testing and Risk Stratification

Treadmill exercise testing in the elderly provides predictive information that adds to clinical data and its prognostic effect is of the same magnitude as in younger patients. Although the maximum workload achieved is generally predictive of outcome in elderly patients, the Duke treadmill score, which has prognostic importance in younger patients, does not predict cardiac survival in the elderly.

The concomitant use of special imaging tests such as nuclear perfusion imaging (NPI) or echocardiography can increase the diagnostic and prognostic utility in elderly patients. For individuals who are unable to exercise, which is common in the elderly, pharmacologic stress testing (drugs used to mimic exercise stress) can yield important diagnostic and prognostic information. The sensitivity and specificity of echocardiography and NPI for diagnosing CHD in the elderly and associated side effects are similar to those in younger patients.

If making a diagnosis of the extent of CHD is imperative, the patient should undergo cardiac catheterization. Cardiac catheterization is well tolerated in the elderly. It has a low rate of major complications and the most frequent minor complication is injury or bleeding from the arterial puncture site.

Management of Angina Pectoris (Chest Pain Due to Myocardial Ischemia/Lack of Oxygen to the Heart Tissue) in the Elderly

As in younger patients, risk factor reduction, particularly control of hypertension and dyslipidemia (abnor-



mal blood lipids), must be addressed. Reversible factors that are more prevalent in the elderly that may aggravate angina should be identified and treated. These include anemia, hyperthyroidism, and valvular heart disease.

All drugs used in younger patients for control of anginal symptoms are appropriate for the elderly. However, the elderly may experience more side effects, particularly hypotension (drop in blood pressure) from medications such as nitrates and calcium channel blockers and adverse central nervous system effects from beta-blockers. Elderly patients may have to be started on lower doses initially and should be monitored carefully for side effects.

Percutaneous coronary intervention (PCI, opening an obstruction in a coronary artery through a tube inserted into the heart), by an angioplasty and/or stenting, or coronary artery bypass grafting (CABG) can be used to treat angina. Elderly patients undergoing PCI are at a slightly increased risk for complications compared with younger patients. The long-term outcome after PCI is also less favorable in elderly patients, with a higher incidence of death and angina compared to younger patients. The increase in adverse outcomes is most prominent in patients with incomplete restoration of blood flow.

CABG surgery is usually well tolerated in the elderly, including those above 80. Older patients typically have a longer hospital stay and higher in-hospital mortality rates, at 1 year, and at 3 years. Despite the initial increase in surgical risk, elderly subjects who undergo CABG surgery have a long-term survival rate similar to that of an age-matched control population and an improvement in quality of life similar to younger patients.

Trials comparing optimal medical therapy with revascularization have primarily involved patients younger than 75. However, available data suggest that revascularization has long-term benefits in selected elderly patients. Registry data have noted an increase in perioperative morbidity and mortality after CABG surgery in elderly patients. Despite this early risk, there was a significant long-term survival benefit for revascularization. The efficacy of revascularization versus medical therapy was directly assessed in the trial of invasive versus medical therapy in the elderly (TIME) in which patients ≥ 75 years of age who had chronic angina were assigned to optimized medical therapy or coronary angiography followed by PCI or CABG surgery, if appropriate. Angina severity decreased and

measures of quality of life improved in both treatment groups; both benefits were significantly more frequent after revascularization. There was no significant difference in mortality between the invasive and medical groups at 1 year or 4 years. A more prominent benefit from revascularization was suggested in the Alberta Provincial Project for Outcomes Assessment in Coronary Heart Disease (APPROACH) that monitored all patients undergoing cardiac catheterization in Alberta since 1995. There were more than 6,000 patients above 70 and more than 15,000 younger patients. Patients in all age groups had better survival rates with revascularization compared to medical therapy, but there was a significantly larger benefit in elderly patients, particularly those above 80.

Management of Myocardial Infarction in the Elderly

Almost 60–65% of myocardial infarctions (MIs) occur in patients above 65 and 33% occur in patients above 75. As many as 80% of all deaths related to MI occur in persons above 65. There are several differences concerning acute MI in the elderly compared to younger patients. MIs frequently present with atypical symptoms in elderly patients. The first manifestation is often shortness of breath, syncope, weakness, or confusion, rather than chest pain. The elderly are more likely to have non-ST elevation myocardial infarction (NSTEMI) than ST-segment elevation myocardial infarction (STEMI) on presentation (non-ST and ST elevation refer to abnormalities seen on an electrocardiogram/EKG). They are also more likely to have heart failure associated with the MI. Finally, the elderly have higher in-hospital mortality after MI.

Some adverse outcomes after acute MI probably result from associated medical problems in elderly patients, as well as a lower likelihood of receiving potentially beneficial interventions, such as thrombolysis, coronary angiography, PCI, or CABG surgery, or to receive aggressive anti-ischemic therapy. The use of all these therapies has been shown to decrease with older age.

The management of an acute MI in the elderly is generally similar to that in younger patients. The cornerstone of management of patients with an acute MI is prompt therapy. Overall, as many as 30% of elderly patients present to the hospital after a significant delay (≥ 6 hours after symptom onset). The proportion of

patients those are present in less than 6 hours and with ST segment elevation decreases with older age.

Both thrombolytic therapy and primary PCI have been used in elderly patients with acute STEMI although, as noted above, they are used less often in younger subjects. The majority of MIs in the elderly are present with ST segment depression (an abnormal pattern seen on EKG) and therefore do not meet criteria for the use of thrombolysis, although many patients are candidates for an early invasive strategy.

Primary PCI appears to be more effective than thrombolysis, as in younger patients. Primary PCI has become the reperfusion method of choice in qualified centers in appropriate elderly patients because of better cardiac outcomes and avoidance of the risk of intracranial (brain) hemorrhage (ICH) associated with thrombolytic therapy.

Thrombolytic therapy is an alternative in patients with an STEMI in whom primary PCI is not available or cannot be performed promptly. Clinical trials have demonstrated a consistent benefit from thrombolytic therapy in eligible elderly patients with an acute MI. There is often reluctance to administer thrombolytic agents to eligible elderly patients due in part to the increased risk of ICH with age. The contraindications to thrombolytic therapy in the elderly are similar to those in younger patients.

Secondary Prevention

An American Heart Association Scientific Statement in 2002 made management recommendations for secondary prevention of CHD in the elderly. These included lipid lowering, smoking cessation, treatment of hypertension and diabetes, and weight reduction, in addition to exercise, all elements of the multifactorial approach to cardiac rehabilitation. These recommendations are similar to those for younger patients with CHD. Despite the absence of large clinical trials evaluating secondary prevention of CHD in the elderly, the available data suggest a benefit similar to that in younger individuals.

Elderly patients should be strongly encouraged to participate in exercise-based cardiac rehabilitation. Exercise-based rehabilitation for patients with CHD improved cardiac and all-cause mortality and demonstrated improvement in a number of coronary risk factors.

Related Topics

▶ [Cardiovascular disorder disease](#), ▶ [Coronary risk factors](#), ▶ [Hypertension](#)

Suggested Readings

- Alexander KP, Roe MT, Chen AY (2005) For the CRUSA E Investigators. Evolution in cardiovascular care for elderly patients with non-ST-segment elevation acute coronary syndromes: results from the CRUSA E National Quality Improvement Initiative. *J Am Coll Cardiol* 46:1479–1487
- Anderson HV, Bach RG (2005) The elderly are not so old anymore. *J Am Coll Cardiol* 46:1488–1489
- Graham MM, Ghali WA, Faris PD, Galbraith PD, Norris CM, Knudtson ML (2002) For the Alberta Provincial Project for Outcomes Assessment in Coronary Heart Disease (APPROACH) Investigators. Survival after coronary revascularization in the elderly. *Circulation* 105:2378–2384
- Grundt SM, Cleeman JI, Rifkind BM, Kuller LH (1999) Cholesterol lowering in the elderly population. Coordinating Committee of the National Cholesterol Education Program. *Arch Intern Med* 159:1670–1678
- Mehta RH, Granger CB, Alexander KP, Bossone E, White HD, Sketch MH Jr (2005) Reperfusion strategies for acute myocardial infarction in the elderly: benefits and risks. *J Am Coll Cardiol* 45:471–478
- Pasquali SK, Alexander KP, Peterson ED (2001) Cardiac rehabilitation in the elderly. *Am Heart J* 142:748–755
- SHEP Cooperative Research Group (1991) Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension. Final results of the Systolic Hypertension in the Elderly Program (SHEP). *JAMA* 265:3255
- Williams MA, Fleg JL, Ades PA et al (2002) Secondary prevention of coronary heart disease in the elderly (with emphasis on patients 75 years of age): an American Heart Association scientific statement from the Council on Clinical Cardiology Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention. *Circulation* 105:1735–1743

Coronary Risk Factors

Amar D. Patel · Nanette K. Wenger

Cardiovascular disease (CVD), the leading cause of death and disability in developed countries, increases with older age. More than 80% of deaths in US individuals above 65 are the result of CVD, the majority due to coronary heart disease (CHD). CVD accounts for significant morbidity and disability. A large number of hospitalizations and emergency room visits



translates into increased demand on the ambulatory and hospital care needs of elderly patients. Identification and prevention of factors contributing to CHD development are of importance.

Elderly patients represent a high-risk population, as the diffuse nature of atherosclerotic plaques (obstructions) in the coronary arteries is greater and more severe compared to younger populations. The overall lower reserve of heart function makes the elderly more likely to incur global myocardial ischemia (decreased blood flow to heart muscle) with increased oxygen demand. Diffuse disease may also limit mechanical means to increase coronary blood flow (revascularization) strategies for the elderly, either by a percutaneous approach (insertion into blood vessel) using balloon angioplasty with or without stenting or by coronary artery bypass grafting (CABG). The increased CHD burden and the lesser revascularization options place elderly patients at a higher risk for CHD-related complications.

Although the elderly comprise an increasing proportion of the overall population, research data available to guide therapy are limited, as many large cardiovascular clinical research studies excluded elderly patients. Extrapolation of clinical trial data to the elderly population seems reasonable in most cases; however, often an individual management strategy must be developed taking into account individual functional status, associated medical problems, and weighing the risks and benefits of specific therapies and interventions. Aggressive risk factor modification can reduce the risk of future cardiac events.

Even though risk factors for the development of CHD have been identified and are discussed in detail below, recent observational studies suggest that additional risk factors are linked to the development of CHD. Common comorbid conditions such as peripheral vascular disease (blocked arteries in the arms and legs), carotid artery disease (blocked arteries in the head and neck), and kidney dysfunction (elevated serum creatinine values on blood testing) are additional risk factors for the development and/or presence of atherosclerotic CHD in patients of all ages, including the elderly. Elderly specific observational studies such as the cardiovascular health study (CHS) have noted that subclinical measures (not felt by the patient) such as electrocardiographic abnormalities, depressed left ventricular ejection fraction (decreased pumping function of the heart), increased carotid artery intimal medial (artery wall) thickness, aortic

stenosis (moderate and severe only), and increased coronary calcium scores are also associated with CHD; in many instances the association is as strong as traditional CHD risk factors. These should be identified and treated, when possible, given their associated cardiovascular risks. However, the role of many of these markers in routine patient care is yet undefined.

Hypertension

Hypertension (high blood pressure) is a strong predictor for mortality and the development of CHD, congestive heart failure, and stroke. Two thirds of all individuals above 65 have hypertension. Until the 1980s, hypertension was not aggressively treated in the elderly. Abundant clinical trial data documenting the benefit of improved blood pressure control has prompted aggressive management of hypertension in the elderly.

The seventh report from the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7) states that the cardiovascular risk from hypertension begins at a blood pressure of 115/75 mmHg. Individuals with a normal blood pressure at age 55 have a 90% likelihood of subsequently developing hypertension. Systolic blood pressure gradually increases into the ninth decade of life, whereas diastolic blood pressure peaks at the fifth to sixth decade and then decreases as a result of the diminished elasticity of the blood vessels. Several large clinical trials of treatment of hypertension in elderly patients noted an approximate 20% reduction in fatal and nonfatal CHD events (e.g., heart attack and sudden death) and a 31% reduction in cerebrovascular events (e.g., stroke) in the treated group. Diminished elasticity of the arterial walls in aging patients, renders them more likely to have isolated systolic hypertension (elevated systolic blood pressure reading and a normal or low diastolic blood pressure reading). There were two major trials in elderly patients with isolated systolic hypertension. The Systolic Hypertension in the Elderly Program (SHEP) randomly assigned 4,736 patients aged 60 years and older to placebo or a diuretic (chlorthalidone), with beta-blocker (atenolol) use, if necessary, to achieve their goal blood pressure. After approximately 5 years, a 25% decrease in CHD incidence, 54% decrease in congestive heart failure, and a 36% decrease in stroke were observed. The systolic hypertension in Europe (Syst-Eur) trial randomly

assigned 4,695 patients (age at least 60 years) to a calcium channel-blocking drug (nitrendipine) with potential addition of a diuretic (hydrochlorothiazide) and/or angiotensin-converting enzyme (ACE) inhibitor (enalapril) to attain goal blood pressure compared with placebo. This study was stopped prematurely at 2 years because of a 31% reduction in congestive heart failure, heart attack, and sudden death and a 34% reduction in stroke in the treated group. The subset of patients above 80, had a similar reduction in stroke and coronary events.

Treatment for hypertension in the elderly focuses on risk factor reduction and pharmacologic therapy. Modifiable risk factors such as exercise, weight loss, low sodium diet, tobacco cessation, and reduced alcohol consumption are nonpharmacologic measures to control blood pressure. Medication classes such as angiotensin-ACE inhibitors, angiotensin receptor blockers, calcium channel blockers, beta-blockers, and diuretics all are efficacious agents that can be tailored based on concurrent medical problems such as heart failure, chronic kidney disease, and recurrent stroke prevention.

Dyslipidemia (Abnormal Blood Lipid Levels)

Dyslipidemia is a major contributor to the development of CHD. Approximately one third of elderly men and one half of elderly women have cholesterol levels warranting intervention. The average daily diet in the Western world consists of 85 g of fat and 300 mg of cholesterol. These water-insoluble products are transferred through the blood attached to lipid-specific proteins (lipoproteins). Abnormalities in the breakdown of these lipid-rich complexes lead to elevated blood levels of cholesterol and triglycerides, causing lipid deposition in the arterial wall. Although elevated lipid levels may result from genetic predisposition, the vast majority of individuals with dyslipidemia acquire this problem from multifactorial causes (obesity, sedentary lifestyle, and diet).

The National Cholesterol Education Program (NCEP) Adult Treatment Panel (ATP) III recommends that adults, of all ages, with a blood total cholesterol above 200 mg/dL be evaluated and those with elevated low-density lipoprotein cholesterol (LDL-C) be treated based on their level of risk for future cardiac events such as myocardial infarction (heart attack) and death

related to CHD. The treatment of hypertriglyceridemia has become increasingly important, as it has been identified as an independent risk factor for CHD.

Interventions that may reduce elevated lipid levels include nonpharmacologic and pharmacologic strategies. Nonpharmacologic options such as dietary modification, physical activity, and weight reduction should always be encouraged. Osteoarthritis or osteoporosis may limit the exertional capacity of the elderly patient. If regular physical activity can be performed, beneficial effects on lipid and blood pressure levels can be observed. Daily dietary modifications including a weighted balance towards mono- and poly-unsaturated fats (23–35% of total calories) over saturated fats (<7% of total calories), lower cholesterol intake (<200 mg), moderate carbohydrate intake (60% of total calories), and increased plant stanols/sterols (2 g) and soluble fiber (10–15 g) may lower LDL-C levels up to 10%.

In addition to lifestyle modifications, patients may require medications to lower their lipids to goal level. Medication classes used to treat dyslipidemia include HMG Co-A reductase inhibitors (statins), nicotinic acid, fibrates, bile acid sequestrants, and intestinal absorption inhibitors. Each has a varied effect on the lipid profile. The effects of statin therapy have been the most widely studied. Statins are a unique class of medications that may have additional beneficial effects at the cellular level other than lowering of cholesterol. Several large randomized clinical trials have demonstrated that statins given to patients with average or above-average cholesterol levels decreased heart attack, heart failure due to coronary disease, stroke, or death during long-term follow-up. Results such as these have been duplicated in elderly specific clinical trials such as the Prospective study of Pravastatin in the Elderly at Risk (PROSPER). This study randomly assigned elderly patients between the ages of 70 and 82 to pravastatin (2,891 patients) or placebo (2,913 patients). After 3 years, pravastatin lowered LDL-C levels by 34% and reduced combined CHD-related death, heart attack, and stroke by 15% compared to the control (untreated) group.

Smoking

Cigarette smoking cessation is the most modifiable CHD risk factor. It remains one of the most preventable causes of death, claiming the lives of an estimated



440,000 individuals each year. Although the US population who smoke cigarettes has decreased by approximately 40% since the mid-1970s, nearly 46 million Americans above 25 still smoke; 10% of the population above 65 are chronic smokers. The deleterious effects of smoking on the cardiovascular system include increased catecholamine levels, increased blood pressure, heart rate, and blood vessel narrowing. Smoking decreases vasomotor tone, increases the susceptibility to form blood clots, and lowers high-density lipoprotein cholesterol (HDL-C) levels, predisposing to heart attack, peripheral blood vessel disease, stroke, and death.

There are many benefits to stopping cigarette smoking. In smokers after heart attack, cessation reduces mortality from 25% to 50%, with approximately half of this benefit occurring in the first year. In the coronary artery surgery study (CASS) patients above 70 after CABG surgery were more likely to survive if they quit smoking. Smoking cessation in patients with CHD demonstrated a 36% reduction in overall mortality, greater than benefits of medications such as aspirin, angiotensin ACE inhibitors, and beta-blockers. The relative benefit in smoking cessation is comparable in younger and older patients.

In the middle-aged and older age group, smoking cessation rates at the end of 1 year that vary from 20% to 70%. Interventions commonly used in younger patients are also effective in the elderly. These include physician counseling, behavioral therapy, support groups, self-help materials, telephone follow-up calls, and pharmacologic therapies. Medications including nicotine replacement (nicotine gum, nicotine nasal spray, and transdermal nicotine) and bupropion may be of help and do not further increase the risk of CVD. Smoking cessation programs, which entail a multifaceted approach that includes several of the above measures are more likely to be effective.

Diabetes Mellitus

Diabetes mellitus is marked by abnormally high concentrations of blood glucose (sugar) levels with typical fasting levels of 126 mg/dL and greater. Nearly 35 million Americans have impaired glucose tolerance, and the elderly comprise approximately one-third of this group. Individuals with diabetes are at an increased risk for CHD, stroke, peripheral blood vessel disease, and death. Approximately 73,000 deaths attributable

to diabetes in 2002, 65–75% had some form of heart and/or blood vessel disease. Increasing obesity and sedentary lifestyle is the major contributing factor to development of type 2 diabetes mellitus and heralds that diabetes will continue to be a growing clinical and public health concern.

The pathogenesis of atherosclerosis in patients with diabetes is multifactorial and involves a complex array of mechanisms that includes metabolic derangements such as insulin deficiency and insulin resistance that contribute to the development of hypertension and alter lipid levels to increase LDL-C and decrease HDL-C. Elevated blood glucose levels promote the binding of glucose to proteins (glycation), in conjunction with oxygen radicals (highly chemically reactive oxygen molecules), this triggers additional chemical reactions, known as oxidation/glucooxidation, which interact with lipids and change their structure such that they preferentially deposit within the arterial wall as “foam cells.” Endothelial dysfunction, abnormal function of the lining of blood vessels, is associated with insulin resistance, hyperglycemia, hypertension, dyslipidemia, and atherosclerosis. Endothelial dysfunction is likely a precursor to development of atherosclerosis and CHD. Inflammation is likely increased in diabetes. Increased adipose (fat) tissue in diabetic patients may play a role in the chronic inflammatory state of diabetics as a source for the generation of factors (e.g., C-reactive protein) that induce platelet aggregation (clotting) and smooth muscle cell proliferation. This may play a role in the formation of atherosclerotic plaques. Lastly, a prothrombotic state (proclivity to form blood clots) likely contributes to the development of CHD as elevated levels of factors that promote blood clotting have been observed in individuals with diabetes mellitus.

Treatment of diabetes mellitus includes risk factor reduction and lifestyle modification. Strict monitoring and control of blood glucose must be performed. Several medications, in addition to insulin, may be used to control blood glucose levels. Concurrent medical illnesses may favor the use of one medication over another. The goal of treatment is a hemoglobin A1C (a compound in the blood that is measured with laboratory testing) of 7.0 or less. In elderly patients, the loss of body fat seems to have a greater impact on insulin and glucose metabolism than in younger patients. This underscores the importance of weight reduction in overweight and obese diabetic individuals. Exercise training improves insulin resistance and blood

glucose control. Hypertension, dyslipidemia, and smoking must be aggressively managed. For example, the JNC-7 recommends that diabetics maintain a goal blood pressure of 125/75 mmHg or less. Dyslipidemia must be treated appropriately and smoking should be invariably discontinued.

Obesity and Sedentary Lifestyle

Obesity is defined as a body mass index equal to, or greater than, 30 kg/m². It is estimated that the prevalence of obesity in individuals aged 60 years and older will increase from 14.6 million in 2000 to 20.9 million in 2010, accounting for almost 40% of all obese adults. The pattern of fat that portends an increased risk is a distribution of the weight to the trunk of the body (central or abdominal obesity). An increased waist/hip ratio correlates with the development of CHD and is closely linked to the abnormal lipid profile observed in individuals with the metabolic syndrome (discussed below). There are currently no specific recommendations for weight loss strategies in the elderly as few studies specifically address diet and exercise in obese elderly individuals. Dietary management measures including a balanced, calorie-controlled, diet and an individualized exercise prescription should be an approach to treatment.

Closely related to obesity, a sedentary lifestyle is a predisposition for CHD. Regular physical activity should be encouraged to improve the functional capacity of the patient and reduce activity-related abnormal signs and symptoms (e.g., increased heart rate out of proportion to level of activity). Studies suggest a decreased mortality rate in elderly patients who perform light-to-moderate physical activity. In the CHS (5,201 patients, mean age 73 years) decreased level of physical activity was an independent predictor of mortality. An individualized exercise prescription must take into account comorbid illnesses that may limit mobility such as pulmonary disease, peripheral vascular disease, and arthritis. Increasing the frequency and duration of exercise is preferred over increasing the intensity of the activities, as it reduces the likelihood of overuse injuries. The goals of an exercise program are not only to increase caloric expenditure and improve functional capacity, but to provide socialization with others. This helps overcome feelings of isolation and depression.

Metabolic Syndrome

The NCEP ATP III has defined the metabolic syndrome as a constellation of disease states enhancing development of CVD and CHD. The syndrome is characterized by a fasting glucose level of 110 mg/dL or greater, abdominal obesity (waist circumference greater than 40 in. in men and 35 in. in women), elevated triglycerides levels (equal to, or greater than, 150 mg/dL), low HDL-C (less than 40 mg/dL in men and less than 50 mg/dL in women), and a blood pressure greater than or equal to 130/85 mmHg. In the Framingham Study, metabolic syndrome predicted approximately 25% of all CVD. Management should include aggressive measures, which target these modifiable risk factors (weight reduction, blood pressure management, correcting dyslipidemia, and maintaining strict control of blood glucose levels).

Nontraditional Risk Factors

Identification of new and potentially modifiable risk factors for CHD is of interest and importance. Elevated serum homocysteine levels have been associated with the development of CHD, heart attack, and stroke. Increased markers of systemic inflammation such as C-reactive protein are directly linked to CHD-related death and MI. Plasma markers of thrombosis (clotting) such as D-dimer and plasmin-antiplasmin complexes plays a role in the development of coronary atherosclerosis and occurrence of heart attack. Several studies have also identified a strong link between depression, CHD, and all-cause mortality. Aggressive risk factor reduction strategies targeted at traditional, nontraditional, and subclinical disease factors can reduce the likelihood of CHD-related events.

Related Topics

➤ [Coronary artery Heart disease](#), ➤ [Diabetes](#), ➤ [Hypertension](#), ➤ [Myocardial infarction](#), ➤ [Obesity](#), ➤ [Smoking](#)

Suggested Readings

Chobanian AV, Bakris GL, Black HR et al (2003) The seventh report of the Joint National Committee on Prevention, Detection, Eval-

- luation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA* 289:2560–2572
- Fried LP, Kronmal RA, Newman AB et al (1998) Risk factors for 5-year mortality in older adults: the Cardiovascular Health Study. *JAMA* 279:585–592
- Grundt SM, Brewer HB Jr, Cleeman JI, Smith SC Jr, Lenfant C (2004) Definition of metabolic syndrome: report of the National Heart, Lung, and Blood Institute/American Heart Association conference on scientific issues related to definition. *Circulation* 109:433–438
- Grundt SM, Howard B, Smith S Jr, Eckel R, Redberg R, Bonow RO (2002) Prevention Conference VI: diabetes and cardiovascular disease: executive summary: conference proceeding for health-care professionals from a special writing group of the American Heart Association. *Circulation* 105:2231–2239
- SHEP Cooperative Research Group (1991) Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension. Final results of the Systolic Hypertension in the Elderly Program (SHEP). *JAMA* 265:3255–3264
- Shepherd J, Blauw GJ, Murphy MB et al (2002) Pravastatin in elderly individuals at risk of vascular disease (PROSPER): a randomised controlled trial. *Lancet* 360:1623–1630
- Staessen JA, Fagard R, Thijs L et al (1997) Randomised double-blind comparison of placebo and active treatment for older patients with isolated systolic hypertension. The Systolic Hypertension in Europe (Syst-Eur) Trial Investigators. *Lancet* 350:757–764

Cosmetic Surgery

Janet M. Blanchard

Cosmetic or plastic surgery is being openly talked about as lifestyles in the world are changing. This includes liposuction, eyelid surgery, breast augmentation, nose reshaping, and face-lifts. There is much more emphasis placed on our personal appearance, particularly in the workforce.

No one ever sees an older woman, man, or a person with “saddle bags” on the cover of a magazine. This could be one of the major impetuses for a person seeking cosmetic surgery. Another reason for contemplating cosmetic surgery could stem from a feeling we have about a certain part of our body. For example, our nose is too wide and big, and it has been a source of self-consciousness and also ridicule from our peers. This usually starts at an early age and can occupy a good portion of our thoughts in daily living.

Feeling good about ourselves and perception of ourselves can reflect in how we relate to others. Usually, people do not want to look “plasticized” but

only have a refreshed look. This can really help one’s self-esteem and concentrate on matters at hand. This does not apply to extremes at either end of the spectrum. In addition, there is a lot of competition in the workforce. This applies to both men and women. Many more men are seeking cosmetic surgery as well because of this very fact.

Once someone has decided to investigate the possibility of having plastic surgery, finding a board certified plastic surgeon is extremely important. This decision is sometimes the most important step in the entire process. How does someone find a surgeon in whom they may have confidence?

First and foremost is whether the physician is board certified by the American Board of Plastic Surgeons (ABPS). The society to which they belong is the American Society of Plastic Surgeons, (ASPS) ASPS has a website with a wealth of information regarding plastic surgery. In addition, many plastic surgeons have a webpage for reference. This can educate you about that particular person. This Society has stringent rules for membership. If plastic surgeons are board eligible, it means that they have completed their requirements, but have not yet taken their board examination.

Developing a rapport with your plastic surgeon is very important. In addition, sometimes the plastic surgeon offers you to speak to one of his or her patients. Asking other patients about your particular choice in surgeons can provide very valuable information!

Related Topics

▶ [Botox](#)

Suggested Resources

Plastic Surgery. www.plasticsurgery.org

Cremation

Tambra K. Cain

Cremation is an alternative to the traditional methods of preparing a deceased person’s body. Literally, cremation means to incinerate a corpse. Cremations are usually performed by licensed crematories. Some funeral

homes and memory gardens are also licensed to perform cremations.

It is estimated that cremation began about 3000 BC in Europe. In about 1000 BC it spread into Greece, then to the Roman Empire. In the middle of the fifth century, Roman decree required cremation for all bodies inside the city limits of Rome. Cremation fell from popularity due to the Christianization of Europe and the Middle East. Entombment became the popular method for disposing of human remains, and remains popular today. The first crematory in the United States was built in 1876 in Pennsylvania.

In 2004, in the United States, cremation accounted for 29.61% of dispositions of human remains. There is an increase from 21.11% just 10 years ago. Some reasons that cremations are on the rise are: it is less expensive than traditional methods, it is more environment-friendly and requires less space, it has become a more acceptable practice, and it offers greater flexibility with the memorial services. After cremation, a traditional burial in a cemetery plot is one option; others include interment in a mausoleum, storage by a family member, and scattering of remains. Remains may be scattered on public lands or public waterways, so long as there are no local laws prohibiting it. Also, remains may be scattered on private property by permission of the owner. It is important to plan in advance for the care and storage of the remains, as there are few laws regarding the disposal of cremated remains.

If cremation is a choice one is considering, a person should take steps to make their choices known. The first step is to discuss cremation with loved ones and family members. A health care Power of Attorney is another important tool. In a Power of Attorney a person can set out whether they do or do not desire to be cremated, where the cremation will take place, and where one's remains will be kept after cremation. In situations where a person desires to be cremated, but family is opposing, then the person's wishes for cremation and any arrangements should be set in his or her will to ensure that the person's wishes are complied with.

Related Topics

➤ [Bereavement](#), ➤ [Financial planning](#), ➤ [Grief and grieving](#)

Suggested Readings

- Grollman E (2001) A child's book about burial and cremation. Centering Corporation, Omaha, NE
- Llewellyn JF (2004) Saying goodbye your way: planning or buying a funeral or cremation for yourself or someone you love, 2nd ed. Tropic Press, Glendale, CA
- Reigle JM (2003) When death occurs: a practical consumer's guide—funerals, memorials, burial, cremation, body donation. Consumer Advocate Press, Curran, MI
- Rosen F (2004) Cremation in America. Prometheus Books, Amherst, NY
- Rutherford HR (1997) Honoring the dead Catholics and cremation today. The Liturgical Press, Collegeville, MN

Suggested Resources

- Cremation Association of North America Official Web site, <http://www.cremationassociation.org>, November 2005
- The 2000 US Census, <http://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf>, November 2005

Crime

Bettina A. Rausa

Fear of crime and victimization are important elements in many elderly citizens' lives. When an elderly person becomes the victim of a crime, the after effects tend to be longer lasting than with a younger person. However, most surveys show that people above 65 have lower rates of crime than other groups, especially for serious crimes such as robbery, personal theft, assault, and rape. In fact, when all crimes are taken together, the elderly victimization rate is lower than that of the rest of the population.

The National Crime Victimization Survey (NCVS) demonstrates that between 1993 and 2002, the elderly experienced nonfatal violent crime (rape, sexual assault, robbery, and aggravated and simple assaults) at a rate of 1/20 that of younger persons. People of 65 or older experienced property crimes at a rate about one fourth of those below 25. When the elderly are victims of crime, they are most often victims of property crimes, including home burglary, motor vehicle theft, and theft. In fact, property crimes account for 92% of victimizations against people aged 50–64. Personal larceny (purse snatching and pocket picking) occurs at about the same rate as most other age groups. In



comparison, persons aged 12–24 comprise more than half of the victims of violent crime and murder rates are lower for people aged 65 or older than any other age group (about 5% of the total number of murders).

Elder abuse is becoming an increasingly important issue for the elderly. It is typically portrayed in the media as financial fraud committed by strangers. However, elder abuse includes a range of actions of commission and omission that have negative consequences for elderly victims. It includes physical, psychological, and material abuse such as financial exploitation, as well as physical, psychological, or material neglect. Researchers estimate that elder abuse victims who experience physical violence, verbal aggression, or neglect can be as high as 32/1,000. Although there is a tendency to think of elder abusers as strangers, perpetrators are most commonly spouses, children, and grandchildren, and men and women are victimized at equal rates.

Elder abuse committed by strangers is typically that of financial fraud. Tactics include deceiving the elderly victim with promises of goods and services. The most commonly used are: nonexistent prizes and sweepstakes that “require” money for processing fees, shipping, and taxes; investment scams; donations to nonexistent charities; fraudulent home repairs often “emergencies” requiring an advanced deposit; unscrupulous health, funeral, and life insurance policies; ineffective health remedies promising “miracle cures”; and, over-market-rate travel packages.

The elderly are also perpetrators of crime. Until recently, research usually focused on older people being victims of criminal activity when there is a growing number of elderly offenders. The type of crimes they commit is also changing with a movement toward more serious offenses. Between 1967 and 1992, the number of individuals aged 50 and older arrested for violent crimes more than doubled and the number of elderly arrested for property crimes nearly tripled. A study of older prisoners in 2000 in Tennessee found that 77% were involved in a violent crime. Interestingly, of those, 41% had a diagnosed mental illness. Older prisoners with mental health disorders were found more likely to have been convicted of a murder; 77% of mentally ill women were incarcerated for committing murder and 27% of older mentally ill male prisoners had committed a sex crime. In 2004, there were more than 125,000 prisoners above 50 and 35,000 prisoners above 65 in correctional facilities in the United States (these figures encompass both elderly

offenders as well as those who have aged in prison). Even though the elderly criminal is increasingly committing more serious offenses, more than 97% of the elderly in the federal system are nonviolent offenders.

Related Topics

▶ Elder abuse and neglect, ▶ Firearms, ▶ Homicide, ▶ Rape, ▶ Sexual assault, ▶ Violence

Suggested Readings

- Flowers RB (2000) Domestic crimes, family violence and child abuse. McFarland & Company, Jefferson, NC
- Knapp J, Elder K Assessing prison personnel’s knowledge of the aging process. *Journal of the Oklahoma Criminal Justice Research Consortium*, vol 4, August 1997/1998 (Online). <http://www.doc.state.ok.us/DOCS/ocjrc/OCJRC97-98/Assessing%20Prison%20Personnel's.PDF>
- Montaldo C (2005) Crime/punishment: financial crimes against the elderly. *The New York Times* (Online). <http://crime.about.com/od/elderabuse/a/fraud.htm>
- Tonry M (2000) *The handbook of crime and punishment*. Oxford University Press, New York
- US Department of Justice, Office of Justice Programs. Bureau of Justice Statistics, Special Report: Crimes against Persons Age 65 or Older, 1993–2002 (Online). Revised 2005. http://www.ojp.usdoj.gov/bjs/cvict_v.htm

Suggested Resources

- Golden years behind bars: special programs and facilities for elderly inmates. <http://www.homestead.com/corrections/aoj3JA3.htm>, EBSCO Publishing. www.epnet.com/
- Regan J, Alderson A (2001) Geriatric offenders in Tennessee (Online). [http://scholar.google.com/scholar?q=author:"Regan"%20intitle:"Geriatric%20offenders%20in%20Tennessee](http://scholar.google.com/scholar?q=author:)

The Cross-Linkage Theory of Aging

Jessica Diggs

According to the cross-linkage theory of aging proposed by Johan Björkstén in 1942, aging results from the accumulation of intra- and intermolecular covalent

bonds between molecules, termed “cross-links.” Over time, these cross-links result in the alteration of the chemical and biological properties of the cell. Although these changes occur at the level of individual cells, these cellular changes can translate into significant dysfunction of body systems. There are several age-related manifestations of the accumulation of cellular cross-links and the resulting cellular dysfunction. For example, cross-links are associated with the loss of elasticity in skin and muscle tissue, stiffening of blood vessel walls, changes in the lens of the eye, delayed wound healing, and reduced joint mobility in aging individuals.

Chemical cross-links can be formed both inside (intracellular space) and outside (extracellular space) the cells. Intracellular cross-links can occur between molecules of deoxyribonucleic acid (DNA) and proteins, which can limit the ability of proteins to associate or disassociate with the DNA molecules. This can potentially inhibit processes like transcription (reading of the DNA code), gene expression, and protein synthesis (see error catastrophe theory of aging) leading to cellular dysfunction. Cross-links can occur in the cell membrane, reducing the fluidity and decreasing membrane conductance (the flow of charged molecules across the cell membrane). Changes in conductance can also decrease the ability of cell transcription, gene expression, and protein synthesis.

Another mechanism by which cross-links occur is through a nonenzymatic process involving the addition of sugar molecules to proteins and nucleic acids (e.g., DNA), referred to as nonenzymatic glycosylation. The products formed by this reaction are unstable and can eventually lead to the production of substances known as advanced glycosylation end products (AGEs), which are themselves capable of cross-linkage reactions. AGEs are more likely to form in longer-lived molecules due to a series of degradation and dehydration steps that occur over time to produce these molecules. Cataract formation in the lens of the eye is one example of the negative effects of this type of reaction. Because these reactions cause damage to DNA and other molecules they react with, they can also result in global cellular dysfunction.

Collagen

Collagen is the molecule that has been used as a model for studying the cross-linkage theory of aging. Collagen

is a structural protein, known as gelatin (animal collagen). Collagen comprises about one third of all proteins in the body; it can be found in skin, tendons (connect muscles to bones), ligaments (connect bones to bones to form joints), bones, fibrous tissue between muscles, cartilage, and in the walls of arteries. Collagen is particularly useful for the study of cross-linkage in aging, because it is a very long-lived molecule and undergoes cross-linkage reactions under normal conditions as part of its formation.

The functional unit of collagen is known as tropocollagen. It is a triple-stranded molecule with a twisted rope-like structure. Tropocollagen fibers aggregate end-to-end and side-to-side in a semioverlapping pattern and are joined to adjacent tropocollagen fibers by cross-links during its normal maturation process. Collagen is an abundant component in the extracellular matrix that surrounds the cells. The extracellular matrix will influence the manner in which cells divide, migrate, and respond to chemical mediators that are secreted by other cells to influence the function and activities of neighboring cells.

Cross-Linkage of Collagen in Aging

Since collagen is a very long-lived molecule with a slow rate of turnover, oxidation (primarily resulting from free-radical reactions) and nonenzymatic reactions (typically with glucose and other sugar molecules) lead to structural and functional changes in these molecules over time. The numbers of cross-links within collagen molecules accumulate with age; as a result collagen molecules gradually lose mobility and become less soluble. The rigidity of collagen can also affect the ability of cells to transport nutrients and oxygen to cells and wastes away from cells. Aging is also manifested by an increase in rigidity and loss of elasticity in collagen-containing tissues. Common examples of this are skin wrinkles and the increased size of the ears and nose with aging. Rigidity or stiffening of blood vessel walls reduces the distensibility of the blood vessel and can lead to hypertension.

Public Health Perspective

Since free-radicals and nonenzymatic glycosylation are two major mechanisms of producing collagen cross-links, these mechanisms provide opportunities for

prevention of the effects of aging due to cross-linkage reactions. Having a diet rich in antioxidant molecules and controlling blood sugar levels, coupled with an active lifestyle may be instrumental in delaying and reducing age-related changes in collagen, the resulting rigidity of collagen-containing structures, and the consequences thereof. Topical skin products and vitamin supplements can also be effective ways of coping with the effects of age-related increased cross-linkage.

Related Topics

➤ [Accumulative waste theory of aging](#), ➤ [Anti-aging remedies](#), ➤ [Cataract](#), ➤ [The error catastrophe \(accu-](#)

[mulation\) theory of aging](#), ➤ [Free radical theory of aging](#), ➤ [Hypertension](#), ➤ [Wrinkles](#)

Suggested Readings

- Hayflick L (1994) *How and why we age.*, Ballantine Books, New York
- Hooyman NR, Kiyak HA (1999) *Social gerontology: a multidisciplinary perspective*, 5th ed. Allyn & Bacon, Boston, MA
- Masoro EJ (1999) *Challenges of biological aging.* Springer Publishing Company, New York
- Nagy I (1994) *The membrane hypothesis of aging.* CRC Press, Boca Raton, FL
- Timiras PS (1994) *Physiological basis of aging and geriatrics*, 2nd ed. CRC Press, Boca Raton, FL

Day Hospitals

Brandy L. Johnson

The day hospital is a community-based option for providing both social and supportive care. Day hospitals were introduced approximately 70 years ago in Russia. This movement reached America and Europe in the 1940s and 1950s. There are day hospitals that address geriatric care, mental illness, and psychological disorders.

Geriatric Day Hospitals

Geriatric day hospitals provide interdisciplinary assessment and management of chronic health problems for older individuals. They are designed for individuals recovering from acute events such as stroke, amputation, and fractures. They provide assessment, rehabilitation, and certain medical and nursing procedures. Many also provide services such as transportation, nutrition, and recreational and social activity programs.

Day hospitals should be distinguished from day centers. Day centers are designed to maintain function, provide activity and socialization, and give caregivers a respite. Unlike day centers, day hospitals provide specific therapy. Day care centers do not have the staffing found in day hospitals. Staffing in geriatric day hospitals usually consists of a geriatrician or physician, nurses, nurse practitioners, physiotherapists, occupational therapists, and social workers. Additionally, some day hospitals employ speech pathologists, nutritionists, and recreational therapists.

Patients frequently visit the day hospital when they have suffered a loss of independence. As a result, they require services such as physical therapy, adjustment of their medications, or a new way of planning their daily activities. Patients in day hospitals often suffer from conditions such as hypertension and diabetes.

Individuals who attend day hospitals often benefit not only from the therapy but also from the interaction with their peers. Typically, a patient will be involved in both individual therapy and group activities. Day hospitals spend a lot of time educating the patients and their families about the patients' health problems. Patients usually attend day hospitals as outpatients. The amount of time, per day, that a patient spends in

a day hospital can vary, e.g., some may spend four hours while others a full day.

Patients and their families are generally involved in establishing the patient's treatment goals. The person is discharged from the day hospital when the goals are met. The length of program could vary from 6 weeks to 6 months.

The effectiveness of geriatric day hospitals has been a source of controversy. A study performed in 1999 found that patients attending day hospitals had better outcomes than individuals receiving no comprehensive elderly care. The study further found that day hospitals have a similar impact on patient outcomes as inpatient care, outpatient care, and domiciliary services. However, the study showed that, compared to other forms of care, day hospital attendance could have a positive impact on the need for long-term institutional care.

Psychiatric Day Hospitals

Psychiatric day hospitals are designed to treat people with acute, severe episodes of mental illness who would otherwise have been admitted to hospital. Like geriatric day hospitals, psychiatric day hospitals differ from day centers that provide rehabilitation to individuals suffering from longer-term mental illness.

Psychiatric day hospitals provide care that is similar to the care offered to inpatients. This care could include therapeutic activities, e.g., the day hospital may offer occupational therapy or group therapy. Although day hospitals can remain part of mental health services, day hospital care can be arranged by other organizations or social services departments.

Studies have shown that patients at day hospitals showed a more rapid improvement in mental state than patients who received inpatient care. Further, many of the patients currently admitted to inpatient care could realistically be treated in acute day hospitals. Studies have also shown that patients who attended a day hospital showed increased satisfaction with their treatment.

Related Topics

➤ [Institutionalization](#), ➤ [Mental illness](#), ➤ [Physical therapy](#)

Suggested Readings

- Faculty of Adult Psychiatry (2004) Submission of the Adult Psychiatry Faculty of the Irish College of Psychiatrists to the Expert Group on Mental Health Policy. Irish College of Psychiatrists, Dublin
- Forster A, Young J, Langhorn P (1999) Systematic review of day hospital care for older people. *BMJ* 318:837–841
- Marshall M (2003) Acute psychiatric day hospitals. *BMJ* 327:116–117
- Passi L (1998) A guide to creative group programming in the psychiatric day hospital. Haworth Press, Binghamton, NY
- Turpe I (2000) The geriatric day hospital. In: Evans J (ed) *The oxford textbook of geriatric medicine*. Oxford University Press, Oxford, UK, pp 1076B–1086B

Suggested Resources

- BMJ.com. <http://bmj.bmjournals.com>
- Medscape. <http://medscape.com>
- PubMed. <http://www.ncbi.nlm.nih.gov>

Death

Jo Weis

Today in America approximately 50% of people die in hospitals, 30% in nursing facilities, and the remaining 20% in their homes. However, the vast majority of people wish to die at home. People want to die with dignity, free from pain and suffering, burdening no one while maintaining control over decisions that affect the prolonging of their lives. Helping individuals to die in this manner is difficult. Whether death is sudden or following a prolonged illness, issues of grief and loss often become overwhelming. The assault to the psyche cannot be underestimated. Society frequently views death as a failure, as a time of pain, and as a suffering. The naturalness of death as a final stage of the life process is swept aside by medical and technological advances that are oriented toward preventing death, seemingly at all costs. Such efforts may obscure precious opportunities to ensure compassionate care at the end of life. Offering assistance to those in need at this difficult time can be challenging but is integral to the human experience.

Palliative and Hospice Care

Palliative and hospice care focus on supporting patients and families during the difficult times surrounding serious illness and end-of-life. The goal is to allow patients and families to live as fully and comfortably as possible during whatever time remains from a physical, mental, and spiritual perspective. In the United States, palliative medicine is primarily offered in hospitals and some long-term care facilities. Palliative medicine shares the same philosophy as that of hospice care in which a multidisciplinary team, together, provide medical care for pain and symptom management as well as psychosocial support for emotional and spiritual needs. Care is patient/family driven and emphasizes the relief of suffering and the improvement in quality of life.

In our present system of care, there may sometimes be barriers to the appropriate use of palliative and hospice care services. The misconception that palliative care (or hospice care) is restricted only to those patients dealing with the active phase of dying is a major deterrent in rendering services that can help decrease and eliminate unnecessary pain and suffering. Early intervention through exploring patient/family goals of care, such as the course of medical treatment and decisions as to care settings after hospitalization, is essential to determining the most effective and timely course of treatment.

In addition, health care providers often find it difficult to discuss death with their patients viewing their inability to “cure” as a sign of failure. Patients and families engage in cognitive denial and emotional numbing as ways to cope with the overwhelming feelings of fear, grief, and impending loss. The assistance of a palliative trained multidisciplinary team consisting of doctors, nurses, psychologists, social workers, and chaplains can help navigate the patient and family through difficult conversations and decision making. Examples of this include providing alternative options instead of curative care and funeral planning.

Finally, there may be misunderstandings about the financial arrangements surrounding palliative and hospice care. In this country, these services are generally well integrated into the health care financial reimbursement system. Accordingly, hospice interventions may be paid by the Medicare Hospice Benefit and also reimbursed by Medicaid Hospice Benefit and most private insurers. About 90% of hospice services are supplied in patients’ homes, but more hospice homes

for residential care are opening. To provide the best ongoing care, communities need to embrace both palliative medicine and hospice care as an integral part of caring for those with advanced, progressive, and incurable disease.

Goal Setting in End-of-Life

An organized approach to goal setting can facilitate comprehensive, optimal palliative and hospice care. Family meetings, in which parties who are interested in the patient's care and treatment options, address issues such as advanced planning, including power of attorney for health care decisions and do not resuscitate directives, in the event that this has not already occurred. In addition, family meetings can help health care providers to clearly articulate treatment options to address pain and other symptoms, as well as interventional palliative procedures. Patients and families can address fears and concerns about possible interventions. Family values and desires, such as how to care for loved ones, can be discussed. Financial concerns relating to insurance benefits and other resources can be addressed. Cultural considerations of those participating must always be kept in the forefront and respect for religious and spiritual beliefs must be maintained.

When the patients are unable to convey their wishes, goals of care remain respectful and consistent with those values by which they lived their lives. This may be a process of helping families with discrepant views to come to consensus as it relates to the patient's wishes. The intent to neither hasten nor prolong death remains consistent with the objective of providing comfort and care according to the desires of patients and their families.

Psychological Issues

Many difficult and complex psychological issues accompany dying. In addition to the physical hardships of chronic illness, most patients develop psychological and psychiatric symptoms during the terminal phase of their illness. This can be present in the form of dementia or delirium as well as in the form of anxiety and depression. Issues of grief and loss, for both the patient and the family, can be overwhelming. A sense of feeling out of control is often expressed, as normal daily activities become challenging to patients. Patients and families

struggle with finding the meaning for their suffering. Interventions aimed at normalizing the experience and reframing to focus on quality-of-life issues can help ease the discomfort. This may manifest itself in helping patients' process difficult emotions regarding their death while recognizing "a fix" is not a reality. Medications and psychotherapy to treat depression and anxiety are warranted in some situations. Helping patients and families remain central to treatment planning reinforces and enhances empowerment and dignity.

Spirituality

The dying process brings, for many, greater attentiveness to issues of spirituality. Spirituality can be defined as that which gives meaning to one's own existence, which is broader than a formalized religion. It is how one processes information in relation to the self and the world around. End-of-life can challenge one's very purpose in life, as well as the value system by which life was lived. Often a period of review occurs as stories are retold, making peace across emotional, psychological, and spiritual domains. It can be a time of addressing unfinished business and a time of leaving legacies. Some retreat and silently introspect, and some simply reacquaint with the constant spiritual companion that has accompanied them throughout their life's journey. There is no right or wrong way to come to terms with death. It is an individual process that is the right and privilege of the living. The multidisciplinary team by its very nature can remain fluid in its ability to witness and help address spiritual needs.

Dying is part of the life cycle. Whether young or old, sudden onset or following a lingering illness, dying does and will affect every one of us. How we chose to die is as important as how we live. No one chooses the pain and suffering of illness, but each of us does have a choice as to our relationship with life as we die. Understanding the value of palliative and hospice care early in the course of serious illness is extremely important in helping bring comfort and grace to people who are dying, and it can be very helpful to their families and the clinicians involved in their care.

Related Topics

➤ Bereavement, ➤ Death with Dignity Act, ➤ Depression, ➤ Family relationships, ➤ Grief and grieving,

- Hospice, ➤ Medicaid, ➤ Medicare, ➤ Palliative care,
- Religion, ➤ Social support, ➤ Spirituality

Suggested Readings

- Berger AM, Portenoy RK, Weissman D (2002) Principles and practice of palliative care and supportive oncology, 2nd ed. Lippincott Williams & Wilkins, Philadelphia
- Chochinov HM, Breitbart W (2000) Handbook of psychiatry in palliative medicine. Oxford University Press, New York
- Doyle D, Hanks G, Cherny NI, Calman K (2003) Oxford textbook of palliative medicine, 3rd ed. Oxford University Press, New York
- Joishy SK (1999) Palliative medicine secrets, Hanley and Belfus, Philadelphia

Suggested Resources

- American Academy of Hospice and Palliative Medicine. www.aahpm.org
- American Board of Hospice and Palliative Medicine (ABHPM). www.abhpm.org
- End-of-Life Physician Educational Resource Center. www.eperc.mcv.edu
- International Association for Hospice and Palliative Care (IAHPC). www.hospicecare.com
- National Hospice and Palliative Care Organization. www.nhpco.org

Death with Dignity Act

Kristin M. Beasley

In November 1994, a citizens' initiative in Oregon passed the Death with Dignity Act that allowed physicians to prescribe lethal dosages of medication, typically oral barbiturates, to Oregon citizens suffering from terminal illnesses. An injunction delayed implementation of the Death with Dignity Act until it was lifted in October 1997. In November 1997, a measure on the general election ballot to repeal the Act was defeated. To date, Oregon is the only state in the Union to have legalized physician-assisted suicide.

To obtain a lethal prescription, a patient must first find a Doctor of Medicine (MD) or Doctor of Osteopathy (DO) licensed to practice medicine by the Board of Medical Examiners for the State of Oregon, who is

willing to participate in the Death with Dignity program. Physicians are not required to participate, and some may be prohibited by their employers from participating. After finding a physician, the patient must demonstrate to the physician that he meets certain criteria before he will be allowed to request a prescription.

First, a patient must be above 18 and a resident of the state of Oregon. A patient wishing to participate under the Act must provide his physician with documentation sufficient to establish that the patient is a bona fide resident of Oregon. It is up to the physician to decide whether the residency requirement had been met.

The patient must also be diagnosed with a terminal illness that will lead to death within 6 months. Again, the patient's physician will determine if this criterion has been met. Additionally, the patient must be capable of making and communicating health care decisions for himself. Family members or persons exercising health care or other powers of attorney are not allowed to make the decision to participate under the Death with Dignity Act on behalf of the patient. The attending physician will determine if the patient is capable of making his own health care decisions. The patient must also be capable of administering the lethal dose of medication himself. No one else, not even the prescribing physician, is permitted to administer the medication to the patient.

If he or she meets all the criteria, a patient may request to participate in physician-assisted suicide. To make a valid request, the patient and physician must follow certain steps aimed at insuring that patient participation is voluntary and fully informed. First, the patient must make two oral requests for participation to the attending physician. The requests must be separated by at least 15 days. At the end of the 15-day waiting period, the physician will give the patient an opportunity to rescind his request. Next, the patient must provide the physician with a written request for participation. The written request must be signed in front of at least two witnesses, one of whom is not related to the patient.

After receiving the request for participation, the attending physician and a consulting physician must confirm the patient's diagnosis and prognosis. The two physicians must also determine whether the patient is capable of making and communicating health care decisions for himself. If either physician believes the patient's judgment is impaired by a psychiatric or

psychological disorder, such as depression, the patient must be referred for a psychological examination.

The attending physician must inform the patient of feasible alternatives to assisted suicide including comfort care, hospice care, and pain control. Finally, the attending physician must request, but may not require, that the patient notify his next of kin of the prescription request. At any time in this process, the patient may rescind his prescription request. The Death with Dignity Act is not euthanasia, because it is the patient, not the doctor, who administers the lethal dose of medication. Additionally, the Act specifies that participation is not suicide, hence insurance benefits cannot be withheld on that basis.

Proponents of the Act say that it is both humane and empowering to the terminally ill patient. Additionally, proponents believe that passage of the Death with Dignity Act has focused attention on effective pain management for the terminally ill, and on other end-of-life care issues. Oregon consistently shows the lowest rates in the nation of in-hospital deaths, and the state ranks first in the use of medical morphine, a key indicator of whether terminally ill patients are receiving adequate pain control. Oregon is also among the top states when it comes to the availability of hospice services.

Opponents of the Act cite data showing that loss of independence, rather than physical pain, is why most patients opt for physician-assisted suicide. They point to such data to support their belief that physician-assisted suicide is the first step on a slippery slope from voluntary participation to involuntary euthanasia of those whom society finds burdensome.

In November 2001, US Attorney General John Ashcroft issued a directive stating that the use of controlled substances with the intent of hastening death is not a legitimate medical purpose, and thus violates the Controlled Substances Act. The directive further states that physicians or pharmacists acting in compliance with the Death with Dignity Act are subject to suspension or license revocation. An order enjoining federal action on the Ashcroft Directive is currently on appeal to the US Supreme Court. Oral arguments to the Court were heard on October 5, 2005.

Related Topics

➤ [End-of-life care](#), ➤ [Euthanasia](#), ➤ [Physician-assisted suicide](#), ➤ [Suicide](#)

Suggested Resources

- Engber D (2005) How does assisted suicide work? A guide to "death with dignity" in Oregon, Explainer column, Slate Magazine (online), October 6, 2005. <http://www.slate.com/id/2127629/?nav=navoa>
- Oregon Department of Human Services—Physician-Assisted Suicide. <http://egov.oregon.gov/DHS/ph/pas/index.shtml>
- State of Oregon Department of Justice—Death with Dignity Act <http://www.doj.state.or.us/11072001.htm>
- Totenberg N (2005) High court reviews Oregon assisted-suicide law, All things considered, National Public Radio, October 5. <http://www.npr.org/templates/story/story.php?storyId=4946763>
- Yeoman B (2003) Death with dignity. AARP Magazine (online), March–April. <http://www.aarpmagazine.org/health/Articles/a2003-01-14-dignity.html>

Defined Benefit Plan

Tim Morris

Defined benefit plan is a plan that is designed to grant people participating in the plan a definite benefit at retirement. It is called "defined" because the plan is defined by the administrator's prediction of the amount an employer must contribute to produce a specific benefit at normal retirement age, such as a monthly benefit of 20% of compensation upon reaching the age of 65. The plans themselves define the retirement available to a plan participant, usually in terms of participant's compensation or years of service with the employer, or both.

Defined benefit plans compel employers to make contributions to the plan. Employers are required to contribute an amount that is adequate to pay for future retirement benefits, which have been promised to participants under the plan. The contributions made to this plan are stored in a common resource of assets out of which all benefits are paid. This differs from defined contribution plans. In a defined contribution plan, participants have individual accounts.

An actuary figures out the amount of the annual contribution that must be paid into a defined benefit plan to provide for future retirement benefits. There are multiple factors that go into calculating annual contribution under a defined benefit plan, which includes: compensation paid to participants, amount of

time participants have worked for employer, average age of group population, expected employee turnover patterns, expected participant death rates, and expected plan investment results. For example, a plan for a firm with older partners who keep themselves in excellent shape will be much more expensive than for a company that has just started and is filled with young employees.

For employees under traditional defined benefit plans, participants produce most of their benefits late in their livelihood. The reason for this is twofold: (1) these plans customarily link benefits to the years served so participants have to work for the employer for a substantial time before they earn decent benefits, and (2) the plans characteristically use the participants' "final career average pay," to calculate their monthly benefits upon retirement. As a result, these traditional plans are usually labeled "back loaded," due to the fact that most of the benefits are reaped late in their careers. Predominantly older and longer serving employees benefit more.

There are several different types of defined benefit plans. The Flat Benefit Plan provides a benefit at normal retirement date, which is a function of participant's compensation. A Unit Credit Plan has pension formulas that have both compensation and service in the calculation of benefits. Unit credit plans provide higher benefits to longer service employees. Floor-offset plans are plans whose benefits are offset or reduced by part or all of the benefits available to a participant under a defined contribution plan sponsored by the same employer. Cash balance plans offer benefits that are defined benefits but have the look and feel of benefits under a defined contribution plan. Available benefits are described in terms of a hypothetical account to which hypothetical contributions are made, the value of which increases each year at a stated rate of interest.

Employers who wish to give highest recognition to the contributions of longer service employees will choose unit credit formulas, not flat benefit formulas. This is because unit credit formulas use service factors in the defined benefit formula, while the flat benefit formula are based mainly on compensation factors. Employers who opt to go with cash balance plans will be the employers who want to keep all of the plusses of a defined benefit plan. They also believe that employees will better understand, and appreciate more fully, a pension plan that expresses its benefits in

simple to understand individual account and interest earnings classifications that are familiar to defined contribution plans.

Related Topics

[Defined contribution plan](#),
 [Financial planning](#),
 [Pension](#),
 [Retirement](#)

Suggested Readings

Employee benefits guide, Chapter 4: Qualified employee pension plans, 1–4 Employee benefits guide, § 4.05 and § 4.03. Matthew Bender and Company, New York, 2005

Saxinger D (2000) Cash balance plans: they work for employers but do they work for employees? *John Marshall Law Rev* 34:345–377

Suggested Resources

Thompson JW (2005) Defined benefit plan at the dawn of ERISA, March 30. <http://www.bls.gov/opub/cwc/print/cm20050325ar01p1.htm>

Sutkowski and Rhoads, Ltd. Law Office. Defined benefit plan questions. Chicago, IL. http://www.erisalawfirm.com/faq/defined_benefit_plan_questions.asp

Defined Contribution Plan

Elizabeth Kee

A defined contribution plan is an employer-sponsored plan that specifies the contributions made to an employee's retirement account. These contributions are made by the employee from pretax dollars and sometimes the plan's sponsor, generally at a set rate. For example, a sponsor may contribute 5% of what the employee contributes annually and those contributions are invested to increase the account's value. The employer's contribution is called a company match. Contributions are typically invested on the employee's behalf, but many plans allow the employee to choose from several options how the contributions are invested.

For instance, many employees invest their contributions in mutual funds and even stock in their employer.

As investment amounts fluctuate, the value of a defined contribution plan will do the same, showing earnings and perhaps losses over a period of time. As long as funds remain in retirement accounts, the earnings of a defined contribution plan remain tax-free, allowing the contributions to grow to a larger amount than if the employee had to pay income taxes. Ultimately, the balance of a defined contribution plan account will be based on the employee's contribution, the employer's contribution, and any gains or losses in the value of the employee's investments rather than a specified monthly payment after the employee's retirement (known as Defined Benefit Plan).

Advantages such as tax-deferred savings and the potential for company matching make defined contribution plans attractive to those wishing to start a retirement plan as well as employers whose goal is to recruit and retain more employees. There are several types of defined contribution plans, the most popular being the 401(k) plan. Under this plan, employees deduct a portion of their paycheck before taxes to contribute to their account, to which their employers may also contribute. Taxes on contributions and earnings will be postponed until funds are actually withdrawn from the account, which is typically done at retirement. However, tax penalties in addition to income taxes will apply if funds were withdrawn from a 401(k) (or other tax-deferred retirement plan) before the participant reaches the age of 59½. In addition, after the participant reaches the age of 70½, the Internal Revenue Service (IRS) requires the employee to begin taking distributions, known as minimum distributions, each year. The 401(k) plans are also flexible because they may be moved to another employer or to another retirement plan, which is commonly known as rollover; however, such moves should be handled carefully to avoid tax penalties and income taxes.

Upon retirement, a defined contribution plan participant (employee) may have several options of how their account funds may be distributed. For instance, some plans allow the employee to take annual installments for usually not less than 2 years but no more than 15 years, and under some plans, funds may be converted into an annuity payable over the employee's (and sometimes the employee's spouse's) life. Other plans permit the employee (or require the employee) to take a lump-sum payment in which all account

funds are taken upon retirement. Upon their withdrawal, the funds are subject to income tax, and since this is an irrevocable decision, it is often advised that before choosing the distribution method, the employee meet with a tax advisor who will assess their financial situation and assist the employee in making this difficult decision.

In addition to the 401(k), there are numerous types of defined contribution plans that may be tailored according to the employer/employee's needs. Some of these plans include the 401(a), 403(b), 457, Keogh, simplified employee pension (SEP), individual retirement account (IRA), and Savings Incentive Match Plan for Employees of Small Employers (SIMPLE). While some plans are flexible to allow employers to adapt them to their greatest needs, minimum employee standards for such plans are established by the Employee Retirement Income Security Act (ERISA) of 1974, a federal law that governs all retirement plans in private industry. Such standards include the employer's responsibility to properly inform participants with information about their plan and required accountability for those who manage retirement plans among other standards. In addition to establishing minimum criteria for retirement plans, ERISA also establishes standards for health plans and other employer-provided benefits.

Related Topics

➤ [Defined benefit plan](#), ➤ [Financial planning](#), ➤ [Individual retirement account](#), ➤ [Retirement](#)

Suggested Readings

US Department of Labor, Employee Benefits Security Administration (2003) What you should know...about your retirement plan. US Department of Labor, Washington, DC. Available on: www.dol.gov.ebsa

Suggested Resources

Government website for the US Department of Labor's Employee Benefits Security Administration. Provides a great deal of information regarding retirement plans in addition to other employer-provided benefits. www.dol.gov.ebsa

Official publication of the Financial Planning Association. A vast selection of articles from *Journal of Financial Planning* that includes but is not limited to selections about various types of retirement planning. www.fpanet.org

Tax Information for retirement plans for participants/employees, plan sponsors/employers regarding that includes articles. Site includes an online resource guide, articles, and additional resources. www.irs.gov/retirement

Deinstitutionalization

Tambra K. Cain

There was a time, not too long ago, when growing old most likely meant moving to a nursing home. This was especially true if the older person had a physical or mental disability. Options for older adults have been changing for some time. Nursing homes are no longer the only type of facility that is available to assist older adults; now, there are assisted living facilities, residential homes, personal care assistants, etc. With these changes, there has been a movement toward “deinstitutionalization.” In the literal sense, this means to move from an institution. However, for most senior adults it means living in the least restrictive environment possible. It means being independent and having choices about where to live and how to live.

As we age, we are threatened with the loss of autonomy. If we suffer from some physical or mental disability, such as Alzheimer’s disease, then we are at an even greater risk for losing control of our own lives. Consumer-directed care is where informed consumers make informed choices about the services that they receive, where they receive, and how they receive.

In 1999, the US Supreme Court laid the foundation for vast deinstitutionalization among America’s senior population when it handed down its ruling in *Olmstead v. L.C. ex rel Zimring* (Olmstead). *Olmstead* is a case based on the Americans with Disabilities Act (ADA). It gives civil rights protections to those with disabilities. This case held that states were prohibited from unnecessarily institutionalizing persons with disabilities and from refusing to treat disabled persons in the most integrated setting appropriate to their needs. Furthermore, states must make reasonable

modifications to their programs in order to accomplish this goal.

Related Topics

➤ Disability, ➤ Discrimination, ➤ Institutionalization, ➤ Nursing home, ➤ Stigma

Suggested Readings

- Ericsson K, Mansell J (eds) (1996) *Deinstitutionalization and community living: intellectual disability services in Britain, Scandinavia, and the United States*. Chapman & Hall, New York
- Loverde J (2000) *The complete eldercare planner: where to start, which questions to ask, and how to find help*, 2nd ed. Three Rivers Press, New York
- Sager AP (1983) *Planning home care with the elderly: patient, family, and professional views of an alternative to institutionalization*. Ballinger, Cambridge, MA
- Stroman D (2003) *The disability rights movement: from deinstitutionalization to self-determination*. University Press of America, Lanham, MD

Suggested Resources

The Official Americans with Disabilities Act (ADA) Website. <http://www.usdoj.gov/crt/ada/adahom1.htm>

Delirium

Daniel Brian Keaton

Delirium is an acute disturbance of consciousness (i.e., reduced clarity of awareness of the environment) with reduced ability to focus, sustain, or shift attention. This results in a cognitive (e.g., memory deficit, language disturbance, and disorientation) or perceptual disturbance that is not accounted for by a dementia. It may coexist with agitation, tremulousness, and hallucinations. Delirium usually develops over a short period of time (usually hours to days) and tends to fluctuate during the course of the day. Delirium is diagnosed when there is evidence from the history,

physical examination, and laboratory findings that the disturbance is caused by the direct physiological consequences of a general medical condition, substance intoxication/withdrawal, or as a side effect of medication. Epidemiologically, it is one of the most common mental disorders encountered in patients with a medical illness, particularly among the elderly.

There are four basic principles of prevention and therapy: (1) avoiding factors known to cause or aggravate delirium, (2) treating the underlying acute illness, (3) providing supportive and restorative care to prevent further physical and cognitive decline, and (4) controlling dangerous behaviors so that the previous three steps can be accomplished.

Avoidance of the factors that cause or aggravate delirium is challenging, as delirium can be a multifactorial disorder. The most commonly identified risk factors are underlying brain diseases such as dementia, stroke, or Parkinson's disease. Other factors include advanced age and sensory impairment (i.e., absence of a clock/watch, spectacles, and hearing aids); consequently, elderly patients are at the highest risk. Factors that may precipitate delirium include polypharmacy (particularly psychoactive drugs), infection, dehydration/malnutrition, immobility (including restraint use), bladder catheters, and long-term care/intensive care unit (ICU) stays. In the perioperative setting, untreated pain and inadequate analgesia, increase the risk by ninefold; opioid use often precipitates delirium that can be reversed by adjusting dosage or correcting metabolic disturbances. Strategies to reduce the risk of delirium by managing many of the modifiable risk factors are effective; therefore, older patients should be provided adequate medical treatment and structured activities as feasible for their condition.

Identification and treatment of underlying illnesses are paramount in the prevention and treatment of delirium, as virtually any medical condition can precipitate delirium in a susceptible individual. The conditions most commonly identified in the disorder include: fluid and electrolyte disturbances, infections, drug toxicity, metabolic disorders, low blood perfusion (low oxygenation to the brain) states, or intoxication/withdrawal from alcohol and sedatives. When the underlying acute illness is identified, specific therapy is directed toward the medical condition rather than the delirium itself.

With respect to supportive and restorative care, the delirious patient is at risk for complications of

immobility and confusion, leading to a high prevalence of irreversible functional decline. It has long been assumed that the outcome of delirium could be improved by earlier identification of the disorder and comprehensive intervention to treat underlying causes may prevent subsequent complications such as immobility, aspiration (breathing food or fluid into the lungs), and skin breakdown. Early identification and comprehensive geriatric consultation for patients with established delirium may improve functional outcome by focusing on maintaining adequate hydration and nutrition, enhancing mobility and range of motion, treating pain, preventing skin breakdown, ameliorating incontinence (seen in over half of delirious patients), and minimizing the risk of aspiration pneumonia (lung infection due to aspiration). This team approach should also include family members and caregivers, whose resources must be realistically assessed since delirium may require months to fully resolve.

Managing disruptive behavior is the most challenging aspect of delirium therapy. Agitated or combative behavior is found in less than one third of the older patients with delirium. Often, acute confusion places the patient at risk for falling, wandering off, or inadvertently removing intravenous lines. The hospital environment, characterized by high ambient noise, poor lighting, lack of windows, frequent room changes, and restraint use, often contributes to worsening confusion. Physical restraints should be used only as a last resort since they frequently increase agitation and create additional morbidity. Mild confusion and agitation may respond to interpersonal and/or environmental manipulations, frequent reassurance, touch, and verbal orientation from a familiar person. Prompt symptom control is occasionally necessary to prevent harm or allow evaluation and treatment; a cautious trial of psychotropic medication is warranted in these circumstances. A review by the Cochrane Collaborative, an international research group, found only one high-quality study that demonstrated low-dose haloperidol (0.5–1.0 mg) to be most beneficial to control agitation or psychotic symptoms. Older patients with dementia are more likely to experience severe extrapyramidal effects (i.e., restlessness that may be mistaken for worsening delirium, thereby inviting escalating doses of the culprit medication). Benzodiazepines, such as Valium, Ativan, and Xanax, have a more rapid onset of action than the antipsychotics, but they commonly

worsen confusion and sedation. Medications such as benzodiazepines are the drugs of choice only in cases of sedative drug and alcohol withdrawal.

Related Topics

- ▶ Dementia, ▶ Drug interactions, ▶ Medication management, ▶ Minimental status examination, ▶ Polypharmacy

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th ed, Text revision. American Psychiatric Association, Washington, DC
- Hahn RK, Albers LJ (2006) Psychiatry. Current Clinical Strategies Publishing, Laguna Hills, CA
- Sadock JB, Sadock, VS (2000) Comprehensive textbook of psychiatry, 7th ed. Lippincott, Williams & Wilkins, Philadelphia

Suggested Resources

- Rose BD, Rush JM (2005) Up to date. <http://www.utdol.com/enterprise.asp>

Delusional Disorder

Sara G. West

Delusional disorder is a psychotic disorder defined by the presence of one or more nonbizarre delusions with a relative absence of other psychopathology. Delusions are defined as fixed, false beliefs, and the term “non-bizarre” refers to the fact that these situations could occur in reality. It is an uncommon disorder and less severe than other psychotic disorders. There are seven subcategories of the disorder that are defined by the type of delusion that is present. Epidemiology, diagnosis, subtypes, treatment, and prognosis of delusional disorder will be discussed.

Incidence of delusional disorder is low; estimates range from 0.7 to 30 per 100,000 people. This disorder accounts for 1–2% of admissions to psychiatric

inpatient units. The onset may occur at any age, but it is most common in the mid-thirties. It appears to affect both sexes equally. The most common type is persecutory delusions. The families of those diagnosed with delusional disorder tend to have a greater incidence of jealousy, suspiciousness, and paranoia, but there is no clear evidence to suggest these families have an increased rate of schizophrenia.

In order to receive a diagnosis of delusional disorder, the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR), used as a reference for diagnoses, requires that the patient suffer from a nonbizarre delusion for at least 1 month. Other psychotic symptoms, such as auditory and visual hallucinations, are not often seen. Tactile and olfactory hallucinations can be present if they fit with the delusional system. The individual must not meet the criteria for schizophrenia, as that diagnosis would supercede a diagnosis of delusional disorder. Individuals with delusional disorder have relatively normal behavior and function with the exception of how their actions are influenced by their delusional systems.

It is important to consider the differential prior to diagnosing delusional disorder. Drug abuse, depression, schizophrenia, dementia, and delirium can all cause paranoia and other symptoms consistent with delusional disorder. Seniors are particularly susceptible to paranoia, with up to 4% of them exhibiting persecutory ideas. Some risk factors for this include isolation, illness, medications, and loss of auditory and visual acuity.

There are seven categories of delusions that may exist when one is diagnosed with delusional disorder. (1) *Erotomantic delusions* involve the belief that someone is in love with the delusional individual. The person who is the object of the delusion often has a higher social position than the individual maintaining the delusion and may be harassed secondary to the delusional system. (2) *Grandiose delusions* involve thoughts of exaggerated wealth, power, knowledge, or social stature. They may also be religious in nature. The individuals maintaining these delusions often contact the media or speak out to the public in order to share their beliefs with the society. (3) *Jealous delusions* involve the belief that the individual's significant other is unfaithful. Those maintaining these delusions have the highest risk of violence in patients with delusional disorder, and it is often directed toward their partner or their partner's perceived love interest.

(4) *Persecutory delusions* involve the thought that the person or someone to whom he or she is close is being threatened in some manner. These individuals are often involved in legal actions against those that they fear. (5) *Somatic delusions* involve the belief that the individual is suffering from physical maladies despite evidence to the contrary. There are few subcategories proposed under this type including: olfactory (presence of a foul odor about the individual), body dysmorphic (focus on an incorrectly identified misshapen body part), and infestation (infested with parasites or insects). (6) *Mixed delusions* allow for the presence of multiple types of delusional systems with no type predominating. (7) *Unspecified delusions* make up the last category and can be applied to delusions that do not fit the other criteria.

Delusional disorder is often difficult to treat. Frequently, the individual will deny the presence of a mental illness and is initially resistant to treatment. Supportive psychotherapy is a good preliminary approach in order to combat the individual's feelings of demoralization and isolation. Later in treatment, cognitive therapy may be helpful. Pharmacotherapy may also prove useful; selective serotonin reuptake inhibitors (SSRIs), have been shown to be beneficial. Antipsychotics may aid in controlling the agitation that accompanies the delusional beliefs. However, the individual's disbelief regarding their diagnosis may serve to undermine their treatment.

Once the diagnosis of delusional disorder has been made, it is commonly a chronic disorder. The prognosis, however, does appear more favorable than other psychotic disorders, including schizophrenia. Approximately one third to one half of the individuals will achieve remission.

Related Topics

🔗 [Cognitive behavior therapy](#), 🔗 [Medication management](#), 🔗 [Psychotherapy](#), 🔗 [Schizophrenia](#)

Suggested Readings

American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th ed, Text revision. American Psychiatric Association, Washington, DC, pp 323–328

Manschreck TC (1996) Delusional disorder: the recognition and management of paranoia. *J Clin Psychiatry* 57 Suppl 3:32–38

Dementia

Mark Lyubkin

Dementia, a devastating syndrome of multiple etiologies, is estimated to affect more than six million people in the United States. The risk of dementia increases with age, doubling its prevalence every 5 years above age 60. Because the proportion of the US population above 65 is rapidly increasing, dementia is emerging as a major public health problem of the twenty-first century. According to a 2004 report from the Centers for Disease Control, dementia was the eighth leading cause of death in the United States in 2001. The cost of the dementia syndromes to the United States has been estimated at up to \$140 billion per year in caregiving costs, lost productivity, and medical and institutional care.

Dementia syndrome refers to a group of symptoms related to a sustained decrease in intellectual function from previous levels. Memory decline is always a part of this syndrome along with combinations of other impairments such as problems with judgment, language, recognition, or performing tasks. Personality change can also occur as a component. The dementia syndrome usually begins gradually, although in some cases it can occur suddenly, depending on the underlying cause.

There are multiple causes of the dementia syndrome, with over 60 disorders having been associated with dementia. However, the most common causes are (1) Alzheimer's disease, (2) vascular disease, and (3) diffuse Lewy body dementia. Others are less common, but debilitating causes of the dementia syndrome include Parkinson's disease, Huntington's disease, and progressive supranuclear palsy. Potentially reversible causes of dementia include depression, medication effects, thyroid disease, vitamin deficiencies, and syphilis.

Alzheimer's disease is the most common type of dementia, accounting for 50–60% of the cases. Risk of Alzheimer's is age-related, with the risk above age 65 being about 5–8%, while risk above age 85 increasing to 25–50%. Other risk factors for developing Alzheimer's disease include Down's syndrome, history of head injury, and a family history of dementia. While the risk for Alzheimer's appears inherited in some cases, in other cases, there is no family history. The cause of Alzheimer's disease is not known, but is currently thought to be related to the genetically determined

overproduction of abnormal brain proteins (e.g., beta amyloid) or abnormal brain protein processing and deposition. Microscopically, the brains of Alzheimer's sufferers show abnormal "plaques" and "tangles." The impact of Alzheimer's disease on brain chemistry is a prominent degeneration of systems involving the neurotransmitter "acetylcholine" that is critical to intact cognitive function, although other neurotransmitters are also involved. The clinical picture of a typical patient with Alzheimer's dementia is a description of a gradual decline that may not have been noted by family members until difficulties became obvious several years after onset, such as getting lost while driving or leaving the stove burners on.

Vascular dementia accounts for 10–20% of dementias. This type of dementia occurs when blood clots block small blood vessels in the brain and destroy brain tissue. The major risk factor for vascular dementia is high blood pressure or hypertension. The clinical picture of vascular dementia differs from that of Alzheimer's disease; in vascular dementia, it is more common to see a stepwise decline. Treatment of high blood pressure or other cardiovascular disease can sometimes halt the progression of the illness but will usually not reverse symptoms. Often, a clue to vascular dementia is an association in time with a stroke and the onset of sustained memory problems. Strokes are not always obvious in terms of their symptoms, and neuroimaging, such as magnetic resonance imaging (MRI), can detect strokes that were clinically silent.

Dementia with Lewy bodies (DLB) likely occurs in 15–25% of elderly patients with dementia. In DLB, patients have both cognitive impairment as well as symptoms of Parkinson's disease (e.g., muscular rigidity, shuffling gait when walking, tremor in the hands, limited facial expression). In addition, other symptoms such as falls, hallucinations, false beliefs (delusions), fluctuations in alertness or cognition, and fainting episodes may be present. Patients with DLB are very sensitive in terms of side effects to medications called neuroleptics or antipsychotics, which are often used to treat behavioral symptoms in dementia.

Behavioral or neuropsychiatric symptoms commonly occur in dementia of all types and include depression, apathy, agitation, delusions, hallucinations, and sleep problems. A recent study found that 80% of participants exhibited at least one of these symptoms at some point after the onset of the memory disturbance. These symptoms, as opposed to the core cognitive symptoms of dementia, tend to be the

ones that create problems for patients, families, and caregivers, and can lead to earlier placement in nursing homes.

The assessment of a person suspected of having dementia should include careful history, physical/neurological examination as well as selected laboratory testing. On examination, focal neurological problems should be identified and the patient should be screened for depression as well as memory problems. The latter is usually screened for with the "mini-mental state examination" (MMSE), a cognitive screening test that can easily be performed by physicians during an office visit. MMSE neither confirms nor rules out the presence of dementia; however, scores below a certain cutoff indicate the need for further workup and attention. Laboratory screening for thyroid disease and vitamin B12 and folate deficiency is also recommended. Imaging of the brain, such as a noncontrast computerized tomography (CT) or magnetic resonance imaging (MRI) scan is often appropriate. Neuropsychological testing is used both to examine patterns of cognitive impairment that may be helpful to distinguish among the types of dementia and to establish a baseline of cognition for the individual patient.

Dementia includes both psychosocial and pharmacological treatments. Psychosocial treatments help the patient come to terms with their diagnosis as well as to work with the caregiver and family system in maintaining good activity levels for the patient and in reducing the burden on caregivers. Referral to dementia support groups and resources is especially helpful for patients and their families.

Pharmacological treatment includes treatment of the core cognitive symptoms, and secondary behavioral complications. Currently, the mainstay of treatment for the core cognitive symptoms in Alzheimer's disease (also used in DLB and to a lesser extent, vascular dementia) is a class of drugs known as the "cholinesterase inhibitors" (donepezil, rivastigmine, and galantamine). Notably, while these agents do not reverse the underlying illness of dementia, they slow its speed of decline and in some cases, may improve problematic behaviors. Side effects of these medications include nausea, diarrhea, and loss of appetite. Memantine, a new medication with a different mechanism than cholinesterase inhibitors, has also been shown to reduce the rate of decline in patients with Alzheimer's disease. Ultimately, it is thought that actual disease modification in Alzheimer's disease will occur from preventing accumulation of abnormal brain protein

(beta amyloid). For vascular dementia, treatment of underlying vascular risk factors (e.g., smoking, hypertension, diabetes, and heart disease) is important in preventing further damage to the brain from strokes.

Treating the behavioral complications of all types of dementia is another very important part of treatment. Behavioral approaches that can be used in concert with medications can be effective in decreasing problem behaviors and improve daily functioning. Medications should be tailored to both the individual patient and the accompanying constellation of symptoms such as neuroleptics or antipsychotics (to treat hallucinations, paranoia, or delusions), antidepressants (to treat depression and anxiety), anticonvulsants (for mood stabilization and agitation), and trazodone or Desyrel (for sleep difficulties and agitation). Benzodiazepines (diazepam or Valium, alprazolam or Xanax, lorazepam or Ativan) should generally be avoided or minimized due to concern of side effects (e.g., worsened cognition and falls) and especially of “paradoxical disinhibition” (reaction of agitation/worsened behaviors as opposed to the desired calming effect).

Drugs with prominent “anticholinergic” activity should be avoided in individuals with dementia due to their tendency to worsen cognitive impairment and causing delirium (an acute confusional state). Latter medications include both prescription medications (tricyclic antidepressants, some older antipsychotic medications such as chlorpromazine or Thorazine; antispasmodic bladder agents such as oxybutynin or Ditropan; antiemetic agents such as promethazine or Phenergan; and prochlorperazine or Compazine; anticholinergic medications such as trihexyphenidyl or Artane and benztropine or Cogentin) and over-the-counter preparations containing diphenhydramine (Benadryl, Tylenol PM, Unisom). Antipsychotic medications may also be associated with slightly increased mortality risk in individuals with dementia.

The vast majority of people with dementia are cared for by their family members or other informal caregivers. Even when placement is needed in alternative living settings, family and informal caregivers continue to provide vital care to their loved ones with dementia. While caregivers can derive great satisfaction from this role, they also face chronic stress that can result in a variety of health problems. Caregivers need to cope with changes and losses in their relationship with the affected patient. The role of parent and child may be reversed, and the intimacy and companionship shared by spouses or parents may be lost. In some

cases, caregivers may find themselves caring for family members with whom they have had a difficult relationship. Friends may not know how to behave or help. Siblings may disagree on treatments or living situations for the affected family member. All of these changes can contribute to the stress of caregiving. The warning signs of “caregiver stress” include exhaustion, insomnia, irritability, problems with concentration, physical health problems, impatience, low mood, excessive worry, feelings of isolation or loneliness, resentment, and guilt.

Caregiver stress can be reduced by getting respite from caregiving including regular physical exercise, healthy diet, learning relaxation techniques, getting regular medical care, and using respite opportunities to socialize and get rest. Support and education groups provide caregivers’ knowledge about particular conditions, helpful resources in the community, and techniques for handling difficult behaviors. Groups also provide a safe and encouraging place to express fears and celebrate successes. Future planning for legal, financial, and medical situations can also relieve stress, and improve well-being.

Related Topics

[▶ Alzheimer’s disease](#),
 [▶ Caregiving and caregiver burden](#),
 [▶ Delirium](#),
 [▶ Disruptive behavior](#),
 [▶ Informal caregiving](#),
 [▶ Long-term care](#),
 [▶ Mini-mental status examination](#),
 [▶ Pseudodementia](#),
 [▶ Respite care](#)

Suggested Readings

- American Psychiatric Association (1997) Practice guideline for the treatment of patients with Alzheimer’s disease and other dementias of late life. American Psychiatric Press, Washington, DC
- Anderson RN, Minino AM, Fingerhut LA et al (2004) Deaths: injuries, 2001. *Natl Vital Stat Rep* 21:1–86
- Doody RS, Stevens JC, Beck C et al (2001) Practice parameter: management of dementia (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 56(9):1154–1166
- Knopman DS, DeKosky ST, Cummings JL et al (2001) Practice parameter: diagnosis of dementia (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 56:1143–1153
- Lyketsos CG, Lopez O, Jones B, Fitzpatrick AL, Breitner J, DeKosky S (2002) Prevalence of neuropsychiatric symptoms in dementia and mild cognitive impairment. *J Am Med Assoc* 288:1475–1483

- Rosenberg RN (2005) Translational research on the way to effective therapy for Alzheimer disease. *Arch Gen Psychiatry* 62:1186–1192
- Ross GW, Bowen JD (2002) The diagnosis and differential diagnosis of dementia. *Med Clin North Am* 86:455–476
- Small GW, Rabins PV, Barry PP et al (1997) Diagnosis and treatment of Alzheimer disease and related disorders. Consensus statement of the American Association for Geriatric Psychiatry, the Alzheimer's Association, and the American Geriatrics Society. *J Am Med Assoc* 278:1363–1371

Suggested Resources

- Alzheimer's Association, (800) 272–3900. www.alz.org
- American Association for Geriatric Psychiatry. www.aagppga.org
- National Family Caregivers Association, (800) 896–3650. www.nfcacares.org

Dementia Advocacy International

Tambra K. Cain

Dementia Advocacy and Support Network International (DASNI) is a worldwide organization whose purpose is to improve the quality of life for those people who have been diagnosed with dementia. DASNI was first formed in 2001 as Dementia Advocacy and Support Network (DASN), which later became DASNI. It is a nonprofit corporation that was created by people with dementia for people with dementia. However, DASNI has evolved into a larger entity, whose purpose is now to exchange information about dementia, promote services for persons with dementia, promote self-respect and dignity, and to align persons with local Alzheimer's and dementia groups. Currently, only one third of DASNI's members have dementia, and the remaining two-thirds are mostly caregivers and care professionals.

DASNI is also an e-mail community that has online chat rooms and Internet support groups. Dementia can be isolating, and prohibit those who suffer with it from access to information. DASNI's website, <http://www.dasninternational.org>, helps ease the isolation and loneliness of those people who suffer from

dementia, by connecting them with others who have dementia and by providing them with critical information and referrals.

Related Topics

- Alzheimer's disease, ➤ Dementia, ➤ Social support

Suggested Readings

- Bryden C (2005) *Dancing with dementia: my story of living positively with dementia*, Jessica Kingsley, London
- Kaye L (1997) *Self-help support groups for older women: rebuilding elder networks through personal empowerment*, Taylor & Francis, Washington, DC
- Lee JL (2003) *"Just love me": my life turned upside down by Alzheimer's*, Purdue University Press, West Lafayette, IN
- Levine C (2004) *Always on call: when illness turns families into caregivers*, Vanderbilt University Press, Nashville, TN

Suggested Resources

- DASN International Official Website, November 2005. <http://www.dasninternational.org>

Demographic Transition Theory of Aging

Jessica Diggs

Demographic Transition Theory (DTT) was developed by Frank Notestein in 1945. This theory provides an explanation of how fertility and mortality rates impact the age distribution and growth rate of populations. The ideals expressed in the DTT originate with the work of Warren Thompson in 1929, who described population growth using three categories of countries (groups A, B, and C). Group A includes Northern Europe, Western Europe, and the United States. These countries were predicted to experience a slow rate of population growth and eventually population aging

and decline due to both low fertility and mortality rate. Group B includes Eastern and Southern Europe where both fertility and mortality rates decline; however, the decrease in mortality precedes that of fertility and occurs at a faster rate than that of fertility. Low rate of mortality coupled with higher fertility rate, would result in a period of rapid population growth and an increasing proportion of younger individuals. As fertility rates slow, population growth would also be reduced, eventually reaching a plateau and later population decline, as with group A. Thompson's group C comprises countries in which both fertility and mortality are high. These countries house the majority of the world's population and have the greatest potential for population growth; however, increased rates of mortality counterbalance the increased rates of fertility, leading to an increased proportion of middle-aged individuals.

Two other fundamental concepts of DTT were also introduced by Thompson. The first is that group membership occurs along a continuum whereby over time (30–40 years) those countries that were part of group B would join group A and those countries in group C would become part of group B, with the overall flow from high fertility and mortality to low fertility and mortality. Thompson also observed that that the time period necessary for this transition became shorter over time. In 1934, the French demographer Adolphe Landry published a similar work *La Révolution Démographique*.

Although several attempts and parallel statements about population growth and stages of fertility and mortality decline have been introduced, Frank Notestein is credited with the development of classical DTT. Similar to his predecessors, Notestein posits that population growth occurs in three stages of varying levels of mortality and fertility, which he refers to as stages 1, 2, and 3. These stages closely align with Thompson's groups C, B, and A, respectively. According to Notestein, countries will transition through all three stages, each of which has an associated potential for population growth and aging. Notestein attributes the lag between initial mortality and later fertility decline to the greater influence of social norms for marriage, family structure, and religion on fertility decisions, which change slowly.

Critics of this theory cite several limitations including an overemphasis on economics in the explanation of the transition and lack of consideration of the

impact of immigration or the impact of differential rates of natural fertility on the transition. The underlying drivers of demographic transition are numerous and broad in scope, and include sociologic, socioeconomic, demographic, and cultural factors. The mortality decline may be attributed to several factors closely linked to modernization. Medical and technological advances allow for improved sanitation and hygiene, pasteurization of food products, and the development of immunizations and antibiotics. Improvements in communication and transportation, while creating the potential for global disease transmission, open channels for the transfer of information and technology to hasten the rate at which transition could propagate globally.

The decline in fertility is often attributed to the development and utilization of contraception and family planning initiatives; however, economic and cultural factors also play a role. One example is the historical shift in the way in which children were viewed in industrialized nations. Before the enactment of child labor laws and policies mandating education, children were viewed as economic contributors to the family unit in which the direction of wealth transfer was from younger generations to older generations. As the position of children in the workforce changed and the direction of wealth transfer reversed to be from older to younger generations, more emphasis was placed on investing in the child's education and future, making having less children more economically sound. In parallel, the historical change in women's roles resulted in increased economic opportunities for women coupled with contraception and cultural norms favoring individual attainment and delayed childbearing.

The public health implications of the demographic transition and population aging are vast and vary according to the transitional stage of the country. The composition of disease has changed from infectious disease associated with short duration and high mortality, to chronic disease associated with long duration and decreased mortality, resulting in an increase in the proportion of elderly people and that of people with disabilities. The cost associated with this transition is significant and due to the changing age distribution, there is a smaller proportion of working age individuals contributing revenue to cover these expenses. Less developed nations and those with the youngest populations face even greater challenges in this regard.

In the United States, concerns about population aging have already begun to fuel policy decisions and debate (i.e., Medicare, Medicaid, and social security reform) and social change (expansion of geriatric medicine and social support systems). Over time the structure of care for older people has changed. Given the dynamic social, demographic, and economic structure of the world, individuals and families should begin planning and making financial and living decisions as early as possible to ensure that our elders have adequate resources for their golden years.

Related Topics

[Baby boomers](#), [Centenarians](#), [Financial planning](#), [Medicaid](#), [Medicare](#), [Mortality](#), [Social security](#)

Suggested Readings

- Kirk D (1996) Demographic transition theory. *Popul Stud (Camb)* 50:361–387
- Peck DL, Hollingsworth JS (1996) Demographic and structural change the effects of the 1980s on American Society. Greenwood Press, Westport, CT
- Redburn DE, McNamara RP (1998) *Social gerontology*. Auburn House, Westport
- Sen K (1994) *Ageing: debates on demographic transition and social policy*. Zed Books, London
- Trovato F (ed) (2002) *Population and society: essential readings*. Oxford University Press, Oxford, UK

Dentures

Edward E. Best

When natural teeth are lost it is desirable to replace them as soon as possible. Normally there is sufficient healing after extraction to begin denture construction in 6–8 weeks. If the missing teeth are not replaced any remaining teeth will have increased force placed on them, and the surface area available to chew food will be decreased. The purpose of dentures is to restore the

person's function and aesthetics, and to maintain the health of the oral tissues and any remaining teeth.

When some teeth are extracted but some remain, the person is said to be partially edentulous. If all the teeth have been extracted the person is said to be completely edentulous. Partially edentulous people may have their teeth replaced by a removable or fixed partial denture. Completely edentulous people may have their teeth replaced by complete dentures. The artificial tooth that replaces a missing natural tooth is called a pontic.

Fixed partial dentures are also called bridges. Fabrication of a bridge requires a tooth to remain on either side of the extraction site. A pontic to replace the missing tooth or teeth will be supported by teeth on either side of the space called abutment teeth. Abutment teeth need to be healthy enough to assume the additional force that was previously placed on the missing tooth or teeth. The bridge is cemented on to the abutment teeth as a single unit, and cannot be removed by the patient. Bridges can be metal such as gold, porcelain, or metal with porcelain fused onto it to give it the appearance of natural teeth.

Removable partial dentures utilize the remaining teeth and the soft tissue of the residual ridges of the extraction sites for their support. Pontics are placed on a saddle that fits in close contact to the residual ridge remaining where the teeth were extracted and the chewing force on the pontics is transferred by the saddle through the soft tissue to the bone below. Removable partial dentures may have a metal framework or may be made only of acrylic. Clasps are placed around some of the remaining natural teeth to help hold the partial denture in place against the tissue. The chewing force is shared between the natural teeth and the saddles on the residual ridges.

Completely edentulous patients may have their teeth replaced by complete dentures. Complete dentures have acrylic bases that fit in close contact with the residual ridges remaining after the teeth are extracted. The maxillary denture covers the entire palate. Since the mandibular denture allows space for the tongue, it is "U" shaped and covers only the residual ridges.

Denture teeth are embedded in the acrylic that is colored and contoured to look like normal gingival tissue. Color and shape of the teeth are selected to fit the size of the person's mouth and to give a natural appearance. Because no natural teeth remain, denture teeth must be placed to support the facial contours and

to support the muscles of the jaw when chewing. They must be positioned to allow these muscles to rest when not chewing and to allow the tongue to aid in food placement when chewing and swallowing.

Because complete dentures rely on capillary attraction to hold the bases to the tissue, the maxillary denture with its shape and greater surface area is normally well retained. The mandibular denture, however, is much less retentive and the denture wearer must learn to help hold the denture in place with the muscles of their lips, tongue, and cheeks, or use a denture adhesive. The retention of the dentures requires the tissues to remain moistened by the saliva. Many denture wearers are taking medications that decrease salivary flow and they have a dry mouth, a condition known as xerostomia.

Xerostomia can also be produced by chemotherapy or radiation that affects the salivary glands. A person with this condition may use a saliva substitute to moisten their mouth, or they may rinse frequently with water to try to maintain moisture in their mouth.

Complete dentures can only restore a fraction of the chewing efficiency of the natural teeth. The denture bases apply pressure through the oral soft tissues to the bone below. This pressure causes the residual ridges to resorb continuously over time and the dentures will become less stable and comfortable. For this reason, an attempt should be made to retain the natural teeth as long as possible. As the residual ridges resorb and the dentures become less stable, it will necessitate the denture bases to be relined, or a new set of dentures to be fabricated.

With proper care of dentures and regular visits to the dental clinic, the function of dentures can be maintained, whether partial or complete dentures. This maintenance will contribute to the denture wearer's ability to chew and provide adequate nutrition, and subsequent overall health, as well as their appearance and comfort.

Related Topics

• Oral health

Suggested Resources

Centers for Disease Control. <http://www.cdc.gov/OralHealth/>

Depression

Virginia E. Ayres

Depressive disorder is the most common mental illness, with a lifetime prevalence rate of 16.6% for the general population and 10.6% for those aged 60 and above. The risk of suicide is high, up to 15% in those who have the severe form of the disorder. Those above age 55 also have an increased death rate. Major depression frequently occurs with other mental disorders (e.g., anxiety, substance abuse, eating disorders, and borderline personality) and medical conditions (e.g., heart attack, stroke, Parkinson's, and hypothyroidism). Although depression is one of the most successfully treated mental disorders when detected and treated appropriately, it is often unrecognized and undertreated.

Depression is one of the many mood disorders classified in the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR). Other mood disorders include dysthymic disorder, depressive disorder not otherwise specified, bipolar I disorder, bipolar II disorder, cyclothymic disorder, bipolar disorder not otherwise specified, mood disorder due to a general medical condition, substance-induced mood disorder, and mood disorder not otherwise specified. Mood disorders as a class have a lifetime prevalence rate of 20.8%. For any mood disorder, the median age of onset is 30 years, with most mood disorders having their onset between the ages of 18 and 43. Those aged 60 and above have a lifetime prevalence rate of 11.9% for any mood disorder.

The DSM-IV-TR specifies that at least five of nine symptoms be present nearly each day for most of the day for at least 2 weeks for a diagnosis of major depression to be met: depressed mood, decreased interest/pleasure, appetite changes, sleep difficulties, psychomotor changes, loss of energy, problems with concentration, and increased thoughts of death or suicide (ideation, plans, and attempts). Either depressed mood (children and adolescents may present with irritable mood) or decreased interest/pleasure must be one of the nine symptoms to meet the criteria. Also, the symptoms listed must be a significant change from usual functioning, cause significant distress, and impair the ability to function in any of the various

roles a person may have (e.g., employee, spouse, or parent).

Older adults and inpatients are more likely to have depression with melancholic features that is mainly characterized by a complete loss of pleasure in activities and/or is not reactive to pleasurable stimuli even temporarily. There is usually a distinct quality to the mood that is different from what is felt when someone close has died. Other symptoms may include feeling worse in the morning, significant weight loss, waking up 2 hours early, excessive guilt, and psychomotor changes (agitation/retardation).

Depression can be mild, moderate, or severe depending on the number of symptoms present and the level of impairment in functioning. Although depression may present with psychotic symptoms at any age, it is more common in late life. Psychotic symptoms are usually congruent with depressive themes (e.g., guilt, punishment) but not always. Dysthymia is a chronic depressive condition that lasts for 2 years or more, but with fewer symptoms than are required for a diagnosis of major depression. Approximately 10% of those with dysthymia will go on to suffer a major depression.

The average age of onset for major depression is in the mid-twenties, with some evidence indicating that the age of onset of depression is decreasing. There is no consensus on what causes depression. There seems to be some genetic component as it is 1.5–3 times more common in first-degree relatives. Females of any age are twice as likely to have major depression than males. Sleep abnormalities, such as various disturbances in rapid eye movement (REM) activity, are present in 40–60% of outpatients and these may precede depressive episodes and/or continue after the episode remits. For some, major depression may be linked to changes in cerebral blood flow, a dysregulation of neurotransmitters (e.g., serotonin and norepinephrine), or disturbances in hormones (e.g., glucocorticoid secretion and growth hormone). Caution must be exercised when considering these findings since they are not specific to depression. In older adults, changes in brain functioning due to aging and disease may increase the vulnerability to depression (degenerative dementia and vascular dementia). Major depression appears to occur after significant stress such as divorce, childbirth, or death of someone important, especially in first or second episodes. As episodes become more frequent, there may be less of a connection to stressors. For older adults with physical problems, stressors

related to the onset of depression may include medication side effects, pain, financial worries, and fears about becoming a burden to others.

There is a low rate of depression among community dwelling older adults. One study indicates that although one third of adults aged 60 or above complained of depressive symptoms, only 1% of them met the criteria for a major depressive episode. This finding leads researchers to wonder if the current assessment tools accurately assess depression in the older population, or, if the low rates of depression found may indicate that older adults have some resilience to life stressors due to experience. However, older adults in acute medical settings and nursing homes have higher rates of depression.

Evaluating depression in elderly adults can be complicated for a number of reasons. Often there are coexisting medical and psychiatric conditions that make diagnosis more complex. When comorbid conditions like these exist, it becomes more difficult to treat either disorder present. Additional information gathered by cognitive testing may be a helpful component in the evaluation of dementia that occurs more frequently in late life. Another factor is that older adults may present to health care professionals with somatic complaints or cognitive symptoms (difficulties with memory, disorientation) rather than with feelings of sadness. When a patient emphasizes these symptoms it can “mask” the depression, making diagnosis more difficult. It is important to accurately identify and begin to treat the depression quickly since the risk of suicide in elderly white males with depression is high, particularly when the depression co-occurs with another mental illness or poor physical health. Taking time to do a careful evaluation and a regular check of suicidal thoughts, plans, and attempts is an important aspect of the treatment plan. Involvement of the family or significant others can help with treatment and recovery.

There are a number of pharmacologic and psychologic interventions available to treat depression. Serotonin reuptake inhibitors (SSRI), serotonin/norepinephrine uptake inhibitors (SNRIs), atypical antidepressants, monoamine oxidase inhibitors (MAOI), and tricyclics. New medications such as the sertraline, paroxetine, fluoxetine, and fluvoxamine (SSRIs), SNRIs (venlafaxine, also available in extended release), and atypical antidepressants (mirtazapine and bupropion) are the most frequently prescribed for geriatric depression. These new medications are less toxic in overdose, better tolerated, and have a lower risk of anticholinergic

and cardiovascular side effects (e.g., orthostatic hypotension, tachycardia, and confusion). This is particularly relevant in the treatment of older adults who are more sensitive to physiologic changes that progress with age.

When prescribing medications to elderly adults it is important to consider a number of issues such as physiologic changes associated with aging, presence of medical conditions, and other medications and substances being taken at the time. To reduce side effects, it is generally recommended that medications be started out at a low dose and increased gradually over time. It is also important to carefully monitor discontinuation of medication due to the possibility of withdrawal syndrome seen especially in the medications with shorter half-life (e.g., sertraline, paroxetine, venlafaxine, and citalopram).

Electroconvulsive therapy (ECT) is an effective and safe treatment for depression in instances where the symptoms are severe, persistent, and refractory to other attempted treatment methods. It has shown equal benefit in young and old, although the greater percentage of those who use ECT are above 60. About 80% of patients have a positive response to ECT, but it appears that some type of maintenance ECT or combination therapy (adding antidepressants) is needed to keep relapse rates low in the year following. Some memory impairment may occur with ECT; however, the use of unilateral electrode placement has reduced the short-term memory loss associated with bitemporal ECT. Any memory loss that does occur appears to remit by 6 months.

Two empirically validated short-term (12–20 sessions) psychotherapeutic treatments include cognitive-behavioral therapy (CBT) and interpersonal psychotherapy (IPT). CBT is designed to target the dysfunctional beliefs, thinking, and behaviors that accompany depression. IPT targets the difficulties or changes in interpersonal relationships that seem to be the most related to the onset of the current episode of depression. Patients treated with either CBT or IPT for 16 weeks experienced symptomatic relief when compared to patients treated with medication. IPT as a maintenance treatment has reduced the likelihood of a recurrence of depression in patients above 59, when used in combination with medication (nortriptyline).

The prognosis for depression is mixed. Those who have had one episode of major depression have a 60% chance of having another. As a history of depressive episodes builds, so does the likelihood of having a

recurrence. In most instances the depression completely remits. In others (30%), some less severe symptoms may remain, suggesting a more complicated course that may require more rigorous treatment. For the majority, symptoms of depression are gone after 1 year or are not severe enough to meet the criteria for depression, while 40% continue to experience symptoms severe enough to warrant the diagnosis.

Related Topics

- Cognitive behavioral therapy, ➤ Mood disorders, ➤ Psychotherapy, ➤ Social support

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th ed, Text revision (DSM-IV-TR). American Psychiatric Association, Washington, DC
- Aronson SC, Ayres VE (2000) Depression: a treatment algorithm for the family physician. *Hosp Physician* 36(7):21–38
- Beck AT, Rush AJ, Shaw BF, Emery G (1979) Cognitive therapy of depression. Guilford Press, New York
- Kessler RC, Berglund P, Demler O, Jin R, Merikangas R, Walters E (2005) Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Arch Gen Psychiatry* 62:593–602
- Koenig HG, Blazer DG (2003) Depression, anxiety, and other mood disorders. In: Cassel CK, Leipzig RM, Cohen HJ, Larson EB, Meier DE, Capello CF (eds) *Geriatric medicine: an evidence-based approach*, 4th ed, Springer, New York, pp 1163–1174
- Weissman MM (1995) Mastering depression through interpersonal psychotherapy (patient workbook). The Psychological Corporation/Graywind Publications, Boulder, CO

Suggested Resources

- American Association for Geriatric Psychiatry. www.aagpgpa.org

Dermatitis (Eczema)

Mary Gail Mercurio

Dermatitis, also referred as eczema, is a common inflammatory process involving the skin that has a variety of different causes and presentations. It may

be acute or chronic and the extent of involvement may be localized or generalized. Depending on the specific features, various types of dermatitis have been classified. Itching is a common feature.

Atopic Dermatitis

Atopic dermatitis is most common in infants and children and is often seen in individuals whose family members have asthma or allergic rhinitis. It begins in infancy and many children outgrow it by adolescence, but a small percentage of individuals continue to have outbreaks into adulthood. It is characterized by red and itchy patches with a predilection for skin folds such as behind the elbows or knees as well as the neck, wrists, and ankles. The areas also have a tendency to become infected due to introduction of bacteria from scratching. Over time, the skin in these areas becomes thickened with a leathery appearance. It is most commonly treated with topical corticosteroids or topical calcineurin inhibitors. Oral antihistamines are often required to reduce the itching that can be so severe as to interfere with sleep and daily activities. Antibiotics may be required for secondary infection. Moisturization with bland emollients and avoidance of overdrying the skin such as bathing too frequently are also helpful.

Contact Dermatitis

Contact dermatitis is an allergic or irritant reaction due to substances touching the skin. Examples of common allergens include poison ivy, nickel-containing costume jewelry, or fragrances in personal care products, and a reaction occurs in those individuals whose skin has been previously sensitized. In contrast, irritant dermatitis occurs in individuals with a significant exposure to caustic substances such as detergents and solvents. Workers in various occupations are prone to contact dermatitis from primary irritants and allergic contacts.

Signs and symptoms of contact dermatitis include redness and itching, and depending on the severity, there can be significant swelling and formation of blisters. These skin changes are limited to the site of exposure to the substance that elicits the allergic or irritant reaction. Often the location and shape of the

rash helps confirm the diagnosis. Treatment consists primarily of identifying the cause and avoiding it, however, resolution can be hastened with topical corticosteroids and in severe cases, oral corticosteroids. If the condition is chronic and the inciting substance is unclear, skin patch testing may be performed to identify the causative allergen.

Seborrheic Dermatitis

Seborrheic dermatitis is a chronic inflammatory skin disease with a predilection for areas that are rich in sebaceous glands including the scalp, eyebrows, folds around the nose and lips, and the sternal area. It is characterized clinically by red patches with a distinctive yellowish greasy scale. On the scalp, the least severe, but by far the commonest presentation is dandruff. It is more common in adults, but can be seen in infants in the form of cradle cap. The presence of yeast, *Pityrosporum ovale*, plays a role in the etiology of this inflammatory condition. In addition, it may occur during times of stress or in people who have neurologic conditions. Scalp treatment includes medicated dandruff shampoos containing selenium sulfide, tar, or zinc. Other treatments, which are often used in combination, are topical corticosteroids and topical antifungals.

Stasis Dermatitis

Stasis dermatitis usually occurs on the lower legs and is characterized by itchy red and scaly patches. Over time, it leaves behind brown patches that are generally asymptomatic. The cause is attributed to fluid accumulation in the tissues beneath the skin, and is often seen in association with venous insufficiency and ankle swelling. Improving the condition that is causing fluid buildup in the legs is the most beneficial treatment, and topical corticosteroids and compression therapy are often employed if the situation is chronic. Because stasis dermatitis is usually asymptomatic, it often goes untreated resulting in ulceration of the skin that can be more challenging to heal.

Related Topics

[🔗 Skin care](#), [🔗 Skin disorders](#)

Suggested Readings

- Bergstresser PR (1989) Contact allergic dermatitis. *Arch Dermatol* 125:276–286
- Rietschel FL, Fowler JF (1995) *Fisher's contact dermatitis*, 4th ed. Williams & Wilkins, Philadelphia, PA

Developmental Disabilities and Aging

Joseph O'Grady

Disability can be understood as a mental or physical impairment that impedes access or performance. A person with an intellectual disability or developmental disability (ID/DD) exhibits significant intellectual impairment on standardized testing and a significant decrease in adaptive functioning. The onset for these disorders occurs before the age of 18; approximately 2% of the US population is affected.

There has been a significant increase in the number of people with ID/DD who are addressing issues of aging. In 2000, there were 641,000 persons with ID/DD who were above 60 and the number is expected to double by 2030. A contributing factor has been a significant increase in life expectancy for this group. In 1930, life expectancy for persons with Down's syndrome was 9 years and now it is 62 years; life expectancy for other etiologies of ID/DD was 20 years and now it is 72 years, with a current average of 66 years life expectancy for all groups combined.

There has been a significant change in the patterns of living arrangements for persons with ID/DD, from past institutionalization toward community-based services and smaller facilities. Nationally, one-third of the persons with ID/DD live apart from families, with the number of persons living in state operated ID/DD facilities declining from 149,892 in 1977 to 44,252 in 2002, a 70% decrease. The number of persons living in community-based settings of six or fewer persons increased from about 20,000 in 1977 to 298,375 in 2002, an almost 15-fold increase.

Increased life expectancy and cost of care issues have also resulted in a significant increase in government

spending. Total spending for ID/DD services has more than tripled from \$9.8 billion in 1977 to \$34.6 billion in 2003 on an adjusted basis with community-based services accounting for \$27 billion (78% of the 2003 spending). Cost of care contributed to movement toward community-based care with national costs for public facilities greater than 16 census \$134,619 per year, in comparison to private facilities greater than 16 census at \$52,585 per year, private facilities with census less than 16 at \$72,460 per year, public facilities with census less than 16 at \$81,483 per year, and supportive living in 2003 at \$48,000 per year.

The combination of increased life expectancy and expansion of community-based services has resulted in significant changes to families of persons with ID/DD. Currently, two-thirds of persons with ID/DD are living with their families and 25% of family caregivers are above 60. This can result in "two generation elderly" families where decreasing function and increasing supports are needed to maintain community placements for both parents and ID/DD adults. Additional issues for parents include long-term caregiver stress, especially in mothers and a "perpetual parent" role that separates ID/DD parents from peers.

Within the general population, maintaining community placement as people age involves the concept of "aging in place" that pertains to the ID/DD population as well. Aging in place is defined as living at home and participating in one's community, supported by assistive technology and environmental interventions, which aim to increase or maintain function of the person in their residence. This use of assistive technology or environmental interventions can result in delayed functional decline and delayed institutional placement and cost. Problems in using assistive technology and environmental interventions in ID/DD persons include problems with funding support, low number of qualified service providers, device complexity, and a prolonged training period that is needed for persons with ID/DD. A proactive approach to maintaining health in persons with ID/DD includes promoting autonomy, continued community living, work involvement, promoting healthy lifestyles, and injury and illness prevention.

With regard to health issues, persons with ID/DD experience the same age-related changes as the general geriatric population as well as the same medical and mental health problems. Presence of an ID/DD can "overshadow" age-related health changes, medical,

and mental health issues, which can result in these disorders not being recognized and addressed.

Age-related health changes include arthritis, cardiac changes, respiratory changes, motor weakness and stroke-related limitations. All these medical changes can result in significant functional limitations in activities and community participation in both the general population and in the ID/DD population as well. The impact of age-related changes is influenced by the severity of existing disabilities (including ID/DD) and increases with the number of preexisting disabilities. There is shorter life expectancy for persons with ID/DD if health and medical conditions exist that predate the onset of age-related changes. Associations of specific medical illnesses with specific ID/DD etiologies include increased respiratory disease in persons with profound ID/DD, osteoporosis, and Alzheimer's dementia that occurs earlier in persons with Down's syndrome, and an increased frequency of fractures in persons with epilepsy.

Overall mental health issues related to aging and persons with ID/DD are similar to the general geriatric population, except for the higher incidence of maladaptive behaviors associated with dementia and the association of higher rates of dementia with longevity in Down's syndrome.

There has been significant progress in the lives of persons with ID/DD over the last 75 years, with an improved life expectancy, and increased participation in communities and acceptance by community members. Our success with extending life expectancy presents a growing challenge for the future. With continuing financial and community support and using cost-efficient community-based services, combined with access to already developed community-based aging services, persons with ID/DD will have an opportunity to enjoy a full and lasting life.

Related Topics

- ▶ [Americans with Disabilities Act](#), ▶ [Disability](#), ▶ [Down syndrome](#), ▶ [Mental retardation](#)

Suggested Readings

Day K, Jancar J (1994) Mental and physical health and ageing with mental handicap: a review. *J Intellect Disabil Res* 39(3):241–256

Hammel J (2000) *Aging and developmental disability: current research programs and practical applications*. Haworth Press, Binghamton, NY

World Health Organization (2001) *Healthy aging: adults with intellectual disabilities summative report*. *J Appl Res Intellect Disabil* 14(3):256–275

Suggested Resources

American Association of Retired Persons. www.aarp.org

Elder Web. www.elderweb.com

Gerontological Society. www.geron.org

National Council on Aging. www.ncoa.org

Diabetes

Asra Kermani

Diabetes is a condition in which there is a persistent elevation of blood sugar (glucose). The mechanism is either destruction of the insulin producing beta cells of the pancreas or the inability of insulin to effectively lower blood glucose (insulin resistance), or a combination of both. Type 1 diabetes results from autoimmune damage to the beta cells; type 2 diabetes is characterized by a combination of insulin resistance and defective insulin secretion. Diabetes present in older individuals is usually of type 2 but may also be caused by medications such as some types of steroids, pancreatic damage, or diseases such as acromegaly (adult growth hormone excess), hemochromatosis (a genetic iron deposition disease), and certain tumors.

Diabetes is a chronic disease, which if uncontrolled may lead to many life-threatening complications. It is the leading cause of new cases of blindness among adults aged 20–74 in the United States and the leading cause of end-stage renal disease. According to the Centers for Disease Control, in 2002, 18.2 million people, or 6.3% of the population, had diabetes in the United States. Among those aged 60 or older, 8.6 million or about 18% had diabetes.

Diabetes is diagnosed based on elevated blood glucose values, often in the presence of typical symptoms of high blood glucose. These symptoms are excessive urination (including at night), excessive thirst, weight

loss, dizziness, and excessive hunger. Frequent vaginal yeast infections in women may also occur as well as frequent urine and skin infections. However, many older patients may not present with classic symptoms and may be misdiagnosed.

According to the American Diabetes Association, diabetes is diagnosed if a person has a blood glucose greater than or equal to 200 mg/dL on more than one occasion in the presence of typical symptoms; a fasting blood glucose greater than or equal to 126 mg/dL on more than one occasion, or elevated reading at 2 hours of greater than or equal to 200 mg/dL after a 75 g glucose ingestion during a standard oral glucose tolerance test (OGTT). Prediabetes includes impaired fasting glucose, which is a blood glucose level greater than 100 mg/dL but less than 126 mg/dL; or impaired glucose tolerance, in which the 2-hour glucose value during OGTT is greater than 140 mg/dL but less than 200 mg/dL.

Type 1 diabetes is a condition in which beta cells of the pancreas are destroyed by an autoimmune process. Patients are usually affected in childhood and young adulthood, but some present later in life. Lack of insulin means that these individuals must use insulin to survive; therefore, they are truly insulin dependent. Insulin may be given by multiple skin injections several times a day, or in certain individuals, with a continuous insulin infusion from a pump. The pump itself is worn as a separate device with insulin infusing through a soft or hard needle inserted into the skin.

Type 2 diabetes is characterized largely by insulin resistance, which is the inability of insulin to produce glucose-lowering effects. It is closely linked to abdominal obesity. The incidence of type 2 diabetes is rising in parallel with the growing incidence of obesity in our population. However, type 2 diabetes is preventable, most effectively by diet and exercise.

Additionally, medications that reduce insulin resistance such as metformin and thiazolidinediones (Pioglitazone and Rosiglitazone) are also effective. In lean type 2 diabetic patients or those with long-standing disease, pancreatic beta cells fail to produce adequate amounts of insulin, and these patients benefit from agents that make the pancreas secrete insulin (sulfonylureas, meglitinides) or insulin therapy itself.

Obesity and lack of exercise are important contributors to the surge in diabetes incidence today. Ready access to high-calorie foods coupled with sedentary lifestyle promotes insulin resistance. Insulin resistance

in turn, may progress to frank type 2 diabetes in the setting of infection, surgery, hospitalization, and psychological stress.

Ketoacidosis is a life-threatening event for type 1 diabetic patients. In the absence of insulin, glucose cannot be used by muscle cells and other tissues as fuel. The alternate fuel, derived from fat breakdown, is ketoacids, which freely circulate throughout the body. However, ketoacids are not well utilized without insulin, and they accumulate in the blood increasing the acidity of the body fluids (ketoacidosis). Symptoms include nausea, abdominal pain, vomiting, and dehydration. The function of many organs is impaired: heart function, enzyme activities, and metabolism. The mortality rate is between 5% and 10% even in specialized centers. Fortunately, ketoacidosis is rare in the elderly.

Hyperosmolar nonketotic state (HONK) may affect type 2 diabetic patients and is a condition in which severe hyperglycemia occurs, leading to profound volume depletion and even death. Because a small amount of insulin is present, ketoacids are not generated, and acidosis does not occur. There is often a delay in diagnosis because symptoms present late, which may account for its mortality rate of 10–50%. The most common cause is infection, but heart attack, dehydration, or increased consumption of sodas or fruit juices may also be triggered.

Chronically elevated blood glucose causes eye and kidney damage in patients with diabetes; these may progress to blindness and kidney failure requiring dialysis. Nerve damage may also result, causing pain or lack of sensation in the feet and legs, and rarely in the hands and arms. These complications are not reversible.

Approximately 73% of adults with diabetes have high blood pressure and many have high cholesterol. This predisposes them to occlusion of large blood vessels—such as those supplying the heart and the brain and explains why 65% of deaths among people with diabetes are due to heart disease and stroke, with heart disease being the leading cause. Mortality from heart disease in adults with diabetes is about 2–4 times higher than in those without diabetes.

Hypoglycemia, or low blood glucose, occurs when blood glucose falls to 40 mg/dL or below. However, symptoms such as shakiness, hunger, confusion, memory loss, agitated, or combative behavior may begin when blood glucose starts to fall to 60 mg/dL leading

to seizures, coma, and death. Older individuals are especially vulnerable and may not manifest these symptoms. Ways to minimize hypoglycemia includes eating within 20–30 minutes of taking these diabetic medications, not skipping meals, lowering the medication dose, or changing the type of insulin, and if needed, snacking before exercising or at bedtime.

Treatment includes ingestion of 15 g of carbohydrate as sugar in water, juice, or regular soda, glucose tablets or hard candy. Some patients who cannot detect hypoglycemia or who cannot be fed will need to be prescribed a glucagon syringe (glucagon is a hormone that opposes insulin and raises blood glucose) for a care provider to inject.

Patients with poorly controlled blood glucose are prone to certain infections, especially skin, urine, yeast, and lung infections. If untreated, these infections can rapidly spread into the blood and be fatal.

Diabetic patients need to monitor their fasting and between meal blood glucose levels using a glucometer. A 3-month average blood glucose control is monitored by the physician with a blood test called HbA1c. Blood pressure, cholesterol, and urinary protein also need to be monitored closely and treated if elevated.

Finally, eye examinations to detect changes from diabetes should be performed at least yearly, and daily foot examinations should be done by the patient at home (with assistance if needed) and by the physician, to check for calluses, ulcers, ingrown nails, and skin infections. Team involvement with a diabetes educator, nutritionist, podiatrist, ophthalmologist, and diabetes specialist can greatly benefit a diabetic patient.

Diabetic treatment goals in healthy older individuals include the same blood glucose, blood pressure, and lipid targets as with younger patients. In people who have many other illnesses, a low level of functioning, or limited life expectancy, the goals should be more conservative.

Diet and exercise are essential to treatment, regardless of oral medications or insulin. Mild diabetes can be treated successfully without medication. Several types of diet can be tailored to an individual by a nutritionist. Brisk walking is recommended on a daily basis; however, individuals should consult their physician before starting any exercise program.

Monitoring one's weight on a regular basis is an effective way to detect weight gain and intervene with lifestyle changes early. Medications such as insulin, glucose absorption blockers, insulin secreting agents, and insulin sensitizers, may be used alone or in

combination. Lipid and cholesterol lowering medications, blood pressure-lowering medication, aspirin, cardiac medications, and treatment for erectile dysfunction or neuropathy may be required as well. Detection and treatment of concomitant depression is essential and may be difficult to diagnose, especially as older individuals may lack typical features.

Related Topics

• [Cardiovascular disease](#)

Suggested Readings

American Diabetes Association, American Heart Association (2004) *The diabetes and heart-healthy cookbook*. McGraw-Hill, New York

Position Statements and ADA Statements (2006) *Diabetes Care* 29: S75–S77

Suggested Resources

American Diabetes Association. <http://www.diabetes.org/home.jsp> 1-800-DIABETES (1-800-342-2383)

CDC Diabetes Public Health Resource. <http://www.cdc.gov/diabetes/index.htm>

Diagnostic Related Groups (DRGs)

Siran M. Koroukian

Used as a methodology to determine reimbursement amounts per discharge, diagnostic related groups (DRGs) refer to a patient classification system that groups patients in “medically meaningful” categories. Patients grouped in the same DRG are expected to be clinically similar, and, on average, to use comparable amounts of hospital resources.

Since the implementation of the prospective payment system (PPS) in 1983, Medicare has reimbursed hospitals predetermined DRG rates that are calculated based on the diagnosis and procedure

codes documented on the claim record, as well as a number of other factors, including the patient's age and sex, the hospital's teaching status, its location in an urban or rural area, the labor cost in that region, and the extent to which it invests in capital equipment. Special considerations are given to hospital admissions based on the lengths of stay that exceed the limit of what is considered average, and hospitals rendering specialized services, such as psychiatric and rehabilitation hospitals, are DRG-exempt, with less stringent rules of reimbursement.

PPS, replacing a cost-based fee-for-service reimbursement system, was designed for cost containment purposes and to address rapidly rising health-care expenditures—19% annually since 1979, reaching \$33 billion for inpatient hospital services in 1982. Under the PPS, predetermined rates would provide hospitals an incentive to become more efficient in the way they provide care. In adapting to this economic reality, hospitals encouraged shorter stays and early discharge of patients—sometimes even before full recovery was achieved, raising important concerns about quality of care.

These concerns were addressed in part through careful monitoring of hospital outcomes by various private and public organizations, including in-hospital mortality, mortality within 30 days following discharge, and hospital readmissions for similar or related conditions, prompting hospitals to incorporate rigorous quality assurance programs. PPS also became an impetus to develop new lines of services, and new ways of service delivery designed to contain costs. For example, a number of surgical procedures were channeled to outpatient settings, avoiding preoperative overnight hospital stay. Unfortunately, not all hospitals could manage successfully and remain solvent, and some, including those rendering care in underserved areas, were forced to close.

It has been found that DRG-adjusted charges may be comparable between groups of patients defined by a number of attributes including: nursing home residence, prior hospitalization, socioeconomic status, and disability before the age of 65. It has also been shown, however, that the DRG methodology fails to recognize the need for a greater use of resources by patients presenting with pertinent clinical characteristics that are not captured through the parameters used in deriving DRGs that are documented in administrative claims data. One such characteristic is functional limitations. In one study, researchers reported

considerably higher costs incurred by elderly Medicare patients with low functional status, even after adjusting for various patient attributes, placing hospitals at a financial disadvantage when caring for such patients.

Such inequities raise important policy concerns, as hospitals would have an incentive to avoid patients with functional limitations and/or other patient characteristics that render a hospitalization more resource-intensive than others. Additional patient attributes have yet to be identified and their impact assessed in order to fully evaluate the implications of DRG-based PPS on the health-care delivery system.

Related Topics

- [Medicaid](#), ➤ [Medicare](#), ➤ [Quality indicators](#), ➤ [Rural health](#)

Suggested Readings

- Chuang KH, Covinsky KE, Sands LP, Fortinsky RH, Palmer RM, Landefeld CS (2003) Diagnosis-related group-adjusted hospital costs are higher in older patients with lower functional status. *J Am Geriatr Soc* 51:1729–1734
- Jencks SF, Kay T (1987) Do frail, disabled, poor, and very old Medicare beneficiaries have higher hospital charges? *JAMA* 257:198–202

Suggested Resources

- Mistichelli J, Diagnosis related groups (DRGs) and the prospective payment system, Forecasting social implications. National Reference Center for Bioethics Literature. Joseph and Rose Kennedy Institute of Ethics, Georgetown University. Accessed November 25, 2005. <http://www.georgetown.edu/research/nrcbl/publications/scopenotes/sn4.pdf>

Diet

Rajkumari Richmonds

In recent years, nutritional status of elders has improved greatly. Yet, significant numbers of the aging population continue to have unmet nutritional needs. Elders have nutritional needs and requirements

that are different from those during other stages of life: they cannot be regarded simply as older versions of young adults. According to US Recommended Dietary Allowances (RDA), adults are divided into two age groups: the younger old adults (aged 51–75) and the older olds (aged 76 and older).

Recent studies have shown that one out of four older Americans suffer from poor nutrition. A study conducted by the National Health and Examination Survey (NHANES) in 1999–2000 used the Healthy Eating Index (HEI) to assess the variety of food consumed, quality of diets, and the frequency of dairy products included in the diet. A score was assigned to each aspect. Approximately 14% of participants had poor diets with a score of 51 out of 100.

Healthy diet and health promotion can be linked to disease prevention. Not surprisingly, 33–50% of health problems are related to nutritional problems. Obesity, heart disease, hypertension, certain types of cancers, and osteoporosis are directly related to inadequate or excessive dietary intake. Malnutrition can also result from (1) the use of multiple drugs, (2) sedentary life style, and (3) low levels of nutrition knowledge leading to poor food choices and meal planning. Nondietary issues such as psychosocial factors, social isolation, loss of spouse, and low income also contribute to dietary patterns of an individual. In addition, elders are often victims of media fraud. They can become convinced to purchase food products that claim to have health benefits by an aggressive sales promotion.

The United States Department of Agriculture (USDA) food guide pyramid provides healthy eating guidelines for the general population. The fewest number of servings for each food group will be enough to meet the food needs of older adults. The base of the pyramid is bread, pasta, cereal, and rice. This group is the largest one and provides the main source of energy. Energy requirements decline for those above 65. Other nutritional needs either remain the same or increase from those of young adults. Recommendations for nutrient intake should be stated in terms of nutrients by weight per 1,000 kcal or per unit of lean body mass for people above 65.

Daily Food Guide

1. Choose foods daily from each of the five major food groups.

2. Include foods from within the food group.
3. Have at least the minimum number of servings suggested from each group. Limit total amount of food eaten to maintain desirable body weight.
4. Often choose foods that are low in fat and sugars.
5. Limit fats, sweets, and alcoholic beverages.

Fruits and vegetables in the diet of an older adult play a significant role in the reduction of risk factors for several diseases. Dark green, deep yellow/orange fruits and vegetables are packed with phytochemicals, vitamin C, E, carotenoids, and zinc. They are believed to help in the prevention of age-related macular degeneration and cataracts.

Only 32% of persons above 65 consume five or more servings of fruits and vegetables daily. Unfortunately the

Table 1
Food groups

Food groups	Serving size guidelines
Breads, cereals, and other grain products: 6–11 servings (whole-grain and enriched).	1 slice bread; half hamburger bun or English muffin; half a cup cooked cereal, rice or pasta or 1 oz ready to eat breakfast cereal.
1. Fruits—citrus, melons, berries, and other fruits: 2–4 servings.	Whole fruit, half of a grape fruit, a melon wedge, half a cup berries, cup of juice, ½ cup of cooked or canned fruit, or ¼ cup dried fruit.
2. Vegetables: 3–5 servings. Dark green leafy, deep yellow, dry beans and peas (legumes). Include all types regularly, use dark green leafy vegetables, dry beans, and peas several times a week.	½ cup cooked or chopped raw vegetables or 1 cup leafy vegetables, such as lettuce or spinach.
3. Meat, poultry, fish, and alternatives: 2–3 servings, total 5–7 oz lean. Alternatives include eggs, dry beans, nuts and seeds, and peas.	A serving of meat is the size of the palm of a woman's hand is about 3–5 oz and of a man's 5–7 oz and the thickness of a deck of cards. 1 egg, ½ cup cooked dry beans, or 2 table spoon peanut butter is equal to 1 oz of lean meat.
4. Milk, cheese, and yogurt: 2 servings.	
5. Fats, sweets, and alcoholic beverages.	Avoid consuming too many fats and sweets. If you drink alcoholic beverages, do so in moderation.

fruits and vegetables most often consumed by older adults are not those associated with disease risk reduction. Fruits associated with disease risk reduction include citrus, melons, and berries.

Recommendations Regarding Dietary Fat

1. Elders should follow recommendations for dietary fat for the general population—a modest reduction is appropriate to older adults. Elevated total cholesterol, low-density lipoproteins (LDL), triglycerides, and decreased levels of high-density lipoproteins (HDL) remain a risk factor for coronary heart disease among the elderly.
2. However, older adults should not reduce fat intake markedly. They tend to eat less and further reduction may result in nutritional deficiency.
3. Weight reduction by restriction of fat is not justified in the absence of obesity-related risk factors. Abnormally low body weight carries greater mortality in the elderly than excess body weight.

Excessive consumption of food combined with poor choice and sedentary lifestyle have contributed to a higher prevalence of obesity among aging populations. Obesity is one of the major risk factors for cardiovascular disease, hypertension, dyslipidemia, diabetes mellitus, osteoarthritis, and sleep apnea. Hypertension is also widely prevalent among the elderly. About 60% of men and 70% of women in the age group of 65–74 years suffer from hypertension. The percentage of people diagnosed with hypertension further increases with advancing age. About 68% of men and 84% of women are hypertensive. This can be prevented by reducing salt intake and consuming an adequate amount of potassium with a low fat diet.

Osteoporosis affects almost 44 million US men and women aged 51 and above. Intake of calcium-rich products such as milk, fish, and eggs in the diet will prevent bone loss. Maintaining a healthy weight and being physically active contributes to bone health.

Food–Drug Interaction

Often drugs taken by the older adults, both prescription and over-the-counter, influence their food intake. Some medications increase the appetite while others

suppress it. Psychotropic medication like amitriptyline and tricyclic antidepressants generally improve appetite. But among the elderly, due to the slow metabolism of drugs, these medications may cause drowsiness. It can even cause agitation that interferes with food intake. Some medications cause taste changes (dysgusia, e.g., lithium) and some cause cravings for certain foods (diuretics, e.g., salt), which affect food intake.

Alcohol

Alcohol decreases appetite and reduces the ability to eat. Older people have a lower tolerance for alcohol due to decreased total body water. Hence, they quickly become intoxicated, which results in decreased food intake.

Smoking

Smoking has a thermogenic effect. A survey conducted in the UK found that smokers usually skipped breakfast, consumed fried foods more frequently, and ate fruits and brown bread less frequently than the non-smokers. Compared with younger adults, smokers above 65 use the highest tar cigarettes. Even though there is an overall weight reduction among smokers, cigarette smoking appears to increase the waist/hip ratio (WHR). Higher WHRs are associated with an increase of heart diseases and other chronic diseases.

Liquid Supplements

Liquid supplements help in gaining weight for people who have lost weight due to marasmus. There is now reasonable evidence that protein energy malnutrition (PEM) can be treated and probably prevented with high caloric liquids, which will have a beneficial effect on body composition, muscle strength, and immune function. Elders should avoid taking dietary supplements in excess of the RDA. However, if the cause of the weight loss is anorexia or sarcopenia, supplementation may not be effective.

Dietary patterns in the majority of aging populations remain similar to that established by habits at a younger age. For older people, the frequency of meals, food preferences, and dietary taboos can connect them

to their familiar pasts. For elders living in the community, making healthy food choices will help them achieve and maintain their well-being. The most important aspect of nutrition in the young old is moderation. For the old group, keeping up their enjoyment of food is more important than restricting their diet.

Related Topics

[▶ Activities of daily living](#), [▶ Alcohol use](#), [▶ Body fat](#), [▶ Body image](#), [▶ Body mass index](#), [▶ Calcium disorders](#), [▶ Diabetes](#), [▶ Drug interactions](#), [▶ Hypertension](#), [▶ Nutrition](#), [▶ Obesity](#), [▶ Vitamins](#), [▶ Weight control maintenance](#)

Suggested Readings

- Amaranths E, Martinez A, Dwyer J (2001) Nutrition and quality of life in older adults. *J Gerontol Biol Sci Med Sci* 56A:54–56
- Fields LE, Burt VL, Cutler JA, Hughes J, Rochelle EJ, Sorlie P (2004) The burden of adult hypertension in the United States 1999 to 2000. *Hypertension* 44:398–404
- Guthrie JF, Lin BH (2002) Overview of the diets of lower and higher income elderly and their food assistance options. *J Nutr Educ Behav* 34 Suppl 1:S31–S41

Suggested Resources

- Institute of Medicine, Dietary Reference Intakes for Vitamins, 2004. <http://WWW.iom.edu/includes/DBfile.asp?1d=7296>
- Thomas DR, Moreley JE (2004) Regulation of appetite in older adults, 2004
- US Department of Health and Human Services (2004) Bone health and osteoporosis: a report of the Surgeon General, US Department of Health and Human Services. Office of the Surgeon General, Rockville, MD

Disability

Janet L. Lowder

“Individuals with disabilities,” the term now preferred to describe disabled or handicapped persons, refers to those whose physical or mental impairments so interfere with life’s activities, such as working, that the

individuals are set apart from those without disabilities. Disability, like beauty, is in the eyes of the beholder. Whether the beholder is the Social Security Administration, an employer, an insurance company, a retail business, the bureau of motor vehicles, a doctor, or a significant other, one may or may not be considered “disabled.”

Insurance companies and health professionals sometimes measure disability in terms of how many activities of daily living (ADLs) a person can perform independently. The Mayo Clinic separates ADLs into “basic ADLs” and “instrumental ADLs.” Basic ADLs (e.g., dressing, eating, walking, toileting, and hygiene) are required for an individual to care for himself or herself in a limited environment. Instrumental ADLs are those higher level abilities required to function in the community, for example, shopping, housework, accounting, food preparation, and transportation. These are the concepts that help identify appropriate housing and resolve placement issues for people with age-related disabilities and their advocates.

Another touchstone is the Social Security Administration’s definition of disability that is focused more on an individual’s ability to work and make a living in our competitive world. Social Security assessment proceeds through a 5-step sequential evaluation. To be disabled, a claimant must (1) not be working at a level known as “substantial gainful activity,” (2) suffer from a severe medically determinable impairment that lasts for more than 12 months, (3) either meet a “listed impairment” or suffer from an impairment so severe, that it (4) prevents return to past relevant work performed in the last 15 years, and (5) prevents entry into other jobs existing in significant numbers in the national economy. For example, a blind or paraplegic person may meet the definition for a listed impairment and be regarded as “disabled,” but if she is gainfully employed, she is not “disabled” under the first step of the Social Security definition and would receive no benefits. In deference to age, individuals approaching their late fifties and sixties may more easily establish disability under Social Security’s assessment process.

For private long-term disability insurance coverage, and even short-term disability coverage, a distinction is often made between “own occupation” and “all occupation” coverage. Under “own occupation” coverage, a person’s impairments prevent him or her from performing the duties of his or her own occupation. Sometimes after a period of a year or two, the policy will require the disabled person to prove that he or she

is unable to do *any* job, not just the job held immediately before becoming disabled to trigger “all occupation” disability coverage. Additionally, since there is still no parity legally required between physical and mental disabilities, long-term disability insurance coverage sometimes has a 2-year limit on coverage for mental impairments.

Other definitions of disability also consider the individual’s ability to work in order to determine to what degree benefits are provided. The Workers’ Compensation system differentiates “permanent partial,” “temporary total,” and “total permanent” disability, and may assign a percentage of disability for the loss of a limb or the loss of use of a body part or organ. The Americans with Disabilities Act refers to “disability” as the inability to perform the bona fide occupational qualifications (BFOQs) required to perform all the duties of one’s job.

Who makes these decisions? On what medical evidence are such findings of disability based? Sometimes the opinions of one’s own treating physicians or other health care professionals are given the most weightage; sometimes it is the opinion of the independent medical examiner or panel of physicians employed by the company or government that is determinative of the claim. It is important to know if an employer’s disability coverage is provided through an insurance company, or an employer self-funded or Employment Retirement Income Security Act (ERISA) plan. The disability insurance plan is regulated under state law if disability benefits are provided through an insurance plan purchased by the employer. If coverage is provided through a self-funded or an ERISA plan, the disability benefits plan is exempt from state insurance regulations and is governed instead by the US Department of Labor.

Statistically, more women (20.7%) than men (18.6%) suffer disabling conditions. Bad backs are the leading cause of disability for both genders, but women are twice as likely as men to suffer from arthritis. Also, women are twice as likely to struggle with depression. However, overall fewer women suffer from mental disorders, excluding mental retardation and learning disabilities.

As Tolstoy puts it, “All happy families resemble one another, but each unhappy family is unhappy in its own way.” Healthy people do not typically gather in “support groups” focused on peculiar ways in which they are healthy, unless you consider a bowling league or an investment club as a celebration of physical or

mental health. People with disabilities and their families often connect with *other* people with disabilities and *their* families through local chapters of national support groups, like the Alzheimer’s Association, and are linked by the disease or impairment that has changed all their lives.

Syndromes and symptoms, diseases and diagnoses give people with disabilities something in common that goes beyond shared suffering; there is an unspoken language that only people with disabilities, and perhaps their caregivers can understand. Undoubtedly, for better or worse, a disability shapes a person’s day and life in ways the rest of us can only read about and try to imagine.

Related Topics

- ▶ [Activities of daily living](#), ▶ [Alzheimer’s disease](#),
- ▶ [Americans with Disabilities Act](#), ▶ [Discrimination](#),
- ▶ [Employment](#), ▶ [Medicare](#), ▶ [Social Security benefits](#)

Suggested Readings

- Asch A, Fine M (eds) (1988) *Women with disabilities: essays in psychology, culture and politics*. Temple University Press, Philadelphia, PA
- Beisser A (1988) *Flying without wings: personal reflections on loss, disability, and healing*. Bantam Books, New York
- Jans L, Stoddard S (1999) *Chartbook on Women and Disability in the United States: An InfoUse Report*. US National Institute on Disability and Rehabilitation Research, Washington, DC
- Mathews GF (1983) *Voices from the shadows: women with disabilities speak out*. Women’s Educational Press, Toronto
- National Institute of Mental Health (2001) *Women Hold Up Half the Sky, Fact Sheet on Women and Mental Health Research*, National Institute of Mental Health Publication No. 01-4607

Discrimination

Tambra K. Cain

To discriminate is to make a distinction. Discrimination is the act of making distinctions. Age-related discrimination is also called “ageism.” Ageism is different from racism and sexism because a person’s classification in the marginalized group is not static. A person

is always a certain race or gender, but not always a certain age.

Age-related discrimination is particularly prevalent in the United States. Some factors that contribute to age-related bias and discrimination are the fear of old age and death, the focus of society on youth, and the concept of productivity. However, in other parts of the world, such as Asia and the Middle East, aging increases a person's status in society. This is in part due to a difference in the way death is viewed, and the older person's involvement in society.

The fastest growing segment of the population is older adults. The life expectancy of an American male is 74.8 years, and that of an American female is 80.1 years. Age discrimination can be compounded and often interrelated to gender. American women live approximately 5–6 years longer than American men, so women make up a larger portion of older adults.

Age discrimination has many venues. Often age discrimination is related to employment, housing, medical treatment, etc. There have been laws enacted to protect older adults from employment discrimination. Age Discrimination in Employment Act (ADEA) of 1967 protects persons aged 40 and older from employment discrimination based on age. It provides protection not only to employees but also potential employees. ADEA applies to all employers with 20 or more employees, federal governments, and state and local governments. In addition to the ADEA, in 1990 the Older Workers Benefit Protection Act (OWBPA) of 1990 was enacted, amending the ADEA to prohibit employers from denying medical benefits to older workers. ADEA is enforced by the US Equal Employment Opportunity Commission (EEOC). In 2004, the EEOC received 17,837 claims of age discrimination, resolved 15,792 age discrimination claims, and recovered over \$60 million in monetary benefits from nonlitigated claims.

Housing is another area where age-related discrimination has traditionally been prevalent. The Fair Housing Act of 1968 prohibits housing discrimination based on race, color, religion, sex, familial status, national origin, or handicap. Age is not a specifically included protection. However, the Fair Housing Act impacts older persons in several ways. It prohibits discrimination against families with children or related persons under the age of 18, but included an exemption from the familial status protections for Housing for Older Persons. To qualify for this exemption, the

housing must be for persons above 62, or for persons above 55 who have “significant facilities and services” designed for the elderly. The Housing for Older Persons Act (HOPA) of 1995 eliminates the requirement that housing for persons aged 55 and older have significant facilities and services designed for the elderly in order to qualify for the exemption.

The Voting Accessibility for the Elderly and Handicapped Act of 1984 provides that polling places be accessible to both the elderly and the handicapped. If there is no accessible polling place, an alternate method of ballot casting must be made available. The Act also requires that registration and voting aides be made available to the elderly.

The Americans with Disabilities Act (ADA) of 1990 gives civil rights protections to those with disabilities. Recently, the US Supreme Court in *Olmstead v. L.C. ex rel Zimring* (*Olmstead*) held that states were prohibited from unnecessarily institutionalizing persons with disabilities. The *Olmstead* case applies to the elderly as well as handicapped, and provides protection from discrimination relating to residential medical care.

In addition to the well publicized employment and housing discrimination, senior adults are also targeted for internet and investments scams, lack of accessibility, and marginalization in society.

Related Topics

- [Ageism](#), ➤ [Americans with Disabilities Act](#),
- [Employment](#), ➤ [Housing](#), ➤ [Institutionalization](#)

Suggested Readings

- Bergling T (2004) *Reeling in the years: gay men's perspectives on age and ageism*. Southern Tier Editions, Harrington Park Press, New York
- Copper B (1988) *Over the hill: reflections on ageism between women*. Crossing Press, Freedom, California
- Eglit H (1994) *Age Discrimination*, 2nd ed. Shepard's/McGraw-Hill, New York
- Eglit H (2004) *Elders on trial: age and ageism in the American Legal System*, University Press of Florida, Gainesville, FL
- Gregory RF (2001) *Age discrimination in the American Workplace: old at a young age*, Rutgers University Press, New Brunswick, NJ
- Nelson TD (ed) (2002) *Ageism: stereotyping and prejudice against older persons*. MIT Press, Cambridge, MA

Suggested Resources

The 2000 US Census, November 2005. <http://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf>

The Official Americans with Disabilities Act (ADA) Website. <http://www.usdoj.gov/crt/ada/adahom1.htm>

The US Equal Employment Opportunity Commission Official Website, November 2005. <http://www.eeoc.gov>

Disruptive Behaviors

Doug Smith

As individuals age, they become more prone to behavioral disturbances that may result from changes in the brain. These changes may occur due to the onset and course of dementia, an acute delirium, diminished acuity of the five senses, or due to the onset of a mental illness, such as depression. Behavioral disturbances may include agitation, apathy, irritability, confusion, and disinhibition, and lead to disruptive behaviors such as being physically assaultive, verbally assaultive, sexually promiscuous, or prone to wandering away from safe settings.

Agitation and resultant assaultiveness is frequently associated with dementia, which is a symptom that requires care. For more severe cases, a transfer from a home setting to an institutional setting may be necessary. Most care for elders is initially provided by family members at home. However, when behaviors become unmanageable, the patient is often sent to a general hospital and then to a nursing home. More than 50% of patients being cared for in nursing homes have at least one type of behavioral disturbance. Since such settings represent the most expensive care option, increasing the ability to manage disruptive behaviors in the home setting is of particular importance.

To better determine approaches to prevention and treatment of disruptive behavior, research on this area has defined agitation as an inappropriate behavior that is unrelated to unmet needs or confusion. Thus non-verbal patients who have no means of communicating their needs except through physical motion are not automatically deemed agitated.

Diagnosis and Treatment

To determine the cause or causes of specific behavioral problems of an older adult, an examination by a physician is necessary. The doctor will first obtain a history of the patient's social, medical, and psychological background, along with a description of prior functioning. The focus will then shift to changes in function and adaptation, along with any behavioral disturbances, often using a chronological timeline. Motivating an elderly patient who has lost some functioning to engage with the physician and present a detailed history can be difficult, and obtaining collateral information from family and friends is often necessary. Having a solid grasp of such details will help in understanding the possible meaning of unusual behaviors. For instance, a new injury, a change in a chronic condition, a new infection, or pain itself may cause an individual to become agitated. If this patient is not able to understand and/or verbalize this, agitation may be a way of expressing the change. Sometimes newly implemented treatment for a sign or symptom is the culprit of agitation. For example, medications may cause either minor or more serious side effects, including delirium, and may need to be stopped or adjusted.

To fully understand agitation seen in patients with dementia, research has attempted to classify factors that may cause or contribute to the problem. First, patients may become agitated due to the frustration of being unable to function as they had previously. This inability to cope with ordinary daily demands may be more commonly associated with comorbid major depressive disorder, vascular dementias, and damage to the front of the brain. Second, patients may exhibit agitation as a result of the new stressors they must face, such as their loss of autonomy or loss of status. These individuals may react to the restrictions now placed on their movement, having to live among other individuals with dementia and resultant behavioral changes, etc., causing levels of stress beyond any they may have experienced earlier in life. Third, some individuals may have been more prone to maladaptive reactions to difficult circumstances throughout their lives, and are therefore more likely to poorly adapt to the illness. They may not be able to use rationalization, humor, or postponement of gratification as they had in the past to remain socially appropriate in bothersome or public situations. The individual may lose their sense of self and appear to behave more primitively.

Finally, brain abnormalities created by the dementing process may directly cause behavior disturbances. Brain damage, loss of neurons, and neurochemical changes that occur in dementia may ultimately alter the way the individual perceives, behaves, and copes with the world around them.

Managing Disruptive Behavior

Families who bring their elderly loved ones for medical services are often interested in how to manage agitation and disruptive behaviors. If the patient is to be managed at home, then help from outside agencies who supply visiting nurses and skilled care providers may be essential. While family members can learn strategies to help with these difficult situations, they generally do not have the experience to offer all necessary care and they will need their own respite from the circumstances. If the patient is to receive care at a nursing facility, then family input can still be very helpful. In either instance, management of disruptive behavior is best accomplished through a comprehensive care plan. Such a plan must include intervention strategies that have been carefully designed based on the available information for a specific patient, and the patient should be involved in the development of the plan as much as possible.

The types of interventions used in a comprehensive care plan may include modification of the environment, a behavioral plan, educating and working with the family, and medications. Altering the patient's environment can be an important way of removing some stressors while allowing the patient relative freedom within a safe setting. Nurses and psychologists may be more expert in this regard than physicians.

A behavioral plan is often considered to be more important for dealing with disruptive behaviors than medications or other interventions. Positive rewards can be selected that the patient would enjoy or appreciate, and should be given each time a desired behavior occurs. This approach tends to be more successful than a punitive approach whereby something aversive is done each time an individual behaves inappropriately. Of course, patients should still be redirected when they exhibit unwanted behavior. Taking the needed time to understand what a patient is communicating can greatly relieve frustration for all, and may go a long

way to minimize undesirable behaviors. Further, the combination of environmental and behavioral planning can be quite useful, such as when a setting is arranged so that an agitated patient may safely pace instead of feeling trapped and restless. Similarly, if activities are selected based on a patient's current or past interests, he or she will be more likely to act properly in order to be afforded such opportunities. Behavioral plans are most valuable when the frequency of inappropriate behavior is accurately recorded, and the plan is periodically reevaluated and updated to maintain its value.

Educating family members and staff about the patient's illness, agitation, and how to communicate most effectively is essential. This is an important part of any comprehensive plan.

Use of Medication

Medications can be helpful in reducing agitation, treating mental disorders, reducing pain, and alleviating symptoms of physical illness, which can exacerbate the frequency of disruptive behavior. When prescribed, they may need to be used in lower doses to account for the reduced absorption and elimination often present in elderly individuals. Psychotropic medications are commonly given to individuals who exhibit disruptive behaviors. Mood stabilizers such as valproic acid have been shown effective in the treatment of agitation. Antidepressant medications, such as nortriptyline, fluoxetine, trazadone, and nefazadone, can be very helpful in resolving agitation, since depression is often an underlying cause. Short acting antianxiety medications or anxiolytics, can be helpful in decreasing agitation, but may cause too much sedation and lead to other problems. Neuroleptic medications such as olanzapine and risperidone are most useful when a patient has delusional beliefs that lead to agitation. However, these medications require very small doses in order to best avoid side effects that may include paradoxical restlessness or akathisia and/or Parkinson-like movements. Over the past decade, a number of newer medications have emerged. Research on their usefulness in minimizing agitation in elders is ongoing. Discussing these with a psychiatrist and reviewing the scientific literature is necessary to remain abreast of current developments.

Related Topics

- ▶ Behavioral modification, ▶ Delirium, ▶ Dementia,
- ▶ Mental illness, ▶ Nursing home, ▶ Violence,
- ▶ Wandering

Suggested Readings

- Beck CK, Shue VM (1994) Interventions for treating disruptive behavior in demented elderly people. *Nurs Clin North Am* 29:143–155
- Dyck G (1997) Management of geriatric behavior problems. *Psychiatr Clin North Am* 20:165–180
- Merck and Company (forthcoming) Behavior disorders in dementia. *Merck manual of geriatrics*, Chap 41, pp 371–377

Diverticulitis

Rami Abbass

Diverticular disease of the colon is common in developed countries, especially among those above 50. Diverticula are mucosal pockets in the wall of the colon that are more common in the elderly and in people from industrialized western countries. The incidence of diverticular disease is at least 30% in individuals above 50, rising to over 85% in those above 85, and corresponds to both the number and duration of the diverticula.

Diverticulitis is the inflammation of these diverticula or outpouchings of the colon wall, and it is the most common complication of diverticular disease. Though it can present anywhere in the colon, diverticulitis localized in the left colon occurs for 75% of cases in western countries; in contrast, right-sided diverticulitis is observed in 75% of cases in people of east Asian descent. While a higher preponderance in women had been noted in earlier studies, recent research finds a similar incidence in men and women. Diverticulitis is a common cause of hospitalization among the elderly and may progress to complications with significant morbidity.

Diverticula are most typically observed to occur in gaps in the muscle layers of the colon (either between

the longitudinal fiber of the taenia coli or between the rings of the smooth muscle fiber) or at the entry point of blood vessels (the vasa recta), where the bowel wall is considered weakest. Depending on their location, diverticuli can appear differently. In the sigmoid colon, they tend to have a long, narrow neck, whereas in other parts of the colon they tend to have a round, short and wide neck.

There is an established relationship between low dietary fiber intake and diverticular disease. This helps explain why the disease was unheard of before 1900 after the development of milling removed two thirds of the fiber content of flour. The actual mechanism predisposing to herniation in the colon muscle wall leading to the outpouchings is related to prolonged colonic transit time and decreased stool volume that is characteristic of these western diets high in fat and low in fiber. Diverticula can fill with stagnant fecal material or undigested food with obstruction resulting in distention. This makes the diverticulum susceptible to vascular compromise and at risk for perforation of the colonic wall—resulting in inflammation or diverticulitis. Surrounding structures, such as mesentery and pericolic fat, usually wall off the small perforation, resulting in small peridiverticular abscesses, which usually spontaneously heal by draining back into the lumen of the colon or through formation of granulation tissue.

However, serious complications may result; the walled off infection can progress to a localized abscess with the possibility of rupture of the abscess causing generalized peritonitis, or inflammation of the peritoneum. Peridiverticular abscesses can also progress to form fistulas or communications between the colon and surrounding structures, estimated to occur in approximately 10% of patients with diverticular disease. The most common complication is a colovesicular (colon to urinary bladder) fistula that occurs almost exclusively in men and in women posthysterectomy since the uterus is interposed between the sigmoid colon and the urinary bladder. Fistulas are also less frequently observed in the small bowel, the vagina, the skin, and the ureter.

The clinical presentation of diverticulitis depends on the location of the inflammation and the presence of complications. Patients typically complain of severe, abrupt, persistent left lower abdominal pain that progressively worsens over hours to days. Pain is

sometimes accompanied by anorexia, fever, chills, nausea, and vomiting. Constipation is commonly observed. On physical examination, peritoneal signs such as mild pain when the examiner removes his hand (rebound) and withdrawal of the patient to palpation (guarding) may be present. A palpable, tender abdominal mass may sometimes be appreciated and about 25% of patients will have occult blood on rectal examination.

Depending on the location of diverticulitis, the presentation may mimic other conditions. In the transverse colon, the differential includes peptic ulcer disease, pancreatitis, or cholecystitis. In the right colon, which is more frequent in patients of Asian descent, it can easily be confused with appendicitis.

It is important to note that elderly patients and those taking glucocorticoid steroids may have vague or milder symptoms and less remarkable physical examination findings. These patients should be approached with a higher index of suspicion with repeated abdominal examinations to detect any clinical deterioration quickly.

Useful diagnostic tests include chest and multiple abdominal x-rays. These may show free air indicating visceral perforation, obstruction, loss of bowel motility, or abscesses. Abdominal x-rays are reported to be abnormal in 30–50% of patients with acute diverticulitis.

Computed tomography (CT) scanning of the abdomen/pelvis is the study of choice in suspected acute diverticulitis with a reported sensitivity of 70–97% and specificity of 75–100%. It has the advantage to image disease within the bowel, surrounding it, or in the peritoneal cavity, and offers the potential to localize and guide the clinician in draining abscesses.

Water-soluble contrast enemas rarely add any value over CT scanning for detecting fistulas and abscess cavities. Ultrasound of the abdomen is safe and non-invasive; however, it is less sensitive due to intestinal gas and operator dependence. Endoscopy is not usually used in the setting of acute diverticulitis secondary to the risk of perforation. Limited rigid or flexible sigmoidoscopy with minimal air insufflation is used when the diagnosis is unclear after performing other studies.

Helpful laboratory studies include a complete blood count to detect elevation of white blood cells; however, 20–40% of patients may have normal findings, particularly the elderly, and those who are immunocompromised. Normal liver function tests and tests of pancreatic function may exclude other causes of abdominal pain such as gallstones and pancreatitis.

Urine studies help identify urinary tract infections particularly in the presence of a colovesicular fistula.

The management of acute diverticulitis depends on the severity of the clinical presentation and the patient's other chronic diseases. The inflammatory process tends to be more virulent at extremes of age, particularly those below 40 and above 70, with right-sided diverticulitis, and in patients with diabetes mellitus, chronic renal failure, and who are immunocompromised. In mild cases when patients can ingest fluids and food, outpatient treatment is used with 7–10 days of broad-spectrum oral antibiotics. A typical oral regimen covering infectious agents is ciprofloxacin and metronidazole.

Patients should be hospitalized if they are above 85, cannot tolerate oral hydration, show peritoneal signs, or do not clinically improve after 2 days of outpatient treatment. These patients should have bowel rest with nothing by mouth, and intravenous fluid hydration and intravenous antibiotics. A typical broad-spectrum antibiotic regimen for hospitalized patients is ampicillin, gentamicin, and metronidazole. Pain management with opioids is frequently required as well.

In 20–30% of patients with acute diverticulitis, surgical intervention is needed. This is indicated in patients who have frank perforation with ruptured abscess or in those who develop fistulas or intestinal obstruction. A two-stage surgical approach, initially creating a colostomy to divert the uninfected bowel with later closure of the colostomy, is most commonly used.

A high-fiber, low-fat diet is generally advocated for the prevention of diverticulitis. After an episode of acute diverticulitis, a complete colonic endoscopic evaluation is indicated approximately 8 weeks later to exclude other conditions such as cancer. Approximately 25–33% of patients with acute diverticulitis will have a recurrence raising the question of prophylactic surgical resection to remove segments of the diverticular-containing colon. Weighing the risks and benefits, the current recommendation is that elective resection is indicated after two episodes of uncomplicated diverticulitis. This has become more accepted recently using modern laparoscopic surgical techniques that afford less risk, especially among the elderly.

Related Topics

➤ Abdominal pain, ➤ Colonoscopy

Suggested Readings

- Evans JP, Copper J (2002) Diverticular colitis—therapeutic and aetiological considerations. *Colorectal Dis* 4(3):208–212
- Farrell RJ (2001) Gastrointestinal disorders in the elderly. *Gastroenterol Clin North Am* 30(2):475–496
- Floch MH, Bina I (2004) The natural history of diverticulitis: fact and theory. *J Clin Gastroenterol* 38(5):S2–S7
- Kaiser AM, Jiang JK (2005) The management of complicated diverticulitis and the roles of computed tomography. *Am J Gastroenterol* 100(4):910–917
- Stollman NH, Raskin JB (1999) Diagnosis and management of diverticular disease of the colon in adults. *Am J Gastroenterol* 94:3110–3121

Divorce

Tracy Beck Kruger

Divorce is the undoing of a marriage. In some states it is called dissolution of marriage. No matter what the label, this is a way to formally end legal ties between a husband and a wife, and resolve other issues that may connect them, such as child custody, child support, property division, debt division, and spousal support. Divorces are granted by courts, and most of the laws regarding divorce are made by the states, rather than the federal government.

Divorces can be arranged by agreement of the couple, and when the couple cannot agree, a judge makes the decisions. In the majority of divorces, the couple reaches an agreement, the judge makes sure the agreement is fair, and the judge makes the couple's agreement a part of a court order.

To obtain a divorce there must be a reason or "grounds" for the divorce. Early in the history of our country the grounds for divorce were very limited, often requiring proof of adultery. Current divorce law includes many more grounds, including physical cruelty and mental cruelty. Most states now also have grounds for divorce that are called "no fault." To obtain a divorce using "no fault" grounds one may be required to show that the couple is living separately, the marriage has broken down, and there is little possibility that the marriage could be repaired.

Couples who divorce often have children in common. When these children are minors or have special

needs, the divorce must address how the children will be cared for and how they will be supported financially. The arrangement of who will care for the children is called child custody. Custody can be further divided into physical and legal. Physical custody refers to who provides daily care for the child. Legal custody refers to who makes important decisions in the child's life. In a divorce, one parent can get custody and the other can have visitation rights, or both the parents can share custody. Shared custody is often called joint custody, but does usually involve a perfectly equal division of time spent with each parent.

Along with child custody decisions come decisions about financial support of the child or children. There is an expectation that each parent will contribute to the financial support of the children. Most often the parent who does not live with the child will be required to provide more financial support. The parent who houses the child supports the child directly through housing, food, clothing, and similar expenses. There are many variations in how states calculate a parent's responsibility for child support. Some states consider only the nonresident parent's income while other states consider the income of both parents. Some states use a simple percentage of income to calculate the amount of support, while other states have more complex formulas. In each state there is an office, funded by the federal government, which can help people get and enforce child support orders.

Divorces also divide the things that a couple owns. Things such as a home, automobiles, furniture appliances, and clothing are distributed either by agreement or by a judge's decision. Other nontangible things can also be divided. Retirement savings plans and business interests can be divided as well, and it is often difficult to estimate the value of these items. If parties cannot agree as to how to divide their possessions, the court can make the division, or the court could order a sale and have the proceeds divided. A small number of states uses a system called "community property" in which the possessions are divided equally between the wife and the husband. Most states' laws require a judge to divide property in a way that is fair, which sometimes, but not always, means an even split.

Many couples who divorce have debts, and a divorce can help resolve who is responsible for which debts. Dividing debts is different from dividing property because debts involve someone who is not a part of the marriage. It can be harder to separate from a credit card company than it is to separate from a

spouse. A court can order one person to pay a particular bill, but if both people agreed to be responsible for the debt originally, both people will still be responsible. This becomes important if the person who promised to pay a bill can no longer pay it, decides not to pay it, or tries to discharge the debt in bankruptcy. Protecting yourself in these situations can be tricky.

In some divorce cases one former spouse makes payment for the support of the other. This used to be called alimony, and is often called maintenance now. Maintenance payments are not based on gender, as they used to be in the past, so either spouse may have to support the other. Maintenance is more often a part of a divorce where the marriage has been long and where the parties do not have equal abilities to support themselves. Maintenance can be awarded on a permanent basis, or it can be for a specific time period. Maintenance is often limited in time when it is for the purpose of giving one spouse the opportunity to get an education that will increase that person's ability to support herself or himself.

Divorce can be both a financial loss and an emotional loss. Living expenses will increase because the couple will maintain separate housing. At the same time expenses are increasing, income may decrease. Unless some kind of spousal support is awarded, each former spouse will take home his or her own paycheck, which may be less than that of the other. Emotionally, divorce can mean loss of support and companionship of the spouse, and even relationships with friends can be affected. People experiencing this kind of loss may be able to find a support group through local a social service agency.

Lawyers can provide important services to people who want a divorce. Lawyers can make sure that people who agree to a divorce understand how the agreement will affect them. Lawyers can also represent a spouse in negotiating an agreement, or in presenting a case to a judge for a decision. But lawyers can be expensive. Sometimes free legal assistance can be obtained through a local office of the Legal Services Corporation, or through other local agencies. Many people represent themselves in a divorce, but where there are complicated issues about children and finance, this should be a last resort.

Finally, divorce is only available to married people. While this may sound obvious, it affects a large number of people who establish a relationship without

being married. Such people cannot use the process of divorce to help make decisions about which person should receive which belongings, and how children should be cared for. Other legal processes may be available, but those processes rarely cover the wide variety of issues that come up when people end relationships.

Related Topics

▶ [Day care Hospitals](#), ▶ [Domestic partnership](#), ▶ [Intimate partner violence](#), ▶ [Prenuptial agreement](#)

Suggested Readings

- The American Bar Association Guide to Family Law: The Complete and Easy Guide to the Laws of Marriage, Parenthood, Separation and Divorce (1996) Times Books/Random House, New York
- Lyster M (1996) Building parenting agreements that work. Nolo Press, Berkeley, California
- Mercer D, Pruett MK (2001) Your divorce advisor: a lawyer and a psychologist guide you through the legal and emotional landscape of divorce. Simon & Schuster, New York
- West RP (1997) How to find the right divorce lawyer. Contemporary Books, Chicago, IL

Doctor–Patient Relationship

Cynthia M. A. Geppert

The relationship between doctor and patient is viewed as the foundation for effective and ethical medical care. The therapeutic goal of the doctor–patient relationship has always been the alleviation of suffering and enhancement of the health and well-being. Every code of medical ethics known places the doctor–patient relationship at the center of the ethical principles, duties, and virtues of medical professionalism. Recent developments in health-care delivery such as managed care, use of midlevel providers, growth in the uninsured population, and the rapid pace of technological

advance represent challenges to the traditional fiduciary nature of the physician–patient relationship. A fiduciary relationship is one in which there is a power differential between the two parties, and this asymmetry requires a special covenant of trust, confidence, and professionalism to prevent exploitation and ensure accountability. The principles of beneficence, respect for persons, and nonmaleficence as well as the duties of confidentiality and truth-telling are grounded in this fiduciary relationship.

Theoretical Views of the Doctor–Patient Relationship

The last half-century has seen a fundamental shift in the balance of the doctor–patient relationship from classical paternalism to increasing autonomy and partnership. A seminal 1992 article by Emanuel and Emanuel outlined four models of relationship that illustrate this shift. The first is a *paternalistic* model in which the physician acts in the best interest of the patient with the patient in a more passive role. The second model is called *informative* and the patient receives information from a physician expert. The third model known as the *interpretive* sees the goal of the relationship as mutual understanding of the patient’s life narrative and its implications for treatment. The final model is the *deliberative* in which the physician provides relevant information and acts as a teacher and advisor to facilitate the patient’s making health-care decisions consonant with their values. These first two models are more familiar to many elderly patients who may have less experience or feel less comfortable with the two models emphasizing self-determination and shared decision-making.

The Physician–Patient Relationship and the Care of Aging Patients

Several studies suggest that older patients and their practitioners may struggle with this shift in the patient–physician relationship toward more mutuality and less authority. The Medical Outcomes Study showed that patients 75 years and older, those with high school education or less, and members of minority groups had the least shared decision-making at

office visits. Older women with multiple chronic medical conditions such as arthritis, depression, and heart disease, constitute the largest fraction of any geriatric practice, and as a group may be especially likely to encounter problems in the physician–patient relationship. Loss of hearing and vision, and cognitive difficulties from dementia or strokes may make discussion problematic. Many older women may not have the benefit of education and misunderstand technical language crucial to the informed consent process. Providers, particularly younger professionals, may have a tendency to attribute presenting symptoms to age, personality, or somatization, and thus neglect serious medical conditions.

Many women, members of the minorities, and older patients in general may have an overly deferential and respectful attitude toward authority that prevents them from fully disclosing medication side effects, and substance abuse, mental health, or sexual issues. Older patients, conscious of their own mortality, are often afraid to report signs or symptoms that might herald a serious disease fearing a diagnosis of cancer or other life-threatening conditions. Both patient and provider may not feel their age and morbidity warrant preventive efforts, lifestyle medications or active interventions that may be beneficial and evidence based.

Public Health Implications

The public health impact of changes and difficulties in the relationship between doctors and their aging patients is enormous both in human and economic costs. For instance, studies have shown that older patients who do not have a primary care physician have a higher rate of emergency room use for serious medical problems. Persons above 65 represent only 12% of the population in this country but account for one third of health-care services and one half of physician time. The Alliance for Aging Research reports that appropriate geriatric care could reduce nursing home and health-care costs by 19% a year, an estimated savings of \$133.7 billion in 2020. Results of the Medical Outcomes Study in 1995 suggest that increased participatory decision-making may optimize patient care outcomes particularly in the case of the chronic diseases so prevalent in an aging cohort.

The role of caregivers is often important in geriatric medicine and generates unique ethical dilemmas such as reporting elder neglect and abuse. Caregivers, usually spouses or daughters, provide a substantial amount of care for older patients especially those with dementias. This caregiving saves the health-care system resources, but places a heavy burden on the caregiver. Physicians caring for older patients with cognitive impairment or terminal illnesses are being confronted with the professional duty to balance the needs and concerns of both the patient and caregiver.

Perhaps the greatest obstacle to achieving compassionate and competent relationships between aging patients and physicians is the serious shortage of geriatricians. Only 650,000 of the currently practicing physicians are trained in geriatrics. This shortage will require a concerted governmental and organizational effort to train all doctors, but especially primary care physicians to treat geriatric patients. Reinforcing the need for a trained and dedicated cadre of geriatric physicians is the increasing political activism of the elderly cohort and its rising influence as a powerful political constituency. A survey from the American Association of Retired Persons found that respondents who wished to see more equality in the physician–patient relationship, were interested in receiving more health-care information, and redressing of inadequate communication with their providers. Those surveyed also intended to become involved in health-care reform at local and federal levels (Harvey 1989). As the elderly embrace the consumer movement in health care, medical education, and physician attitudes must also change from directive to empowering the elderly to share the responsibility for long life and good health.

Related Topics

➤ [Caregiving and caregiver burden](#), ➤ [Ethics](#), ➤ [Ethnicity](#), ➤ [Patient–provider communication](#), ➤ [Patient’s rights](#)

Suggested Resources

American Society on Aging. http://www.agingsociety.org/aging_society/pdf/trainging.pdf

US Department of Health and Human Services, The US administration on aging. <http://www.aoa.dhhs.gov/>

Domestic Partnerships

Nancy Mendez

In the United States, domestic partnership is a legal status similar to marriage that has been available to same-sex couples (and sometimes opposite-sex couples). The term domestic partnership refers to a legal arrangement in which two individuals are treated as one legal unit for certain purposes. The legal status falls short of same-sex marriage.

Some of the local and state Domestic Partnership Bills are not limited to same-sex relationships. They define domestic partnership as “two people living together in a committed relationship.” Elderly heterosexual couples may wish to have certain benefits without getting into complicated tax situations or risk losing existing benefits. There are also “family units” that cannot get married, e.g., an elderly sister and brother living together. Increasing numbers of elderly, particularly women, live in companionate nonconjugal unions. Granting domestic partnership benefits to nonmarried couples and blood relatives responds to the diverse ways Americans actually structure their intimate lives.

According to the 2000 Census Bureau, 5,475,768 homes are headed by unmarried partners. Of the households headed by unmarried partners, 594,391 or 10.9% are partners of the same sex, while 4,881,377 or 89.1% are headed by partners of the opposite sex. It is believed by many researchers that the 2000 census underestimates the number of same sex domestic partners, some of whom deliberately fail to report themselves as such. Unfortunately, there is no way to gauge precisely the extent of this undercount. A recent study examining the 1990 census estimated that the census underreported by two thirds the number of same-sex couples.

Although the majority of the domestic partners are of the opposite sex, the roots of domestic partnership can be found in the gay rights movement. In the United States, the push to obtain the legal protections of civil marriage such as health insurance, hospital visitation, and Social Security survivor benefits for same-sex families has been growing since the early 1970s. The first domestic partnership benefits were offered in 1982 to employees of the *Village Voice*, a local newspaper in New York City. In 1985 Berkeley and West Hollywood, California became the first local governments to grant

domestic partnership benefits. Today over 150 local governments, thousands of companies, nonprofit organizations, unions, colleges, and universities offer domestic partnership benefits. But the effort did not reach widespread national attention until the 1990s after a series of court rulings, legislative votes, and political actions that encouraged both supporters and galvanized opponents.

Domestic partnership in the United States is determined on a state-by-state basis. The type and extent of benefits also vary depending on the state or local government. For example, medical decision making is often not granted, nor are the benefits applicable outside the jurisdiction where they are granted. Currently, ten states offer some type of domestic partnership benefits to their employees. These states include California, Connecticut, Delaware, Iowa, Massachusetts, New York, Oregon, Vermont, Washington, and Wisconsin. The following are common guidelines that most governments and companies use to determine who can qualify for domestic partnership.

- Have lived together for a specified period (generally, at least 6 months).
- Are responsible for each other's welfare.
- Are not blood relatives.
- Are at least 18 years of age.
- Are mentally competent.
- Are life partners and would get legally married should the option become available.
- Are registered as domestic partners if there is a local domestic partner registry.
- Are not legally married to anyone.
- Agree to inform the institution or company in the event that the domestic partnership is terminated.

In some instances, domestic partnership policies apply only to same-sex couples. However, some policies also apply to unmarried heterosexual couples, particularly to elderly ones who may wish to have certain benefits without getting into complicated tax situations. For instance, California's laws apply to all same-sex couples above 18, but include heterosexual couples only if they are above 62.

No matter how expansive the domestic partnership offered, states can not grant immigration rights, the ability to collect Social Security benefits after the death of a partner, the ability to file jointly for federal taxes, property transfer that are free of federal taxes, veteran pensions, agricultural loans, and hundreds of other

federal benefits that are given to opposite-sex married couples. Additionally, domestic partnerships cannot be transferred to other states and dissolving them often involves lengthy residencies in the state where they were granted. Indeed, many areas that grant domestic partnerships do not even have a procedure established for dissolving them. Without being able to dissolve a domestic partnership, individuals can be left unable to register a new partner for benefits. Moreover, if a domestic partnership becomes violent or coercive, the lack of easy escape options can also exacerbate the abuse. Another problem with domestic partnerships is that the requirement for joint financial responsibility can leave a partner liable for the other partner's finances without an equitable distribution of joint finances or child custody.

Potentially serious legal issues arise from the conflict between state domestic partnership, same-sex-marriage laws, and the structure of US federal law, which under the Defense of Marriage Act (DOMA) does not extend federal law recognition to those unions. This means that, for example, though they may be essentially "married" under the law of some states, partners would not be entitled to spousal rights to Social Security, to spouse benefits in the other partner's private employer pension and will not be treated as "spouses" for purposes of any federal tax law.

Before November 2004, four states had antimarriage constitutions, which had been used to legally argue against recognizing *any* nonmarriage status, such as job benefits and Civil Unions for same-sex couples. The November 2004 election brought 11 more antimarriage state constitutional amendments as well as Louisiana and Missouri earlier in that same year. In all, 17 states have amended their constitutions to ban gay marriage; 10 of these extend beyond marriage to eliminate other forms of partnership recognition including civil unions and domestic partnerships. These initiatives go beyond blocking future progress for "gay marriage." They have also dismantled domestic partnerships and other civil contracts that have provided legal protection and benefits for decades to heterosexual and straight couples alike, who could not or would not marry.

In most states domestic partnership have not been legalized; consequently, there is no expectation that lesbian, gay, bisexual, transgender (LGBT) partners or unmarried heterosexual partners will be extended the same rights as legally married couples when seeking

medical care and long-term care facilities. In addition, surviving domestic partners are not granted Social Security benefits or property inheritance that a widowed spouse would receive. Likewise, pension, 401(k) regulations, and tax laws do not recognize domestic partners.

Given these laws it is crucial for LGBT couples, particularly those approaching later life, to entrust each other financial and medical decision making capabilities via legal procedures such as power of attorney, healthcare proxies, and living wills.

Related Topics

◉ [Homosexuals](#), ◉ [Marital status](#)

Suggested Readings

- Bailey R (1999) *Gay politics, urban politics: identity and economics in the urban New York*. Columbia University Press, New York
- Carrington C (1999) *No place like home: relationships and family life among lesbians and gay men*. Chicago University Press, Chicago, IL
- Duggan L, Hunter ND (1995) *Sex wars: sexual dissent and political culture*. Routledge, New York
- Statsky WP (2001) *Family law*. Thomson Learning, Albany, NY, p 696

Down Syndrome

Deborah J. Gould

An English physician, John Langdon Down, first described Down syndrome in 1862. It was not until 1959 that the cause of the syndrome was found. Individuals normally have 23 pairs of chromosomes. For each pair of chromosomes, one chromosome is inherited from the mother and one from the father. In Down syndrome, there is an extra chromosome 21. Thus, another name for Down syndrome is Trisomy 21.

Down syndrome is a major cause of moderate to severe mental retardation. In addition to intellectual impairment the disorder has medical conditions associated with it. These include congenital malformations of the heart and gastrointestinal tract, hearing loss, and

leukemia. There are also characteristic physical features (dysmorphic features) found in the disorder including slanting eyelids, short stature, small hands and feet, and flattening of the back of the head. The degree of impaired intellect and dysmorphology varies with the number of cells in the body containing the extra chromosome. Because of the different ways in which the extra chromosome is derived, not all cells of the fetus may be affected. This phenomenon is called mosaicism.

The incidence of Down syndrome is 1/600 live births. Maternal age is a risk factor for Down syndrome with the incidence rising from 1/600 births for a maternal age of 20 to 1/370 for a maternal age of 35 and to 1/105 for a maternal age of 40. However, because fewer older women have children, the majority of children born with Down syndrome have younger mothers. Paternal age does not have a significant impact on the incidence of Down syndrome.

There are now tests that can diagnose the syndrome prenatally. The mother's blood can be tested for levels of alpha fetoprotein (AFP), human chorionic gonadotropin (hCG), and unconjugated estriol (uE3). Abnormal levels of these substances in the mother's serum are predictive for Down syndrome and the diagnosis can be confirmed by tests such as amniocentesis accompanied by fetal chromosome analysis that directly examines the fetus's karyotype (the number and morphology of the chromosomes).

The life expectancy of individuals with Down syndrome has increased over the last 30 years because of the ability to treat the comorbid medical conditions. However, with longer survival came the discovery that many people with Down syndrome develop Alzheimer dementia at a young age. Studies have shown that for individuals with Down syndrome 10–25% develop Alzheimer Disease (AD) by the age of 40–49, 20–50% by the age of 50–59, and 60–75% by the age of 60. AD in individuals with Down syndrome occurs at a much younger age and with greater frequency than in the general population. This finding led researchers to explore the role of chromosome 21 in AD. Researchers found a gene on chromosome 21 responsible for the formation of a material called β -amyloid, a protein that contributes to the development of Alzheimer's.

With treatment of the medical problems found in Down syndrome, individuals with the syndrome can live fairly long and productive lives with the appropriate assistance. The degree of intellectual impairment associated with Down syndrome varies widely. Some

people with Down syndrome can live independently or within a supervised environment such as a group home. Over the last decade more children with Down syndrome have been educated in schools where most students are not disabled, as opposed to separate schools for children with special needs. Vocational training has increased and individuals with Down syndrome are often employed. When given the opportunity, individuals with Down syndrome will develop good social skills and form meaningful relationships with people both inside and outside the family.

Related Topics

▶ Capacity, ▶ Dementia

Suggested Resources

eMedicine.com, Inc. Feb. 17, 2005. Alvarez, N. Alzheimer disease in individuals with Down syndrome. <http://www.emedicine.com/neuro/topic552.htm>

National Association for Down Syndrome. <http://www.nads.org>

National Down Syndrome Society. <http://www.ndss.org>

National Institute of Child Health and Human Development, National Institutes of Health. March, 2005. Facts about Down syndrome. http://www.nichd.nih.gov/publications/pubs_downsyndrome/down.htm

Driving Safety

Kristin A. Cassidy

Contrary to a commonly held belief, the number of motorist and pedestrian fatalities caused by older adults is far less than drivers in any other age category. Unfortunately, when older drivers *are* involved in an accident, insurance data indicate that they are more likely to be severely injured or killed than the other people involved in the crash. The death rate per mile driven for drivers aged 65 and older is second only to that of teenagers. This is mostly due to the fact that older adults are more vulnerable to injuries and are more likely to die from those injuries than younger people.

In 2004, while persons above 70 comprise 9% of the US population, nearly 12% of the 42,636 traffic

fatalities were from this age group. Of these fatalities, 57% were men and 43% were women. Of the 58,080 total drivers involved in fatal crashes, 7.8% were 70 years or older. This compares to 13.6% in the 15–20 age group.

People often find, as they grow older that some of their senses are not as sharp as they used to be. Deteriorating vision, hearing loss, slower reaction times and other physical and cognitive impairments that often accompany aging may affect an older person's ability to drive safely. Although not all older adults have difficulties when driving, insurance data show that as drivers age, they become more likely to be at fault in an accident. Therefore, it is important for older persons and their loved ones to be aware of these heightened risks and regularly evaluate any changes in driving skills.

Driver's license renewal regulations vary by state. Some states require people over a certain age (usually 65 or 70) to take special tests when renewing their license or to renew more often. Other states do not have any special regulations for older drivers. Regardless of the regulations, older drivers may want to be tested for their own peace of mind. The local Bureau of Motor Vehicles or Area Agency on Aging can provide information on where to get tested.

Depending on the severity of the driving impairment, there are several options available to the older person. For those who have minimal impairment, driving refresher classes specifically for older adults are offered at many senior centers, American Association of Retired Persons (AARP) chapters, hospitals, automotive clubs, community colleges, or local agencies on aging. These classes typically cover reminders and updates of the driving laws, suggestions for how to adjust to normal, age-related physical changes that may affect driving, driving safety tips, how different medications may interfere with driving safety, and how to continually appraise driving skills. Many insurance companies will even give a discounted rate to people who take approved refresher classes. Some states have laws requiring insurance companies to give a discount to anyone who completes an approved driver improvement course. Occupational therapists can also evaluate a driver and suggest equipment to adapt a car for certain impairments. For example, a person with limited arm movement may attach a spinner knob to their steering wheel to allow for one-handed steering. Even something as simple as installing extra mirrors can help a person suffering from the stiffness of arthritis.

Some older persons may be in denial of a decline in driving skills. This is understandable since many people equate having a car with freedom and independence. It is important for loved ones to step in and offer assistance to help ease this life transition. A friend or relative can help the older adult by seeking out other options for transportation.

One way a loved one can help is by contacting friends and family members and making a list of people who are willing to give the person a ride when needed. The list should include important information such as their phone numbers and the times they are available. In urban areas, public transportation is another alternative to driving. Many cities offer discounted passes for senior citizens. A loved one can help by getting the schedules and writing up a plan for which bus or train to take to specific destinations (e.g., the grocery store, a friend's house, the theater, the mall, the doctor's office, etc.). Local senior centers also often have programs that provide transportation to medical appointments at a low cost.

By being aware of age-related changes in driving skills, seeking ways to adapt to those changes, and putting safety first, older adults can extend their trip on the road of independence and successful aging.

Related Topics

▶ Accidents, ▶ Alzheimer's disease, ▶ Dementia, ▶ Pedestrian injuries, ▶ Role loss, ▶ Transportation services, ▶ Vision

Suggested Readings

National Center for Statistics and Analysis of the National Highway Traffic Safety Administration. <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/> Insurance Institute for Highway Safety Status Report, September 2001, Special Issue on Older Drivers 36(8). <http://www.highwaysafety.org/sr/pdfs/sr3608.pdf>

Suggested Resources

AAA Foundation for Traffic Safety—Senior Driver Website. <http://www.seniordrivers.org>
 AARP Driver Safety. http://www.aarp.org/families/driver_safety
 American Medical Association's Physician's Guide to Assessing and Counseling Older Drivers. <http://www.nhtsa.dot.gov/people/injury/olddrive/OlderDriversBook/index.html>

Drug Interactions

Matthew A. Fuller

Adverse drug reactions are common especially in older adults. This population exhibits physiologic changes associated with aging that affects the way in which the body handles drugs, pharmacokinetics, and the way in which drugs impact the body, pharmacodynamics. Adverse drug reactions may also occur when two or more drugs possessing similar or antagonistic actions are used in combination with each other. While only a small proportion of adverse drug reactions in patients occur secondary to these drug–drug interactions, they are important because they are often predictable.

Clinicians need to be mindful and make efforts to avoid and manage drug–drug interactions. This is particularly true for the elderly as the number of medications taken increases in older adults, the risk of drug–drug interactions increases. In fact, when the number of drugs prescribed reaches eight, the risk of a drug–drug interaction approaches 100%. This is a sobering piece of information considering that individuals in nursing homes on average receive at least this number of medications. Drug interactions also contribute to avoidable hospital admissions in older adults with a resultant increase in the risk of morbidity and mortality.

Drug–drug interactions may result from a drug's inherent pharmacokinetic or pharmacodynamic properties. Pharmacokinetic mechanisms for drug–drug interactions include alterations in drug absorption, distribution, systemic drug metabolism and excretion. Pharmacodynamic drug interactions may occur when two drugs possessing a similar effect are combined (additive or synergistic) or possess opposite or antagonist effects. In addition, a pharmacodynamic interaction may arise when one drug changes the environment necessary for another drug to be used safely. Therefore, drug combinations may produce either additive or diminished effects depending on the combination utilized. One needs to be careful, however, not to ascribe a lack of efficacy of a drug or drugs to a lack of adherence. Adherence to medications is often not 100% and the possibility of a drug–drug interaction should be considered.

The most frequently encountered drugs involved in drug–drug interactions in the elderly include

furosemide, digoxin, warfarin, angiotensin-converting enzyme inhibitors, NSAIDs, and amiodarone.

Changes in systemic drug metabolism and excretion appear to be the most common pharmacokinetic parameters impacted in the elderly. Drugs metabolized in the liver undergo either Phase I or Phase II metabolism. Phase I metabolism involves very specific enzymes responsible for metabolism. There are a large number of these enzymes encompassing various families. These enzymes are broadly called cytochrome P450 enzymes. While both Phase I and Phase II metabolism can be affected, the primary route of drug metabolism for most drugs is Phase I oxidation and specifically cytochrome P450 enzymes. The cytochrome P450 enzymes are responsible for the metabolism of approximately 75% of all drugs. As understanding of enzyme substrates, inhibitors, and inducers increases, appropriate utilization of this information will allow clinicians to better predict and therefore manage drug–drug interactions in the vulnerable older adult population.

Changes in drug excretion primarily involve the kidney (renal) and its ability to remove polar metabolites produced in the liver. Changes in renal excretion can occur due to various mechanisms. It is well known that after 40 years of age there is approximately 1% decline in renal function per year. The usual laboratory assessment of a blood test for creatinine does not reflect this change and may be normal despite the decrease excretion capacity. The clinician needs to be mindful of this decrease when evaluating medication regimen or prescribing new agents so that the appropriate dose is utilized. The use of a usual adult dose of a medication for the older adult may result in side effects and toxicity unless reduced appropriately.

In addition to drug–drug interactions, one also needs to be aware of the potential for herb–drug interactions. Older adults often supplement their prescribed medications with herbal products. Unfortunately, this information is usually not presented to health care clinicians, as herbs are often not considered as medications per se. The lack of complete information makes the evaluation of a medication profile difficult and increases the potential for drug–drug interactions. Individuals who supplement their prescriptions with herbal or other alternative agents should provide this information to their health-care clinicians so they may provide better care by reviewing

for the potential, predicting, and managing drug–drug interactions.

Related Topics

➤ Adherence, ➤ Adverse drug reactions, ➤ Polypharmacy

Suggested Readings

- Doucet J, Chassagne P, Trivalle C et al (1996) Drug–drug interactions related to hospital admissions in older adults: a prospective study of 1000 patients. *J Am Geriatr Soc* 44:944–948
- Hohl CM, Dankoff J, Colacone A, Afilalo M (2001) Polypharmacy, adverse drug-related events, and potential adverse drug interactions in the elderly patients presenting to an emergency department. *Ann Emerg Med* 38:666–671
- Juurlink DN, Mamdani M, Kopp A, Laupacis A, Redelmeier DA (2003) Drug–drug interactions among elderly patients hospitalized for drug toxicity. *JAMA* 289:1652–1658
- Rollason V, Vogt N (2003) Reduction of polypharmacy in the elderly: a systematic review of the pharmacist. *Drugs Aging* 20:817–832

Suggested Resources

Senior Care Online University for Professionals. Multidisciplinary medication management project, November 10, 2005. <http://www.scoup.net/M3Project/topten>

Durable Power of Attorney

Marshall B. Kapp

For various reasons ranging from convenience to physical and mental incapacitation, individuals sometimes want or need others to make financial and personal (e.g., health care) decisions and take actions for them. The law provides mechanisms to accomplish planned, voluntary delegations of authority from one person to another.

The standard power of attorney (POA) is a written legal instrument authorizing a person (designated an

agent or attorney-in-fact) to sign documents and conduct transactions on behalf of the individual who has delegated away that authority (the principal or maker). The principal can delegate as much (e.g., a general or complete designation) or as little (e.g., a delegation specifically delineating the types of choices the agent may and may not make) power as desired. The principal may terminate or revoke the arrangement at any time, as long as the principal remains mentally competent to do so.

The POA in its traditional form does not work well as a method for dealing with medical decision making authority on a voluntary, prospective basis. The ordinary POA terminates automatically when the principal who created it dies or becomes mentally incompetent. The underlying theory is that, because a deceased or incompetent person no longer has the physical or mental ability to revoke the POA, the law should exercise that right immediately in the principal's stead. This rationale makes strong sense when the agent's power concerns financial matters handled for the principal. However, a person who establishes a standard POA to help in managing health affairs would be cut off from such assistance at precisely the moment when assistance is needed the most, namely, when the principal is unable to act personally.

In an effort to get around this practical problem, every state legislature has enacted statutes authorizing citizens to create (or execute) a durable power of attorney (DPOA) instrument. In contrast to the ordinary POA, the effect of a DPOA may endure or continue beyond the principal's later incapacity as long as that continuing authority is what the principal intended in executing the DPOA.

To remove any ambiguity about the applicability of the DPOA concept to the area of health care decision making (including but not limited to choices about the initiation, continuation, withholding, or withdrawal of life-sustaining medical treatments such as mechanical ventilators or antibiotics), almost every state has enacted legislation explicitly authorizing the use of the DPOA in the medical context. Some states use terminologies such as health care representative, health care agent, or health care proxy. In addition, a number of states employ a single, comprehensive advance directive statute to expressly authorize competent adults to execute both proxy and instruction directives; other states maintain separate statutes for each type of advance directive. Under most state laws,

to prevent a real or apparent conflict of interest from materializing either in fact or perception, the health-care providers for the principal who has executed a DPOA are disqualified from serving as agents under the DPOA. The agent may, but does not need to be, a family member of the principal.

Proxy directives provide the advantage, for both consumers and their service providers, of legally empowering a live advocate for the principal who can enter into discussions and make decisions regarding the principal based on the most current information and other considerations, most importantly the agent's interpretation of the principal's previously expressed and implied wishes. Although it usually works reasonably as intended, a DPOA sometimes goes badly awry. A service provider, for instance, may become aware of an agent named under a now-incapacitated individual's DPOA who is misusing or exploiting the principal's finances, abusing the principal, or grossly neglecting the principal's medical or residential needs. In such circumstances, the professional caregiver confronts ethical quandaries about whether to initiate a conservatorship/guardianship proceeding or otherwise request judicial involvement. When the professional caregiver sees no other effective, less intrusive means of dealing with these sorts of scenarios, referring the situation to the legal system, through official notification of the local adult protective services (APS) agency, probably is the best course to follow.

Another limitation of the DPOA is the legal and practical requirement that the person who would like to delegate general or limited authority to an agent actually have a suitable, willing, and able person to whom to delegate that authority. DPOA is irrelevant for people who do not have available to name as a potential agent an individual whom they can trust to make future financial and/or personal decisions for them. The combination of population aging and a weakening of family structures is producing a significant social development of growing numbers of "unbefriended" older persons without family members or friends available and willing to act as appointed decision-making agents for them.

Related Topics

- [Advance directives](#), ➤ [Capacity](#), ➤ [Conservatorship](#), ➤ [Informed consent](#), ➤ [Living wills](#)

Suggested Readings

- Dubler NN (2001) Creating and supporting the proxy-decider: the lawyer-proxy relationship. *Georgia Law Rev* 35:517–538
- Gunter-Hunt G, Mahoney JE, Sieger CE (2002) A comparison of state advance directive documents. *Gerontologist* 42(1):51–60
- Hall MA, Ellman IM, Strouse DS (1999) Health care law and ethics. West Group, St. Paul, MN
- Sabatino CP (1999) The legal and functional status of the medical proxy: suggestions for statutory reform. *J Law Med Ethics* 27(1):52–68

Suggested Resources

- www.abanet.org
www.caringinfo.org

Dyspareunia

Karen Ashby

Dyspareunia is pain prior to, during, or after, sexual intercourse. Dyspareunia is more common in women but can affect either sex. Many women will experience dyspareunia at some time in their life. Sometimes a medical or physical etiology may not be obvious and psychosocial factors also can play an important role. In men, dyspareunia can be related to an allergic reaction to a condom or spermicide. An infection of the prostate or prostatitis may also cause pain. If a female partner has a vaginal infection or dryness, the male can experience discomfort during intercourse.

Dyspareunia can have several different causes. For instance, vaginismus is a “spasm” or contraction of the muscles surrounding the vagina. Women with vaginismus have pain with insertion of tampons as well as with penile penetration. Vulvodynia and vulvar vestibulitis are both conditions that are characterized by painful intercourse. They are also characterized by vulvar burning and itching. The discomfort may not necessarily be associated with intercourse.

In older women vaginal dryness is a common cause of dyspareunia. This is a common problem for women that are not on hormone replacement. Dyspareunia can also be caused by abnormalities of the uterus or

pelvic organs. Woman may describe the pain as feeling that something is being “pushed” or “bumped” during intercourse. An enlarged uterus or ovary can cause painful intercourse especially during deep penetration. A prolapsed or “dropped” uterus or bladder may also cause discomfort. Dyspareunia can also result from previous pelvic surgery or infection. These conditions can reduce movement of the pelvic organs resulting in pain with deep penetration.

Women who experience trauma such as rape or sexual assault may also experience dyspareunia. Unfortunately, many women may have difficulty sharing this information with their health-care providers.

In order to treat dyspareunia appropriately the cause must be identified. The time at which the pain occurs during intercourse and other associated symptoms can help determine the potential etiology. For instance, pain during entry may have a different etiology than pain with deep penetration. It is also important for a health-care provider to know when in a woman’s life symptoms began. For example, if a woman’s symptoms began around or shortly after menopause, her symptoms could result from atrophic vaginal tissue. She may describe her symptoms as burning or “friction” with intercourse. Vaginal lubricants or estrogen can improve dryness and decrease pain. For women with a history of endometriosis, pelvic surgery, or infection, treatment of dyspareunia is aimed at restoring pelvic organs to their normal position and reducing scar tissue. Surgical management may also be recommended for women with symptomatic prolapse of the uterus, rectum, or bladder.

Women with a history of sexual abuse or treatment may benefit from psychological evaluation and treating any depressive symptoms that are present.

Related Topics

- ▶ Rape, ▶ Sexual dysfunction, ▶ Sexuality, ▶ Vaginismus

Suggested Resources

- www.medem.com
<http://familydoctor.org>

Dysphagia

Jane Prasse

Oropharyngeal Dysphagia

In adults as well as children, congenital and acquired malformations, neurological and neuromuscular diseases, tumors, gastroesophageal reflux disease, strictures, and webs are the main conditions leading to dysphagia. In addition, cervical spine surgery, bracing of neck following cervical spine surgery, upper esophageal sphincter dysfunction as well as radiation and chemotherapy to the head and neck have shown to cause oropharyngeal dysphagia. In the elderly, overall muscle atrophy of the tongue, pharynx and upper esophagus, generalized weakness as well as cervical osteophytes have also been noted to cause dysphagia.

Esophageal Dysphagia

Esophageal dysphagia is often characterized by the sensation of pressure in the chest area, a “sticking” sensation of food in the sternum/chest area. Symptoms may be more pronounced with solids versus liquids, or vice versa.

Esophageal dysphagia is often the result of aging, infection, and irritation causing narrowing, head and neck cancer, tissue scarring following radiation treatment to the head and neck, gastroesophageal reflux disorder, alcoholism (esophageal varices), esophageal diverticuli (small sacs or pouches in the esophagus), achalasia (difficulty moving food through the esophagus), esophageal spasm, nutcracker esophagus (difficulty and/or pain associated with swallowing due to excessively strong contractions of the esophagus), scleroderma, and/or diabetes mellitus.

Signs and Symptoms of Dysphagia

Individuals with dysphagia may demonstrate coughing or choking before, during, or after meals and during the swallowing process. Others may not demonstrate outward signs of difficulty, but instead present with vocal quality changes, fevers after meals and recurrent aspiration pneumonias. Patients may report the sensation of food or liquid “sticking” in the throat area,

often referred to as a globus sensation. Individuals with oropharyngeal dysphagia (dysphagia due to problems prior to or during the initiation of the swallow) as well as esophageal dysphagia are at high risks for developing aspiration pneumonia, thus having higher morbidity and mortality rates as well. Without proper diagnosis and treatment, dysphagia can lead to chronic and even fatal conditions, such as malnutrition, dehydration, and weight loss.

Diagnosis and Treatment of Dysphagia

Diagnosis of dysphagia may be performed by an informal means, often performed by the primary care physician, a speech-language pathologist, or an otolaryngologist. If oropharyngeal dysphagia or aspiration is suspected, objective measures are often recommended including videofluoroscopy or modified barium swallow (sometimes called “cookie swallow”) or fiberoptic endoscopic evaluation of swallowing.

If esophageal dysphagia is suspected, a barium swallow or esophogram is performed. Depending on the type of dysphagia suspected and the individual’s medical stability, the appropriate test will be chosen to determine the cause and establish a plan of treatment.

Treatment of oropharyngeal dysphagia includes identification of safe swallowing strategies, altering the consistency of food and viscosity of liquid, as well as postural changes to reduce the amount of residual and minimize the weakness throughout the oral cavity and pharynx. In addition, exercises to strengthen and improve coordination of the swallowing muscles, including the tongue, velum (the soft palate), and pharynx are often beneficial, especially in the retraining of the swallowing muscles. For individuals with severely impaired swallow function and recurrent aspiration, feeding or gastrostomy tube placement may be necessary.

Treatment of esophageal dysphagia may range from pH monitoring, reflux precautions and medications to endoscopy or esophageal dilatation and surgical intervention for obstructive processes.

Related Topics

▶ Peptic ulcer disease, ▶ Pneumonia

Suggested Readings

- Castell DO, Donner MW (1987) Evaluation of dysphagia: a careful history is crucial. *Dysphagia* 2:65–67
- Palmer JB, Drennan JC, Baba M (2000) Evaluation and treatment of swallowing impairments. *Am Fam Physician* 61:2453–2462
- Prasse JE, Kikano GE (2004) An overview of dysphagia in the elderly. *Adv Stud Med* 4(10):527–533

Dysthymia

Daniel Brian Keaton

Dysthymia is a chronic, low-intensity mood disorder characterized by depressed mood (extreme irritability in children and teenagers) for more days than not, for most of the day, or for at least 2 years in adults and 1 year in children and teenagers. Hallmarks include at least two of the following: poor appetite or overeating, insomnia or hypersomnia; low energy, excessive tiredness, or fatigue; poor self-esteem, difficulties with memory, concentrating, or making decisions; or feelings of hopelessness and helplessness. Most individuals with this disorder complain that they have been depressed for as long as they can recall, and possibly lack pleasure in acts that are normally pleasurable. The individual has never been without symptoms for more than 2 months at a time. The term “dysthymia” was first used in order to bring a clearer understanding of depressive disorders that did not meet the criteria for major depression, were more chronic and less severe, and implied a chronic, low-grade depression that lasts more than 2 years.

Dysthymia appears to have both psychological as well as biological etiology and tends to respond to medication and psychotherapy equally. Long-term psychotherapy is frequently able to bring about lasting change in dysthymic individuals. Using the best definition possible, as outlined in the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR), this is a common condition with a lifetime prevalence of 6%, affecting about 3% of the population in the United States. The incidence is about three times greater in women than men from adolescence through menopause. It occurs more

often in unmarried persons, those with low incomes, and those with more health problems; hence, elderly patients are particularly susceptible.

Dysthymia commonly coexists with other psychiatric illnesses. In fact, about 75% of those with dysthymic disorder have another psychiatric diagnosis, the most common of which is major depressive disorder. About half of those with dysthymia have gradual onset prior to the age of 25. They are at increased risk for major depression or for bipolar I or bipolar II. Other common disturbances that exist with dysthymia are anxiety disorders such as panic and substance abuse, attention deficit disorder, conduct disorder, and personality disorders. Women with dysthymia are also at risk of premenstrual syndrome (PMS), premenstrual dysphoric disorder (PMDD), and pregnancy-related depression. In helping to make the diagnosis one must take care to be sure that the person does not have major depression, and if one does, it is known as double depression. Also it is important to note that there is no mania or hypomania associated with this diagnosis.

The causes of dysthymia are not clear, but some of the same factors that cause major depression have been implicated so that biological, psychological, and social factors are most likely involved. Some of the biological factors seen in major depression also occur in dysthymia, such as rapid eye movement (REM) latency and decreased REM density (REM occurs during sleep). Those with dysthymia are much less likely to have positive results on tests of the adrenal axis (abnormal levels of hormones in the blood) such as the dexamethasone-suppression test (DST). Psychological theories relate to early developmental problems while cognitive theories revolve around diminished self-esteem and sense of helplessness.

While the outlook for those with this disorder used to be quite dismal with only about 15% achieving a complete remission, newer treatments have raised this to about 75%. Newer treatments include some of the medications that raise serotonin levels of the neurotransmitters such as the antidepressants Prozac, Paxil, Zoloft, Celexa, etc. Psychotherapies also have proven effective with and without medications. These include cognitive-behavioral, interpersonal, insight-oriented, family, and group therapies. Hospitalization is not usually indicated unless the individual with dysthymia is suicidal.

Related Topics

- ▶ [Bipolar disorder](#), ▶ [Cognitive behavioral therapy](#),
- ▶ [Depression](#), ▶ [Mood disorders](#), ▶ [Psychotherapy](#)

Suggested Readings

American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th ed, Text revision (DSM-IV-TR). American Psychiatric Publishing, Washington, DC

Hahn RK, Albers LJ (2006) Psychiatry. Current Clinical Strategies Publishing, Laguna Hills, CA

Sadock JB, Sadock VS (2000) Comprehensive textbook of psychiatry, 7th ed. Lippincott, Williams and Wilkins, Philadelphia, PA

Suggested Resources

Rose BD, Rush JM (2005) Up To Date. <http://www.utdol.com/enterprise.asp>

Early Retirement

Brandy L. Johnson

Early retirement is a term that has more than one meaning. Early retirement can refer to the age an individual can start to receive Social Security benefits. The term can also refer to the practice of retiring before reaching an employer's official retirement age.

As applied to Social Security, early retirement refers to the practice of retiring before reaching 65. Individuals who wish to retire early can start receiving their Social Security benefits after turning 62. However, when individuals start to receive their benefits before the age of 65, their benefits will be reduced a fraction of a percent for each month before their full retirement age. Thus, as a general rule, early retirement will provide about the same total of Social Security benefits over an individual's lifetime, but they will be paid out in smaller amounts. The advantage to early retirement is that an individual can collect benefits for a longer period of time. The disadvantage, however, is that the individual's benefit is permanently reduced.

As stated, when applied to an individual's employer, early retirement refers to the practice of retiring before reaching the employer's official retirement age. Many businesses offer early retirement packages meant to encourage employees to opt for early retirement. For example, a company may offer a package that includes an enhanced pension or up-front lump-sum payments.

Many individuals dream of an early retirement. However, early retirement often requires that the individual manage his or her expenses. This includes either reducing or eliminating debt. Individuals who wish to retire early must also invest wisely, save, and accumulate capital. Early retirees are often super-savers that put away at least one-third of their income. It is also common for early retirees to have no children, own their home, pay off their credit card charges monthly, and have a history of living simply.

When deciding whether to retire early, the individual must weigh different considerations. For example, individuals must consider whether they enjoy going to work every day and whether they can afford to go without their current income and/or job benefits.

Health insurance is important. As Medicare does not provide coverage until an individual turns 65, individuals should consider what health insurance is available to them. By retiring early, a retiree will suddenly find himself or herself with a lot of free time. The individual should consider what he or she would like to do with this time and whether he or she can afford to do these things.

Early retirement can be a double-edged sword. While an individual may love the idea of being free to spend every day engaging in his or her favorite activities, the reality of early retirement may turn out to be completely different. Therefore, before choosing early retirement, individuals have to examine what they do for a living, their relationship with their employer and co-workers, the amount of money they make, and whether they can live without all of those things.

Related Topics

- ▶ Financial planning
- ▶ Quality of Life
- ▶ Retirement
- ▶ Social Security

Suggested Readings

- Abromovitz L (1999) You can retire while you're young enough to enjoy it. Dearborn, Chicago, IL
- Lee D, Flewelling J (2001) The complete idiot's guide to retiring early. Alpha Books, Indianapolis, IN
- Peetz R, Peetz T (1996) The ABC's of retiring early: a guide to changing your life-style before traditional age. System Co, Carlsborg, WA
- Siskos C, Goldwasser J (2004) Get out EARLY. Kiplinger's personal finance. 58(3):72-76
- Wasik J (2000) Retire early and live the life you want now: A ten-step plan for reinventing your retirement. Henry Holt, New York

Suggested Resources

- AARP. <http://www.AARP.org>
- CNNMoney. http://money.cnn.com/2005/05/03/pf/expert/ask_expert/
- FIRECalc. <http://fireseeker.com/>
- The Retire Early Homepage. <http://www.retireearlyhomepage.com/>
- Social Security Online. <http://www.ssa.gov/planners>

Earnings Test

Doug Wood

As we mature we learn that we cannot predict the future with perfection. As a result of the uncertainty we know there needs to be preparation for the future, no matter what it may bring. When it comes to planning retirement there are many things to be considered in anticipation of the future, including how earnings can affect the benefits one receives from Social Security should you decide to retire early.

The earnings test is used by Social Security to determine how much benefit should be received when one chooses to retire. The rate at which Social Security deducts from the benefits is \$1 for every \$2 of earnings over the allotted amount, if a person chooses to retire early. In addition, there is a lower allocation of exempted earnings before Social Security starts the deductions to the benefits. The benefits are better if one chooses not to retire too early. In fact, if one retires at normal retirement age, there is no limit to how much earnings an individual can have without deductions to their Social Security benefits. Normal retirement ages vary according to the year of birth; typically it is between 65 and 67. The earnings test applies to those who are below the normal retirement age for the entire year in which they receive benefits.

The definition of earnings includes all income other than pensions, annuities, or investment income. The earnings test is applied to earnings from the year they are earned, not the year they are paid out. Retirement benefits from Social Security may need to be recalculated to reflect any earnings one may make during the year they retire.

Assume that an individual wishes to retire and receive Social Security benefits at the age of 63 and normal retirement age is 65. The benefits that the individual will receive will be determined by how much he/she earned in that year. If the individual earned more than the allotted exempt amount, the benefits will be reduced by \$1 for every \$2 earned over the exempt amount. However, if the individual waits until he or she is 65, the individual will have an unlimited amount of earnings available to him or her.

Social Security offers benefit reduction calculations on their website. One merely enters their earnings and age and the calculations are done for free, so that one can get an estimate of the benefits he or she will receive.

The earnings test can help people plan for the future by being able to determine what benefits will be lost with early retirement. The earnings test allows one to do a cost-benefit analysis of early retirement so that you can decide if that is the right choice for you. It is the closest we can get to a crystal ball telling us what the future may hold for us.

Related Topics:

➤ Early retirement, ➤ Financial planning, ➤ Retirement, ➤ Social Security

Suggested Resources

Social Security's web page for earnings calculations. <http://www.ssa.gov/retire2/retcalc.htm>

Eating Disorders

Virginia E. Ayres

The term “eating disorders” refers to a category of psychiatric illnesses listed in the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR), that include: anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified (EDNOS). Individuals with these disorders exhibit severely disturbed eating behaviors. These disorders occur predominately in women (90%) from industrialized nations where being thin is considered attractive.

The incidence of AN is on the rise. The lifetime prevalence rate for women with AN is 0.6%; the disease is associated with significant morbidity. The mortality rate averages between 5% and 10%, and is frequently due to suicide, starvation, or electrolyte (essential components of blood/body fluid) imbalance. BN has a lifetime prevalence rate of 1–3% for women. Men have one tenth the rate for either disorder. The rate of eating disorders in the older population is unknown. Elderly individuals are not usually assessed for these disorders due to faulty beliefs that they do not occur in this population. Also, when symptoms are observed, they may be attributed to other physical or psychiatric causes.

BN occurs when an individual binges on food and then attempts to get rid of the food and associated weight gain by using a compensatory method. The DSM-IV-TR indicates that binge episodes and the compensatory behavior must occur twice each week for 3 months to be considered a disorder. The binge must occur within a discrete time period (such as 2 hours), significantly more food must be consumed than most would eat in a similar setting, and there must be a lack of control over the eating. As with those with AN, self-evaluation depends significantly on how one feels about the body weight or shape at any one point of time.

There are two subtypes of BN: (1) *purging type*, in which laxatives, diuretics, self-induced vomiting (most common), or enemas are used; and (2) *nonpurging type*, in which excessive exercise or fasting occurs but the methods listed under purging type are not regularly used. Unlike those with AN, individuals with BN are typically at a normal weight, or slightly over or under. The choice of food during a binge episode is frequently sugar-laden with a high caloric content such as cookies, candy, and ice cream. During a binge, food is eaten in secret, and often rapidly until the individual is uncomfortably full. Food may be hidden in various places throughout the living quarters/work area. Triggers for binge eating center around dysphoric or other uncomfortable mood states, relationship stressors, and hunger from dietary restraint. In fact, binge eating commonly begins after dieting, usually in the late adolescent/young adult. Vomiting usually begins after a severe episode of binge eating.

A number of those with BN have a history of AN (25–30%). Some studies suggest that those who develop BN are overweight before the onset, and have higher frequency of personality disorders and impulsive behaviors. Mood disorders, anxiety disorders, and an increased rate of substance abuse or dependence (alcohol and stimulants) are also associated with BN. Studies suggest that the first-degree biological family members of those with BN have a higher incidence of the aforementioned disorders. Due to its relatively recent description in the diagnostic nosology, there is little information regarding the long-term prognosis of those with BN. Most agree that when compared to AN, those with BN have increased rates of partial or full remission.

AN is characterized by refusal to maintain a normal body weight for age and height (less than 85% of expected), marked fear of weight gain, amenorrhea

for three cycles (if woman and of menstruating age), and disturbance in the way weight and shape are perceived. Two types of AN are observed: (1) *restricting type*, in which no binge eating or purging behaviors occur, instead dieting/fasting and excessive exercise are used to lose weight; and (2) *binge eating/purging type*, in which binge eating and purging has regularly occurred. Some with this subtype will purge even after eating tiny portions of food. Those with this subtype are more likely to have a personality disorder diagnosis and exhibit other impulsive behaviors (stealing, promiscuity).

Those with AN deny the seriousness of the low weight. Even as weight decreases, those with AN will continue to experience themselves as fat (or specific body parts as fat, such as their thighs) and will strive to lose even more in an endless cycle. Those who seek treatment will usually do so only after family members or significant others insist, that too, reluctantly. Starvation and the time-consuming behaviors associated with maintaining low weight have interpersonal, psychological, and somatic consequences. Individuals with AN may seek treatment for these associated difficulties, but not to treat the drive for thinness and weight loss. In fact, the ability to lose and maintain the weight loss is perceived as an accomplishment and a testament to self-control.

Excessively monitoring weight, measuring the size of, and looking in the mirror at various parts of the body are a large part of the disorder. There is often poor sexual adjustment. Those with AN may hoard food, collect recipes, and prepare grand feasts for others but do not partake themselves. Depressive illness and obsessive compulsive features may be present during the course of AN due to the effects of starvation itself. Once weight gain is initiated, symptoms of these disorders must be monitored and if they persist, a separate diagnosis may be warranted.

AN rarely occurs before puberty or after 40. When symptoms of AN occur before puberty, there is some evidence of increased comorbidity with other mental disorders. Those who develop the disorder during adolescence may have a better prognosis. Elderly individuals with AN appear to demonstrate the same psychopathological features as their younger counterparts.

The specific cause of AN is unknown. A significant life event or stressor may be associated with the onset of AN. In some cases there is a period of strict dieting (to be attractive or to obtain a body weight needed for a sport, i.e., gymnastics, bodybuilding) which precedes

the onset of AN. This is a similar issue for elderly women who may also experience greater societal pressure to retain physical and sexual attractiveness. There is some evidence that having a first-degree biological relative with AN increases the risk of developing AN and mood disorders. Researchers continue to examine the role of biological processes that may be associated with AN, such as hypothalamic and neurotransmitter function.

The course of AN for any individual can vary since data suggest that roughly 30–43% will experience remission, while 30–36% may go on to experience a waxing and waning course, 20–30% may be chronically ill or go on to develop BN, and 5–10% will die. Those who have an early age of onset and get immediate treatment usually fair better than those who have severe weight loss, vomiting/binging, and chronic symptoms.

EDNOS is the diagnosis given when someone exhibits symptoms of an eating disorder that fall short of the designated number or severity of symptoms needed for AN or BN. For example, the frequency of binge eating might be occurring less frequently than twice a week. Binge eating disorder (BED), currently under investigation, falls in this category. It is characterized by recurrent binge episodes without the regular use of compensatory behaviors. Individuals with BED are usually overweight or more often obese and may have a higher incidence of other mental disorders. This disorder is thought to be quite prevalent with rates around 0.7–4% in community settings and 30% in weight loss programs.

Although there are cases of eating disorders that occur for the first time in late life, it is rare. This infrequency most likely contributes to the lack of recognition of these disorders in the older population. Some suggest that a thorough inquiry targeting these disorders in older individuals, or in men, would uncover greater numbers. When eating disorders are diagnosed in late life, clinical features are similar to younger counterparts as well as the association with depression and obsessive–compulsive disorder. Real or perceived losses, such as the death of a spouse or marriage of a daughter or son, may be precipitating factors in this age group. Some cases of eating disorders in late life represent a relapse of an eating disorder that was present in adolescence, or an exacerbation of eating disorder symptoms that have been present to

some degree for years. Once a history of eating disorders is established, a relapse of symptoms can occur at any time in the life span, particularly when faced with difficult stressors.

Typically, eating disorders which begin in the forties and fifties do not meet the criteria for a specific eating disorder, but instead may represent a mix of eating symptoms (denial of appetite) with other mental (depression, dementia), or physical disorders. Problems with eating in older populations commonly stem from physical and social factors such as impaired taste, social isolation, reduced mobility and finances, and desire to control interpersonal situations by inducing guilt in important significant others.

There are a number of medical issues that may arise in those with eating disorders due to vomiting, starvation, and misuse of laxatives or diuretics, and more rarely, enemas. Although some individuals with eating disorders will show no abnormalities, examinations and laboratory findings may indicate electrolyte disturbances, low blood pressure and fainting, cardiac arrhythmias and failure, anemia and low white cell counts, osteoporosis, parotid (salivary) gland enlargement, and dental problems. For individuals with self-induced vomiting, significant lethal risks include esophageal rupture, gastric dilatation, sudden cardiac death, and cardiomyopathy (disease of the heart muscle) secondary to ipecac abuse. The elderly patient is more vulnerable to these potentially severe and life-threatening effects.

Methods used to treat eating disorders include psychotherapy, medication, and hospitalization. There are no studies that specifically examine treatments for older adults; consequently the same treatment options are available to young and old alike. Determining the appropriate course for each individual is key. For those with AN, a combination of treatments is generally recommended. Hospitalization may be required to increase weight. Cognitive and behavioral methods may be used to target the maladaptive thoughts and behaviors associated with the eating disorder. For those living with family members, therapy involving all members may be helpful. Medications such as chlorpromazine (Thorazine), cyproheptadine, fluoxetine (Prozac), and clomipramine (Anafranil) have been prescribed, but none have been studied sufficiently to demonstrate a clear benefit in the treatment of AN and the frequently associated mood symptoms. More study

is needed to determine the efficacy of these and other medications in the treatment of AN. Fluoxetine (Prozac) has demonstrated some benefit in relapse prevention when given after weight has been restored.

For those with BN, antidepressant medications such as fluoxetine (Prozac), sertraline (Zoloft), and imipramine combined with cognitive behavioral treatment (CBT) seem to be the most effective. There is some evidence that interpersonal psychotherapy (IPT), which focuses on current relationships, not the eating and weight issues themselves, is an effective treatment. When the two therapies were compared, those treated with CBT improved more rapidly, but by one year no differences were found between those treated with CBT or IPT.

Related Topics

[Cognitive behavioral therapy](#),
 [Depression](#),
 [Emotions](#),
 [Obsessive compulsive disorder](#),
 [Psychotherapy](#),
 [Stress](#)

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th ed, Text revision (DSM-IV-TR). American Psychiatric Association, Washington, DC
- Andersen AE, Yager J (2005) Eating disorders. In: Sadock BJ, Sadock VA (eds). Kaplan and Sadock's comprehensive textbook of psychiatry, 8th ed. Lippincott Williams & Wilkins, Philadelphia, PA, pp 2002–2021
- Beck D, Casper R, Andersen A (1996) Truly late onset of eating disorders: a study of 11 cases averaging 60 years at age of presentation. *Int J Eat Disord* 20: 389–395
- Cosford P, Arnold E (1992) Eating disorders in later life: a review. *Int J Geriatr Psychiatry* 7:491–498
- Halmi KA (2003) Eating disorders. In: Hales RE, Yudofsky SC (eds). Textbook of clinical psychiatry, 4th ed. American Psychiatric Publishing, Washington, DC, pp 1001–1021
- Mermelstein HT, Basu R (2001) Can you ever be too old to be too thin? anorexia nervosa in a 92-year-old woman. *Int J Eat Disord* 30:123–126

Suggested Resources

American Association for Geriatric psychiatry. www.aagppa.org

Edema

John A. Ternay · Nanette K. Wenger

Sixty percent of the lean body mass is water. The health of body tissues depends on keeping this large volume of fluid in normal balance. Body water is contained in two main locations. Some body water is in the intravascular compartment, that is, in the blood vessels. The majority of body fluid is extravascular. Extravascular fluid can be inside the cells or in the space surrounding the cells, called the interstitium. One third of the body's water is in this interstitial space. The vascular compartment is separated from the interstitial compartment by a thin layer of cells at the level of the capillary. Under normal conditions a small amount of fluid leaks into the interstitial space and is removed by the lymphatic system. Accumulation of an abnormal amount of interstitial fluid leads to swelling, termed edema. To understand causes of edema, understanding the fluid dynamics controlling its formation is needed. Hydrostatic pressure is pressure due to the hydraulic force of the fluid on the blood vessel wall. This pressure drives fluid out of the vascular space, into the interstitium. Oncotic pressure exerts the opposite force, keeping fluid in the vascular space. Oncotic pressure comes mainly from the concentration of protein in the plasma. These same forces are present in the interstitium, albeit exerting their forces in the opposite direction. These forces are collectively known as Starling's forces. The main mechanisms for formation of edema are an increase in hydrostatic pressure or a decrease in oncotic pressure in the vasculature, increased permeability of the vessel wall, or obstruction to lymphatic flow.

Edema is the abnormal collection of interstitial fluid. Edema has different clinical presentations and terminology depending on the location where it accumulates. The most common type is peripheral edema that accumulates in the superficial soft tissues of the trunk and extremities. Because of gravity, this type of edema tends to collect in the most dependent portion of the body (feet and legs) termed dependent edema. In a person confined to bed, the most dependent location may be the sacral area (lower back). Pressing on an edematous area often leaves an imprint of the fingertip, called pitting edema. In nonpitting edema the

fingertip leaves no impression. This kind of edema is much less common, and is seen in conditions such as hypothyroidism. Edema can accumulate in the lungs, called pulmonary edema. Clinically, this presents with shortness of breath, cough, and a feeling of smothering. Edema can occur in the brain, termed cerebral edema. This presents with neurologic complaints, often with coma. Severe generalized edema is termed anasarca. Edema is a sign of an underlying medical problem, and is usually not a diagnosis on its own.

The potential causes of edema encompass local and systemic diseases. The following paragraphs discuss the more common etiologies of edema in the elderly. For a full list of etiologies of edema, review the references at the end of this chapter.

Congestive heart failure is one of the most common causes of edema. The basic problem is failure of the heart to effectively pump the blood forward through the circulatory system. This leads to an increase in hydrostatic pressure in the capillaries (venous hypertension) and egress of fluid into the interstitium. Once the rate of accumulation exceeds the ability of the lymphatic system to drain the fluid, edema forms. In left ventricular failure (failure of left-side heart muscle) this occurs in the lungs and in right ventricular failure (failure of right side heart muscle) it occurs in the periphery. Additionally, as blood flow to the kidneys is reduced, neurohormonal changes occur causing the body to retain sodium, thus increasing total body water, leading to worsening of edema and of symptoms of a heart failure. Usually, this failure to pump blood is due to weakening of the heart muscle (systolic heart failure). A similar clinical picture occurs when pressure builds up because of the inability of the heart to fill properly (diastolic heart failure). As the fluid cannot enter the heart to be pumped, it backs up, hydrostatic pressure increases, and edema forms. Most commonly this is seen in elderly women with a stiff left ventricle from hypertrophy (enlargement) caused by long standing hypertension. Less commonly this is caused by constrictive pericarditis (inflammation of tissue around the heart) and restrictive cardiomyopathy (cardio muscle disease). Restrictive cardiomyopathy is seen in elderly patients with amyloid heart disease. Constrictive pericarditis is a condition in which filling of the heart is impaired as it is encased in an unusually thick and noncompliant outer layer, the pericardium. Multiple factors in the elderly can lead to this condition, with prior open-heart surgery and radiation therapy for malignancy being the more common. The

successful treatment of heart failure requires that both the poor pump function and sodium retention be addressed.

Chronic venous insufficiency is another common cause of edema. Typically it is caused by incompetence of the valves in the venous system of the legs, leading to reflux of blood into the leg tissues. The resultant increase in venous pressure leads to the formation of edema. The dysfunction of the leg's venous valves is most commonly caused by prior deep venous thrombosis (blood clot in the veins of the legs.). This type of edema is more common in elderly patients, as they more commonly have a history of precipitating conditions. As opposed to heart failure, venous insufficiency edema is asymmetric, forming in the region drained by the damaged veins. If it becomes a chronic problem, affected areas can show varicose veins, skin pigmentation, and ulceration. A similar clinical picture can occur with normal veins but extrinsic compression of the veins by a mass, such as malignancy or uterine fibroids.

Hypoproteinemia, low blood protein, leads to edema because the reduced oncotic pressure in the vasculature favors escape of fluid into the interstitium. Hypoproteinemia in the elderly occurs for a variety of reasons. Severe nutritional deficiency occurs in many disease states. It may be a consequence of chronic illness, or may be secondary to the inability to eat because of oral, dental, or gastrointestinal disease. This can also occur in frail elderly people who lack assistance needed to prepare meals. Severe liver disease with decreased protein synthesis (cirrhosis), nephrotic syndrome (protein escaping in the urine), and protein-losing enteropathy (protein escaping into the intestine) are other common etiologies of hypoproteinemia.

Cirrhosis is seen in the elderly with long-standing liver disease. Infections such as hepatitis B and C, chronic biliary obstruction, alcohol abuse, and hepatotoxic medications can cause severe reversible or irreversible liver damage. Regardless of the underlying reason for liver disease, cirrhosis results in edema by many mechanisms. As stated above, impaired protein synthesis leads to decreased plasma oncotic pressure. Portal hypertension (elevated pressure in the hepatic vessels) leads to venous hypertension with a rise in hydrostatic pressure. Systemic arterial vasodilation also occurs, causing a decrease in the mean arterial pressure. The resultant kidney hypoperfusion leads to retention of sodium and water as previously described. The end result is accumulation of fluid outside the

vasculature. It accumulates in both the peritoneal (abdominal) cavity (ascites) and in the periphery (edema).

Edema can also occur as a result of obstruction of lymphatic drainage of the interstitial space. This type of edema is termed lymphedema. It may be primary (no other reason for the impaired lymphatic drainage) or secondary. Primary edema is typically a disease of middle-aged women. Secondary lymphedema is more common in the elderly. It may be due to prior radiation therapy, lymph node surgery, or infection (lymphangitis). Elephantiasis is lymphatic obstruction caused by a parasitic infection, and is a common cause of lymphedema outside the United States. The clinical characteristics of lymphedema differ somewhat from that in the causes of edema described above. The edema tends to be less pitting, and is associated with thickening of the skin and its folds. In severe cases this is so dramatic that the skin and its pores resemble the skin of an orange (peau d'orange). Long-standing severe lymphedema can lead to limb enlargement that can become severe enough to interfere with daily function.

Medications are a common cause of edema, especially in the elderly, who are often on multiple prescription medications. Common offending agents include calcium channel blockers, diazoxide, minoxidil, thiazolidinediones, estrogens, and nonsteroidal anti-inflammatory agents. A thorough medication history should be taken in any elderly patient presenting with edema.

Less common causes of edema include severe burns, allergic reactions, myxedema, and the capillary leak syndrome. Increased capillary permeability is thought to be responsible for edema formation in these conditions.

Treatment of edema targets both the underlying medical condition and the resultant sodium and water retention. Dietary restriction of sodium, and sometimes fluid is required. Diuretics increase the body's excretion of sodium. This lowers the total body water and reduces edema. Compression stockings increase the interstitial pressure in the legs, decreasing the rate of edema formation. This is particularly useful in edema caused by venous insufficiency. Other simple behavioral modifications such as keeping the legs elevated while sitting can reduce edema of any cause. Further management of edema is targeted at the underlying cause. Management of heart failure, kidney failure, and cirrhosis is complex, but aggressive

management is essential to maintain successful long-term control of edema.

Management of any disease in the elderly is complex, and this holds true for edema as well. Several concepts are important when formulating a treatment plan for the elderly. Elderly patients tend to have multiple medical problems (comorbidities) that must be addressed. In the management of edema these other diseases pose many problems: identifying the etiology of the edema, contraindications to medical or surgical treatments, and limited life expectancy being the more common. The elderly are more prone to adverse reactions to medications. This is particularly true in the use of diuretics to treat edema. Elderly patients are more prone to develop dehydration and its adverse consequences. Dehydration can present as weakness, falls, or altered mental status. The elderly are also more prone to adverse effects of diuretics on electrolyte levels, and are prone to develop hypokalemia (low serum potassium). When starting diuretics it is important to start with a low dose, titrate slowly, and use the lowest effective dose. This "start low and go slow" principle applies to any medication prescribed to the elderly. As people age they tend to develop dysfunction in multiple organ systems. This makes diagnosing the cause of the edema more difficult, and in turn complicates management. However, edema can cause significant morbidity in the elderly and therefore, despite these pitfalls, usually warrants aggressive treatment. In the frail, where mobility is limited, edema can worsen this problem. It also increases the risk of pressure ulcers (skin breakdown in a localized area) a major problem in the elderly population.

In summary, edema in the elderly is a common problem caused by abnormal fluid balance. The causes are many, with heart, liver, and kidney disease being common causes. Treatment is targeted at reducing total body water, as well as treating the underlying illness or illnesses. Elderly are at the greatest risk of complications of therapy. However, they also derive the greatest benefit.

Suggested Readings

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- Braunwald E (2005) Edema In: Fauci AS, Braunwald E, Hauser SL et al (eds) *Harrison's principles of internal medicine*. McGraw-Hill, New York, Chap 32
- Chou S, Atwood JE (2002) Peripheral edema. *Am J Med* 113:580–586

- Mitchell RN (1999) Hemodynamic disorders, thromboembolic disease, and shock. In: Kumar V, Abbas AK, Fausto N (eds) Robbins and Cotran pathologic basis of disease. Elsevier, Philadelphia, PA, pp 120–122
- Rockson SG (2005) Lymphedema and other circulatory diseases of the lymphatic system. In: Lewis RP, O’Gara PT, Hirsch GH, Friesinger II G (eds) ACCSAP. American College of Cardiology, Bethesda, MD, pp 17.52–17.63
- Rose BD (2005) Idiopathic edema. In: Rose, BD (ed.) UpToDate, Version 13.2. Waltham, MA
- Rose, BD (2005b) Pathophysiology and etiology of edema. In: Rose, BD (ed.) UpToDate, Version 13.2. Waltham, MA

Education

Gail E. Souare

Educational attainment influences socioeconomic status, which in turn plays a role in well-being at older ages. Education might improve important cognitive skills including literacy, enhanced decision making, and analytical skills, which allow individuals to be more successful in managing their health problems, in interacting with the health care system, or in preventing future health problems. Higher levels of education lead to higher income, which allows the purchase of more health insurance, better housing, and other goods and services. Some studies have also shown that education might lead to greater optimism about the future, self-efficacy or sense of control, which might alter health behaviors, adherence to medical treatments, or ability to self-manage chronic illnesses.

According to US Census Reports, in 2003, 72% of the older population had graduated high school, and 17% had at least a bachelor’s degree. Older men and women were equally likely to have graduated from high school, although older men attained at least a bachelor’s degree more often than older women (23% compared with 13%). The gender gap in completion of a college education will narrow in the future because men and women in younger cohorts are earning college degrees at roughly the same rate.

Despite the overall increase in educational attainment among older Americans, substantial educational differences exist among racial and ethnic groups. In 2003, 76% of non-Hispanic whites and 70% of Asians aged 65 and above had completed high school. In contrast, 52% of older blacks and 36% of older

Hispanics had completed high school. Older Asians had the highest proportion with at least a bachelor’s degree (29%). Almost 20% of older non-Hispanic whites had this level of education, while only 10% and 6%, respectively, of older blacks and Hispanics had a bachelor’s degree.

The National Institutes of Health reports associations between education and health across a broad range of illnesses, including coronary heart disease, many types of cancer, Alzheimer’s disease, some mental illnesses, diabetes, and alcoholism. In addition, many important health risk factors for disease, such as use of cigarettes, have been linked to education levels. For most diseases, segments of the population with lower levels of education have higher risks of these diseases and access fewer preventive services.

Education appears to be a protective factor. In some studies of clinical treatments, those with lower levels of educational attainment demonstrated poorer outcomes. In studies of chronic diseases such as HIV or diabetes, the effectiveness of self-management and adherence to medical treatment appears related to educational attainment. Unfortunately, few studies have been conducted on the effects of educational attainment and aging.

One study including 1,277 older adults aged 55 and above, concluded that higher education levels appear to increase the likelihood of being happy, healthy, and vital in later years. Positive psychological states appear to have both a promotion function (for vitality) and protective function (against health symptoms).

In a study of psychosocial, behavioral, and biological factors, and educational attainment conducted of older men and women, aged 70–79, associations among education and behavioral (e.g., cigarette smoking, physical activity), biological (e.g., pulmonary function, serum cholesterol), psychological (e.g., self-efficacy, anxiety), and social (e.g., networks, support) factors were examined. The analysis indicated that low levels of education were associated with poorer psychological function (efficacy, happiness), less optimal health behaviors (increased tobacco consumption and decreased levels of physical activity), poorer biological conditions (decreased pulmonary function, increased body mass index, and waist to hip ratio), and larger social networks (increased number of contacts, decreased negative support). On the other hand, several factors (alcohol consumption, HDL cholesterol) were not found to be related to educational attainment.

Related Topics

▶ [Adult education](#), ▶ [Health promotion](#), ▶ [Socioeconomic status](#)

Suggested Readings

Federal Interagency Forum on Aging Related Statistics (2002). <http://www.agingstats.gov/chartbook2000/population.html>

Kubzansky L, Berkman L, Glass T, Seeman T (1998) Is educational attainment associated with shared determinants of health in the elderly? Findings from the MacArthur studies of successful aging. *Psychosom Med* 60(5):578–8

Murrell S, Salsman N, Meeks S (2003) Educational attainment, positive psychological mediators, and resources for health and vitality in older adults. *J Aging Health* 15(4): 591–615

Elder Abuse and Neglect

Gerald J. Jogerst

Elder mistreatment, which includes both abuse and neglect, is a significant public health problem encompassing a variety of activities perpetrated on older adults by others. The classification of elder mistreatment has been based on abuse type (e.g., physical, verbal, financial); motive (e.g., intentional versus unintentional neglect); relationship to perpetrator (e.g., paid caregiver versus family member); and location (e.g., community versus nursing home). Although there is no universally accepted definition of elder mistreatment, many state agencies that investigate cases of abuse have adopted or modified the Older Americans Act of 1975 definition, “The willful infliction of pain, injury or mental anguish.”

Mistreatment of older adults is a problem of unknown magnitude with estimates that 1–10% of the elderly population is affected annually. Perhaps the best available estimate of elder abuse is from the National Center on Elder Abuse Study, which reports that nearly 550,000 adults above 60 were the victims of abuse in domestic settings in 1996. Only about 20% of such cases are reported and substantiated by Adult Protective Services.

One of the societal responses to the growing awareness of elder mistreatment is a creation of state mandatory reporting laws that name health care providers

and other professionals as mandatory reporters. Although the statutes were instituted to increase awareness and decrease occurrence of elder abuse there is no convincing evidence to support their effectiveness. States with mandatory reporting laws do have higher domestic elder abuse investigation rates but this finding is difficult to interpret not knowing the underlying community prevalence of the actual elder mistreatment.

The issue of elder mistreatment is especially significant for health care workers since they are in a unique position to detect abuse and neglect first hand. Physicians in family practice, internal medicine, and psychiatry have the opportunity to develop well-established relationships with long-term patients that may be conducive to discovering more subtle cases of abuse in early stages of neglect, the most common form of elder mistreatment. In Michigan, physicians accounted for only 2% of total state elder abuse reports to the state’s protective agency. Family physicians in Iowa who ask their patients direct questions on elder abuse are more likely to see and report elder abuse cases, yet only 54% of the 202 physicians who claim to have seen a suspected case of abuse reported all their cases to the state’s investigative agency.

Physicians give many reasons for not reporting cases of elder abuse. These include fear that the report would make the situation worse, lack of awareness of state reporting laws, preference to avoid legal involvement, and patient/physician confidentiality issues. It must be remembered, however, that like other forms of domestic violence, the situation tends to escalate if interventions are not initiated and that the obligation to report elder supersedes the privilege of confidential communications between doctors and patients.

Themes and Risk Factors

Although there are hypotheses of stress caregiver, learned violence, psychopathology, and dependence to explain the cause of elder mistreatment, it is widely recognized that a single theory cannot account for all situations. The vulnerability of the older person to abuse is related to their dependence on the abuser, history of family abuse, being without social networks, being older than 75, psychopathology of the perpetrator that predisposes to abusive behaviors, dependence of the abuser on the elder, and abuser’s use of drugs and alcohol. Elder abuse risk factors are based on

epidemiologic studies, and subsume many different situations including physical abuse from adult children, paid caregivers neglecting their dependent clients, and elderly couples who are involved in a lifetime spousal abuse. Clinicians therefore cannot rely on these average risk factors in making clinical decisions. When there is clinical suspicion of abuse, fewer or absent risk factors should not lead the clinician to lower his or her guard. Elder mistreatment crosses all socioeconomic and ethnic borders and a high index of suspicion is paramount in making this diagnosis.

Identifying Elder Mistreatment

Health workers providing care for an elderly person should screen for abuse. Interviews with elderly patients suspected of being abused should occur away from the suspected abuser. Direct questions should be asked such as, “Has anyone at home ever hurt you?” “Has anyone ever taken anything of yours without asking?” or “Are you afraid of anyone at home?” A positive response to such questions should be followed up with inquiries about where and when maltreatment occurred and by whom. If abuse is suspected, the elder person’s safety is the first consideration. It must be determined whether the person is in immediate danger and if it is safe for the older person to return home. When there are safety concerns the person needs to be removed from the environment and in some cases short-term hospitalization or placement in a nursing home is the only alternative. If a potential victim returns home, it should be determined whether there are barriers to further assessment.

There are many potential interventions for components of the elder abuse related to the context in which it occurs. Abuse related to stress from caring for the impaired family member may be improved by respite services, treatment of depression, and psychotherapy for the carer. Violence related to substance or alcohol misuse may respond to drug and alcohol misuse rehabilitation programs. Abuse in the context of long-standing spousal violence may be improved with marital counseling, support groups, orders of protection, or victim advocacy. Financial exploitation by a family member may require the establishment of a guardianship and transfer of legal authority.

Mandatory reporting by professionals working with elderly of suspected mistreatment now exists for most states. It is imperative that persons working with

the elderly are familiar with local adult protective service agencies, community social service departments, police and sheriff departments that can investigate, and intervene in cases of suspected abuse. The National Center on Elder Abuse is a good source to learn about state units of aging and elder protective agencies.

Related Topics

- ▶ Crime, ▶ Family violence, ▶ Financial abuse,
- ▶ Guardianship, ▶ Intimate partner violence, ▶ Rape,
- ▶ Stress

Suggested Readings

- Fulmer T (2002) Elder mistreatment. *Ann Rev Nurs Res* 20:369–395
- Gordon RM, Brill D (Mar-Jun 2001) The abuse and neglect of the elderly. *Int J Law Psychiatry* 24(2–3):183–197
- Jogerst GJ, Daly JM, Brinig MF, Dawson JD, Schmuck GA, Ingram JG (2003) Domestic elder abuse and the law. *Am J Public Health* 93(12):2131–2136
- Kahan F, Paris B (2003) Why elder abuse continues to elude the health care system. *Mt Sinai J Med* 70(1):62–68
- Lachs MS, Pillemer K (2004) Elder abuse. *Lancet* 364:1263–1272
- National Center on Elder Abuse (1998) The national elder abuse incidence study. Department of Health and Human Services, Washington, DC
- Oswald RA, Jogerst GJ, Daly JM, Bentler SE (2004) Iowa family physician’s reporting of elder abuse. *J Elder Abuse Negl* 16(2):75–88

Suggested Resources

- Department of Health & Human Services, Administration on Aging. Elder rights and resources (Oct 20, 2005). http://www.aoa.gov/eldfam/Elder_Rights/Elder_Abuse/Elder_Abuse.asp
- National Center on Elder Abuse (NCEA). The source of information and assistance on elder abuse (Oct 20, 2005). <http://www.elderabusecenter.org/>

Elderhostel

Tambra K. Cain

A hostel is a supervised, inexpensive lodging place for travelers, more often referred to as an inn or a hotel. An elderhostel is, in the most literal translation, a

hostel directed towards our aging community. However, “elderhostel” has come to mean much more. As our aging community grows and comes to live longer, it is becoming a more active participant in the recreation arena. According to the 2000 Federal census, there are more than 121 million Americans aged 55 and above. This represents approximately 43% of the American population.

Elderhostels have become much more than just a vacation getaway. They are now structured, recreational events often with educational value. There are elderhostel programs in each state of the United States and throughout Canada, as well as many international programs. Typically these programs are geared towards adults aged 55 and above. Elderhostel programs are designed to blend senior adults with younger participants, so as to bridge the generational gap.

These programs typically last for several days and include meals, lodging, and planned recreation. The cost of an elderhostel program can vary widely, some being quite affordable and others reaching into the thousands of dollars per person. A few programs even offer scholarships to low-income seniors in order to encourage participation among low-income seniors.

Related Topics

▶ Travel

Suggested Readings

Dada L (1994) *Elderhosteling, United States: an elderhostel how-to guide*. Eldertime Publications, Ferndale, CA

Elderhostel (2001) *Elderhostel International Catalog, Issue 2*. Boston MA

Kerrigan D (1992) *Elder odyssey: an elderhostel sampler guidebook*. Market Square, Greenville, SC

Suggested Resources

Website for Elderhostel. and Elderhostel Institute Network. <http://www.elderhostel.org/welcome/home.asp>, November 2005

The 2000 US Census. <http://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf>, November 2005

Electrocardiogram

Sudeshna Banerjee

The nineteenth century saw the birth of the electrocardiogram (ECG). The first to approach the heart from an electrical standpoint was Augustus Waller in London. The breakthrough in the development of the tool, however, came in 1901 when Willem Einthoven, working in the Netherlands, developed a more sensitive electrometer. He went on to describe the electrocardiographic features of a number of cardiovascular disorders and was awarded the 1924 Nobel Prize in Medicine for his discovery.

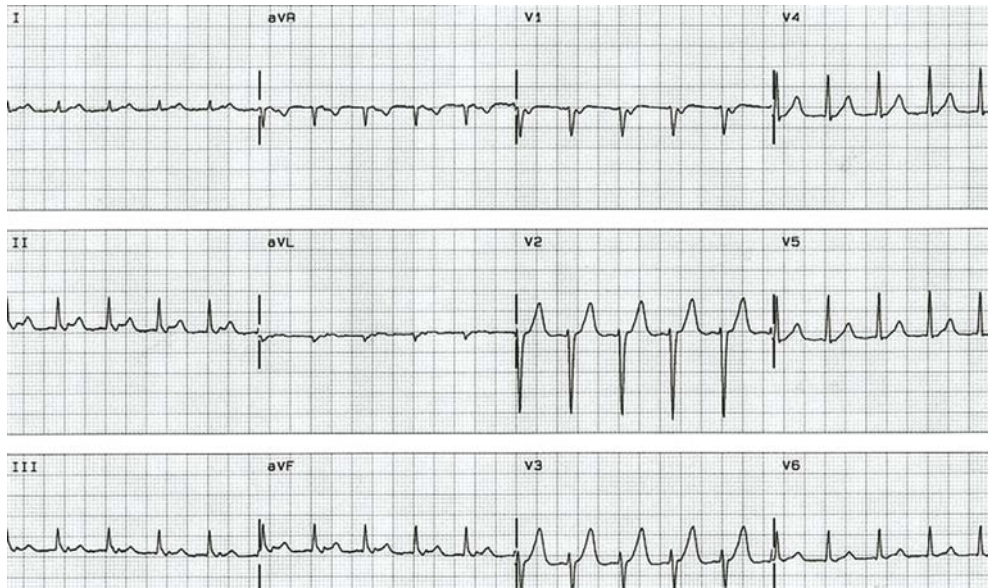
Electrical activity is created by ‘pacemaker’ cells present in the atria or upper chambers of the heart. This electrical activity stimulates cardiac contraction—the pumping activity of the heart. The pathway originates in the sinus node, located in the right atrium, travels through the atrioventricular (AV) node, then follows the septum (dividing the right and left chambers of the heart) where it splits into a right and left bundle delivering the stimulus to the ventricles. The ventricles, or lower chambers of the heart, are muscular structures that pump blood to the lungs and the rest of the body.

The spread of the cardiac impulse gives rise to electrical deflections that can be traced on paper and are the basis for ECG. The conventional ECG is composed of 12 leads (▶ *Figure 1*) which trace the electrical activity as the heart undergoes depolarization and repolarization. Each lead provides a discrete view of the heart and aids in the anatomical localization of disturbances.

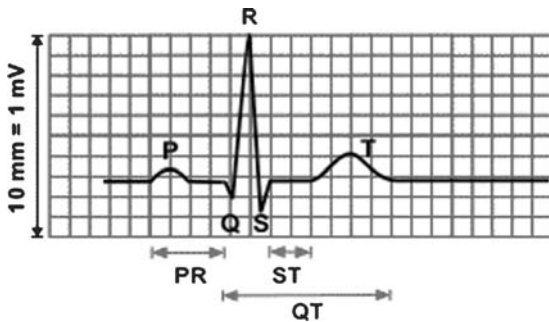
The electrodes are placed on the right arm, left arm, left leg, and along the chest wall. Leads II, III, and aVF give a view of the bottom of the heart, leads V1–V4 demonstrate a frontal view, and leads V5 and V6 along with lead I and aVL demonstrate a lateral view. These views correlate with the distribution of ‘coronary’ arteries supplying these areas of the heart and aid in diagnosis and localization when damage occurs.

The ECG is traced at a rate of 25mm/second on paper that is divided into specially measured small and large boxes. The deflections are labeled P, Q, R, S, and T (▶ *Figure 2*). Although it appears simple, this tracing harbors much information regarding the size, shape, and activity of the heart muscle.

■ Figure 1



■ Figure 2



The normal P wave is a result of electrical activity spreading across the atria. The shape of the P wave can indicate whether the rhythm is being set by the sinus node or an abnormal pacemaker. The size of the P wave can indicate enlargement of either atrium.

The PR interval represents the time taken by the impulse to travel from the atria to the ventricles. When prolonged, it indicates a disruption in the conduction pathway, referred to as heart block. The QRS complex is a result of depolarization of the ventricular muscle. The Q wave is the initial negative deflection, which if deep and wide indicates a myocardial infarction (MI).

Ventricular repolarization results in the formation of the T wave. Abnormalities of the T wave may

indicate myocardial ischemia (decreased blood flow to the heart muscle), MI (death of muscle cells), or enlargement of the ventricle (hypertrophy).

The ST segment comprises the section between the end of the QRS complex and the beginning of the T wave. A displacement upwards indicates an MI while a downward displacement is a sign of acute ischemia. The distribution of the affected leads demonstrates which coronary arteries are affected.

The ECG is a very important tool, aiding in the diagnosis of heart attacks, arrhythmias, heart block, and hypertrophy. It is inexpensive and may be quickly obtained when completed by an experienced individual. The most common use of the ECG is in the evaluation of chest pain. Ischemia and infarction can be indicated by changes in the ECG, but this test is not sufficient to diagnose these conditions. In conjunction with history, physical exam, and laboratory values, however, the ECG is very useful in diagnosis. It is used in preoperative risk assessment as well. The ECG is readily available, making it one of the first diagnostic tests performed in patients. If abnormalities are found, patients are referred for further evaluation including echocardiogram (ultrasound of the heart), stress testing, and cardiac catheterization (imaging of the coronary arteries using dye). Conversely, a normal ECG may sometimes preclude more invasive procedures.

Abnormalities in the conduction pathway, including arrhythmias, are also evaluated by the ECG. Common abnormalities include atrial fibrillation, heart block, and ventricular tachycardia (fast heart rate). These conditions can be due to genetic abnormalities, salt disturbances (potassium, magnesium, and calcium are the most common culprits) or ischemia. The 12-lead ECG can locate where in the conduction pathway these disturbances originate. Proper identification of these disturbances is necessary for appropriate treatment which consists of pacemakers (set a controlled heart rate), internal defibrillators (shock abnormal rhythms), radiofrequency ablation (destroy abnormal pacemakers), and antiarrhythmic medications.

Related Topics

➤ Cardiovascular disease, ➤ Coronary heart disease

Suggested Readings

- Andreoli T, Carpenter C, Bennett J, Plum F (eds) Cecil essentials of medicine, 4th ed. Saunders, Philadelphia, PA, pp 20–27
- Julian D, Cowan J, McLenachan J (2005) Cardiology, 8th ed. Elsevier, London, pp 1–14
- Luderitz B (2002) History of the disorders of cardiac rhythm, 3rd ed. Blackwell, London

Electroencephalogram

Adriana S. Tanner

Electroencephalography is the branch of neurophysiology that measures the electrical activity of the brain. The electroencephalographic signals are generated by the cerebral cortex where the summation of synaptic activity of millions of neurons results in voltage changes at the scalp surface. These signals are captured by a number of strategically placed electrodes, small metal discs that are usually glued to the scalp. This signal is amplified and generates inflections or

waves that are seen in graphical form on a computer screen or paper as an electroencephalogram or EEG (➤ [Figure 1](#)).

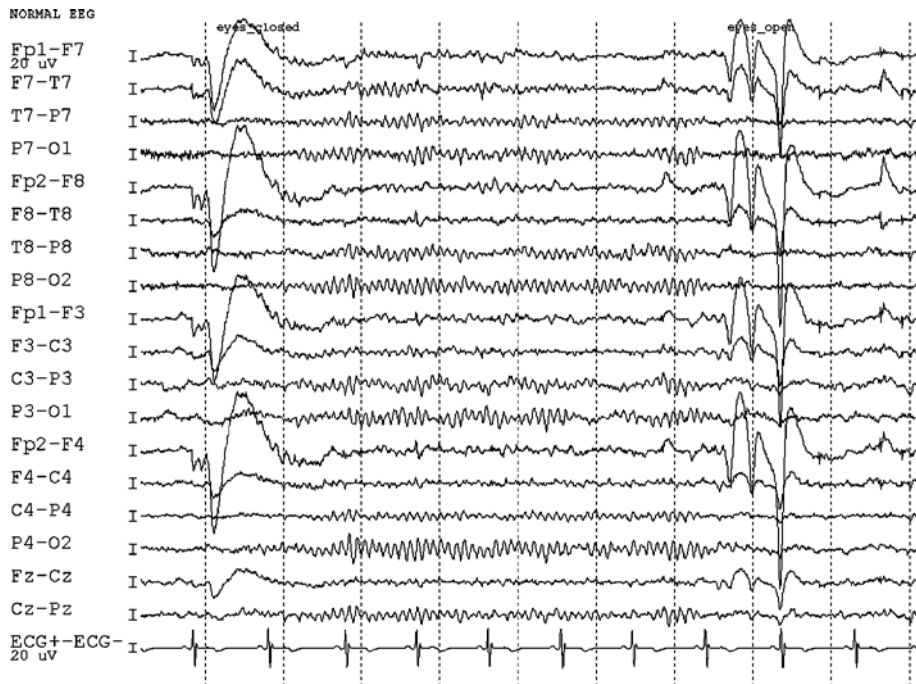
Electroencephalograms may be performed either on outpatients or while hospitalized. The test requires cooperation of the conscious patient for optimal recording and interpretation. Motion, muscle contraction, along with a multitude of external environmental changes influence the recordings and make interpretation difficult.

Other modalities of EEG such as ambulatory and video-electroencephalography are also clinically useful. Ambulatory monitoring is often used to detect infrequent events reported by patients to occur only during their daily routine. Video-electroencephalography is commonly used in an inpatient setting to record bursts or paroxysms of behavior with camera and sound, and correlate with electroencephalographic signals. Both modalities are useful in documenting and studying seizures as well as other paroxysmal phenomena not well understood or diagnosed, and in patients being considered for epilepsy surgery, in which the area of seizure origination needs to be precisely mapped.

In clinical practice, the EEG is interpreted by a neurologist who may often have additional training or have completed a specialty fellowship in this area. The test is best used to address a particular question in a given condition, rather than as a method to screen for certain diseases. Clinical uses of EEG include evaluating epilepsy, altered states of consciousness, focal cerebral lesions, various encephalopathies, central nervous system infectious diseases, dementia, and brain death. Many of the findings seen in EEG are nonspecific, but some are highly suggestive of specific entities.

EEG is probably the most useful test in the diagnosis of epilepsy. Epileptiform abnormalities are abnormal waves usually termed sharp waves or spikes and have a high correlation with epilepsy. Evidence shows that only approximately 2% of the general population has these abnormal waves, whereas as many as 90% of patients with epilepsy will display them. Many factors influence the appearance of epileptiform abnormalities, and because they are intermittent phenomena, they may not be seen even in someone with confirmed epilepsy. Large studies have demonstrated that an initial EEG will detect epileptiform abnormalities in 29–55% of patients with epilepsy. Repeated EEGs over time will demonstrate

■ Figure 1



epileptiform abnormalities in 90% of patients by the fourth EEG.

In addition to distinguishing epileptiform abnormalities, EEG will sometimes identify specific electroclinical syndromes in uncommon or rare neurological conditions such as findings associated with infantile spasms in the West syndrome; 3Hz spike-and-waves in absence or *petit mal* epilepsy; and slow spike waves associated with Lennox-Gastaut syndrome.

EEG has an important role in the evaluation of patients with altered level of consciousness as it complements the clinical examination and imaging findings. EEG may help address issues such as the extent of the process as to whether it is localized or not, diffuse, the occurrence of seizures without physical manifestation (nonconvulsive seizures or status epilepticus), and prognosis. These same principles apply for the use of EEG in dementing process. In certain central nervous system infections such as herpes encephalitis, early EEG is important in diagnosis as the findings are very characteristic.

In the case of brain death, while its diagnosis is based on clinical criteria, studies have shown that loss of cerebral electrical activity, also known as

electrocerebral silence, is rarely associated with recovery of neurological function.

EEGs have a wide variety of clinic uses from helping assess and diagnose clinical conditions to assisting in determining prognosis in others.

Related Topics

► [Epilepsy](#)

Suggested Readings

- American EEG Society (1994) Guidelines in EEG and evoked potential. *J Clin Neurophysiol* 11:1–143
- Ebersole JS, Pedley TA (eds) (2003) Current practice of clinical electroencephalography. Lippincott Williams & Wilkins, Philadelphia, PA
- Goodin DS, Aminoff MJ, Laxer KD (1990) Detection of epileptiform activity by different non-invasive methods in complex-partial epilepsy. *Ann Neurol* 27:330–334
- King MA, Newton MR, Jackson GD et al (1998) Epileptology of the first seizure presentation: a clinical, electroencephalographic and magnetic resonance imaging study of 300 consecutive patients. *Lancet* 352:1007–1011

Emotions

Heather M. Smith

As a result of their complexity, emotions are difficult to define and characterize, and many definitions have been proposed. In general, the term “emotion” refers to a class of subjective feelings experienced in response to objects or events that hold significance for an individual. Typically, emotions possess a directionality or valence; that is, emotions are categorized as being positive (e.g., happiness, joy) or negative (e.g., sadness, anger).

Emotional complexity refers to the ability to distinguish between pleasant and unpleasant feelings. Studies suggest that positive emotions promote resistance to disease, and the experience of increased emotional complexity has been linked to greater resilience and improved health behaviors and outcomes. In turn, negative emotions, including sadness and frustration, and lower levels of emotional complexity are associated with poorer health-related variables, including binge eating, alcohol abuse, and increased stress. An individual’s ability to regulate his or her emotions, that is, to maintain positive emotions and decrease negative emotions, also has been linked to health status and various disease states, including psychiatric disorders such as anxiety and depression.

Recently, increased attention has been directed toward identifying areas of the brain involved in the experience of emotions. Research indicates that brain areas involved in memory for emotional information and emotional processing include the amygdala, prefrontal cortex, and medial temporal lobes.

Emotions Across the Life Span

Historically, it was assumed that emotional functioning diminished with age, along with cognitive and physical abilities. However, research over the past decade has revealed that emotional functioning remains relatively intact throughout the aging process. In fact, studies have identified the “paradox of aging”—despite experiencing physical decline and social losses, older adults demonstrate preserved and, in some instances, improved emotional functioning with age.

For instance, the results of empirical studies indicate that basic emotional experiences are similar across

the life span. Research suggests that young and old adults express emotions in a similar manner, and the ability to express emotions does not appear to diminish with age. Older adults report equally as positive, if not more positive, emotional experiences when compared to younger individuals. In addition, most studies have found that older adults (with the possible exception of the oldest old) experience negative emotions less frequently than their younger counterparts, and they may be more likely to experience positive and negative emotions simultaneously, suggesting an increase in the complexity of emotional experiences with age.

Older adults are more susceptible to medical conditions, including dementia, cerebral vascular accident (stroke), and Parkinson’s disease, that can interfere with emotional functioning and may be associated with reduced emotional expression; increased depression, anxiety, irritability and emotional ability; and poor emotion regulation. However, self-report studies indicate that older adults report an enhanced ability to regulate their emotions when compared to younger adults. In addition, observational research suggests that older adults may be particularly adept at regulating emotions relative to interpersonal relationships, including those with romantic partners. As such, older individuals tend to resolve conflicts in their relationships with less negativity and more affection than younger adults. With the exception of cognitive disorders (e.g., dementia, delirium), older adults also have lower rates of mental illness, including depression, anxiety, and other conditions involving disturbed emotions, than any other age group. Research also indicates that older adults experience the same or even greater levels of life satisfaction than younger individuals. Thus, despite encountering a number of losses (e.g., decline in physical health, deaths of friends and relatives), older adults do not develop a disproportionate rate of mental disorders or dissatisfaction with life, which supports the finding of age-related improvements in emotional regulation.

Compared to the observed age-related decline in free recall of nonemotional information, memory for emotional material appears to be relatively well-preserved with age. In fact, older adults may show a preference for recall of emotional information. In one study of adults ranging from 20 to 83 years, recall of emotional information increased with each successive age group. Consistent with research suggesting a decline in the experience of negative emotions with

age, recent studies have revealed that older adults are less likely to recall negative emotional material and more likely to recall positive emotional stimuli than younger adults, a phenomenon that has been termed the positivity effect.

One difference in emotional functioning across the life span is a decrease in the degree of autonomic or physiological arousal, in particular cardiovascular response, associated with emotional experiences for older adults relative to younger adults. For instance, when induced to experience fear or anger, older adults display less elevation in heart rate than younger individuals. The observed decrease in physiological arousal with age does not appear to be accompanied by age differences in the subjective intensity of emotional experiences, as young and old adults report similar levels of emotional intensity. It is unclear whether current research findings represent a general age-related decrease in autonomic activity or a reduction in emotional arousal specifically.

Research suggests that older adults may be less accurate in identifying emotions represented in the facial expressions of others. More specifically, studies indicate that older adults are less able to identify and discriminate between negative emotions, including sadness and anger, than are younger individuals. Other investigations suggest that older individuals may be more accurate in identifying the emotional expressions of others in their own age group than those of younger people.

Research investigating the role of brain activation in emotional functioning across the life span is still mounting, but some studies indicate that older adults experience less activation of the amygdala while viewing emotional images relative to younger adults. Other researchers suggest that the tendency for older adults to focus on, and therefore remember, emotional information is a function of decreased frontal lobe activity with age, which results in increased distractibility and an inability to inhibit task-irrelevant (e.g., emotional) material.

Researchers continue to seek explanations for the observed overall preservation of emotional functioning throughout the aging process. One school of thought is socioemotional selectivity theory, which proposes that people prioritize emotional or knowledge-seeking goals depending on their perception of time as being limited or expansive, respectively. Because time decreases with age, emotional goals and aspects of life become increasingly important throughout adulthood. Research supports the theory, as studies indicate

that older adults are more prone to take account of emotional information when making decisions, and emotions occupy a more central role in mental processing as individuals near end-of-life, regardless of age. The narrowing of one's social circle in later life may reflect an older individual's desire to select social relationships that promote the optimization of his or her emotional health. Studies support the notion that greater perceived social support is associated with increased experience of positive emotions in later life.

A limitation of the current body of research is that most studies employ a cross-sectional design, and therefore the role of cohort or generational influences is uncertain. However, the available research clearly indicates that the aging process is not inherently one of emotional despair and decline, but rather a time of resilience, fulfillment, and emotional health and stability.

Related Topics

▶ Anxiety disorders, ▶ Coping, ▶ Dementia, ▶ Depression, ▶ Health beliefs, ▶ Memory

Suggested Readings

- Carstensen LL, Mikels JA (2005) At the intersection of emotions and cognition: aging and the positivity effect. *Curr Dir Psychol Sci* 14(3):117–121
- Chipperfield JG, Perry RP, Weiner B (2003) Discrete emotions in later life. *J Gerontol: Psychol Sci* 58B(1):P23–P34
- Isaacowitz DM, Charles ST, Carstensen LL (2000) Emotion and cognition. In: Craik FIM, Salthouse TA (eds) *The handbook of aging and cognition*, 2nd ed. Lawrence Erlbaum, Mahwah, NJ
- Lawton MP (2001) Emotion in later life. *Current directions in psychological science*. 10:120–123
- Mroczek DK (2001) Age and emotion in adulthood. *Curr Dir Psychol Sci* 10:87–90
- Ong AD, Bergeman CS (2004) The complexity of emotions in later life. *J Gerontol: Psychol Sci* 59B(3):P117–P122

Suggested Resources

- American Association of Retired Persons (AARP). www.aarp.org/ageline
- Family Doctor. www.familydoctor.org/seniors.xml
- Health on the Net Foundation. www.hon.ch
- University of California—San Francisco Alzheimer's disease research center, memory and aging center. <http://memory.ucsf.edu/Education/Topics/emotions.html>

Employment

Kristin A. Cassidy

Whether it is due to financial necessity, a desire to avoid the perceived boredom of retirement, or the excitement of pursuing the adventure of a new career, older adults are remaining in or returning to the workforce in larger numbers, and many employers are glad they are. In the last 20 years, the percentage of people over 65 who are employed has increased from about 10–14%. With people living longer, healthier, more active lives, and with the aging of the baby boomer population, 20% of the labor force is expected to be above 55 by 2015.

A telephone survey conducted for a study by the American Association for Retired Persons (AARP) found that 69% of workers aged 45–74 plan on working in some capacity during their retirement years. Some people find after retiring that they are not able to make ends meet on the fixed income they receive, or they may need extra money to cover their ever-increasing medication and health-care expenses. Some retirees find that they miss the social interaction and stimulation they got from working. Still others may just want a little extra cash to spend on traveling, entertainment, or spoiling their grandchildren. These types of older workers may be interested in the financial or social advantages of returning to work, but do not want the pressure and headaches associated with a career. Or they may choose to work only part-time since the Social Security retirement or survivor benefits of people who are under 65½ years could be reduced if they earn more than a certain amount of money. Plenty of low-stress job opportunities are available for these situations. Many retail and grocery stores hire seniors as greeters. Some factories have even created a “seniors only” production line.

In the AARP telephone survey, 67% of the workers interviewed had concerns that age discrimination remains a major barrier to their advancement and well-being in the workplace. Two thirds had personally witnessed or experienced age discrimination on the job. Between 2000 and 2002, the number of age-discrimination complaints filed with the Equal Opportunity Commission rose nearly 24%. In addition to age discrimination, doubts about job security and the perception that employers undervalue experience ranked

high on the survey respondents’ list of challenges in the workplace.

Some employers may be hesitant to hire older workers due to common stereotypes about the abilities and capacities of older adults. However, after hiring older workers, many employers are finding that most of these myths are generally not true. For example, in contrast to the common perception that older workers are not willing to learn new skills, 88% of the older workers surveyed for the AARP identified “the opportunity to learn something new” as an absolutely essential part of their ideal job. According to another research study conducted on behalf of the AARP, employers report that older workers often bring to a job the valuable qualities of experience, focus, and stability which are not seen as often in younger workers. Employers gave high ratings to older employees for the highly valued traits of “loyalty and dedication to a company,” “commitment to doing quality work,” “dependability in a crisis,” “ability to get along with coworkers,” and “willingness to be flexible about doing different tasks.”

Although some businesses may still discriminate against older workers, an increasing number of employers are recognizing the advantages of having older, more experienced, dedicated workers on their staff. As the baby boomers near retirement age, more employers will begin to run into issues when trying to find competent employees to replace the workers who have spent years developing and refining their knowledge and skills. Many employers are beginning to offer a more flexible work environment in order to keep these valuable workers as long as possible. For those seniors with less appreciative employers or who are looking for a change, but are not quite ready to give up the careers they have worked so hard to develop, there are several websites dedicated to help put older adults in touch with employers seeking their knowledge and experience.

Many seniors see retirement as an opportunity to embark on a career they had always wanted to try, but were too busy to pursue. Again, there are many websites that can help older adults get in touch with training programs. Many community and state colleges have programs that allow seniors to take classes at a reduced rate or to audit classes for free. This is another great way to gain knowledge and training in a new field. There are also plenty of opportunities for seniors to volunteer with an organization to gain experience,

which can then be used to qualify for a job in a new career field.

Regardless of the reason for working, the future looks bright for older workers and the companies and organizations that employ them.

Related Topics

- [Altruism and volunteerism](#), ➤ [Early retirement](#),
- [Pension](#), ➤ [Retirement](#), ➤ [Role loss](#)

Suggested Resources

AARP careers after 50. <http://www.aarp.org/money/careers>

The business case for workers age 50+: planning for tomorrow's talent needs in today's competitive environment, prepared for AARP by Towers Perrin, December 2005. http://assets.aarp.org/rgcenter/econ/workers_fifty_plus.pdf

Experience works: the nation's leading provider of training, employment, and community service for low-income older people. <http://www.experienceworks.org>

Senior Community Service Employment Program (SCSEP). <http://www.doleta.gov/seniors>

Social Security Administration, How work affects your benefits. <http://www.ssa.gov/pubs/10069.html>

Staying ahead of the curve: the AARP work and career study, September, 2002, prepared for AARP by Roper ASW. http://assets.aarp.org/rgcenter/econ/d17772_multiwork.pdf

Empty Nest Syndrome

Sara Harkness

First introduced in 1914 by writer Dorothy Canfield, the concept of “empty nest syndrome” was clinically identified and popularized in the 1970s as a group of symptoms including depression, loneliness, and low self-esteem, found among mothers whose last child had recently moved out of the family home. A great deal of sociological research since then has sought to find out how the “empty nest” relates to mothers’ (and to a lesser extent fathers’) well-being, and how other circumstances such as being employed outside the home may influence the experience.

The term “empty nest” evokes different images depending on whether one is a sociologist, psychologist,

therapist, parent, or even a realtor or travel agent. For sociologists, the “empty nest” is a household composed of adults whose children have moved out, but who have not yet reached old age themselves. Several trends have contributed to the emergence of this household type in the United States in the last 50 years, including greater longevity, smaller family size, earlier completion of childbearing, and children’s increasingly younger departure from the home.

The “empty nest” stage is by no means a universally difficult life-stage for mothers; on the contrary, increased well-being is often reported. As expected, women who work outside home are generally happier than full-time homemakers; but surprisingly, employment does not seem to affect a woman well-being at the “empty nest” transition. A recent national study found that parental well-being increases after the children leave home if there is frequent contact, but decreases when the opposite is true. Interestingly, the great majority of parents in their sample reported that they had seen or talked to one of their children within the next day.

The “empty nest” as a life-stage appears to be limited not only historically but also culturally. In the United States, empty nest households are mainly white and middle-class, while lower income whites and other ethnic groups, such as African Americans and Mexican Americans, tend to maintain larger, more extended households, and keep closer ties across generations. Demographers have also recently charted a “revolving door” trend in which previously launched children return to the parental home after divorce or financial difficulties.

European countries vary greatly in the age at which children leave home, due to both economic constraints and cultural traditions. In northern European countries, young people are able to leave home relatively early thanks to generous government supports. In contrast, in Italy and Spain, the age of leaving home has actually increased in recent years due to difficult economic circumstances. Parents there complain good-naturedly of the “crowded nest” with children up to their thirties still living at home. Regardless of age, there is a strong cultural expectation throughout continental Europe of continued frequent interaction with adult children and emotional or material support from parents.

Clinical approaches to the “empty nest syndrome” have often linked its symptoms to women’s physical changes at midlife, especially menopause, even though

the timing of the “empty nest” transition varies widely in relation to each mother’s life course. Research has not shown any general relationship between menopause and distress at children’s departure. The recent clinical literature echoes familiar American cultural themes of fulfilling work and the opportunity for individuation and increased autonomy, provided that one can “let go” of the parental role.

In contrast, Robert Putnam’s depiction of the disappearance of “social capital” in American society emphasizes the importance of social connectedness for well-being. From this perspective, children in many American families today may provide parents with their main links to the community through participation in sports and other group activities. For these parents, the “empty nest” transition may turn out to be more problematic than it was for earlier generations who had multiple ties to their extended families and communities.

Social connectedness may be the most fundamental aspect of environmental influences on the “empty nest syndrome.” The question still remains as to why some mothers (and fathers) experience more distress over the “empty nest” than others living in apparently the same circumstances. Here, research has been hampered by ideological constraints, especially the idea that parents should gradually release the ties of attachment to their growing children, in reciprocity with the children’s own weakening ties to their parents.

On the contrary, from an evolutionary perspective, it could be suggested that parents, like their children, depend throughout their life on the continued availability of those with whom they have the closest emotional bonds, and that attachment to children cannot be substituted with other attachment relationships (as with a spouse), no matter how gratifying or important those other relationships are. If this is true, it seems likely that individual variation in response to the “empty nest” life-stage will show the same types of differences as are seen in childhood attachment, and parents, who have experienced insecurity or loss in childhood attachment relationships, will be more vulnerable to the “empty nest syndrome” in adulthood.

Related Topics

- [Coresidence](#), ➤ [Depression](#), ➤ [Family relationships](#),
- [Menopause](#), ➤ [Role loss](#)

Suggested Readings

- Adelman PA, Antonucci TC, Crohan SE, Coleman LM (1989) Empty nest, cohort, and employment in the well-being of midlife women. *Sex Roles* 20(3–4):173–189
- Borland DC (1982) A cohort analysis approach to the empty-nest syndrome among three ethnic groups of women: a theoretical position. *J Marriage Fam February*:117–129
- Doherty NA, Feeney JA (2004) The composition of attachment networks throughout the adult years. *Personal Relationships* 11:469–488
- Kerns V, Brown JK (eds) (1992) *In her prime: new views of middle-aged women*. University of Illinois Press, Chicago, IL
- Putnam RD (2000) *Bowling alone: the collapse and revival of American community*. Simon & Schuster, New York
- Schmidt PJ, Murphy JH, Haq N, Rubinow DR, Danaceau MA (2004) Stressful life events, personal losses, and perimenopause-related depression. *Arch Women Ment Health* 7:19–26
- White L, Edwards JN (1990) Emptying the nest and parental well-being: an analysis of national panel data. *Am Sociol Rev* 55:235–242

End-of-Life Care

Stuart J. Youngner

There are many complexities to be considered in choosing appropriate end-of-life care; patients, families, and health professionals are often faced with tough medical and ethical decisions. Medical advances such as mechanical ventilators, hemodialysis machines, pacemakers, defibrillators, and drugs to maintain blood pressure can prolong and sustain life. These technologies and the health professionals trained to use them were organized into special areas in the hospital called intensive care units (ICUs). Today, ICUs account for approximately 20% of the beds in modern medical centers. Pediatric, newborn, surgical, medical, cardiovascular, neurointensive, and other ICUs provide technology that can, in almost every instance, prolong the moment of death for seconds, minutes, hours, days, weeks, or even longer. Yet, the mere prolongation of life is not always desirable. It often comes with unwanted suffering, separation from home and family, and loss of dignity.

The timing of death has become a matter of deliberate choice in most institutional deaths. This has placed an enormous burden on patients, families,

health professionals, and health-care institutions. Yet, early on, there was little or no guidance from the law, medical and nursing codes, or hospital policies. Over the last 30 years, our society has engaged in a deep and intense discussion about the ethics and procedures that should guide end-of-life decisions. This discussion has been heavily influenced by a new emphasis on individual rights and autonomy throughout our society—in contrast to more paternalistic traditions in the medical profession and in medical institutions. The discussion has taken place in the courts, in professional societies, in the press, in state and federal legislatures, and even in popular culture—movies, books, and TV dramas.

Resuscitation

A debate continues over policies that pertain to the presumption that all hospitalized patients wish to be resuscitated if an acute emergency arises in their care. Many treatment centers have established policies for “default” resuscitation action, for instance, if a patient suffers from a life-threatening episode such as cardiac arrest. Hospitals across the country have established policies in which cardiopulmonary resuscitation (CPR) is administered if a patient in the hospital suffers cardiopulmonary arrest. CPR—with intubation, mechanical ventilation, external chest massage, and other invasive procedures—has been shown to be an effective intervention to reverse sudden cardiac arrest in otherwise healthy individuals.

This type of clinical care policy is controversial because any other intervention, including giving a patient an aspirin, requires a formal order from a doctor. CPR, on the other hand, is administered *unless* there is a specific order not to resuscitate—a “do not resuscitate” (DNR) order. This issue is all the more significant because CPR is a highly invasive intervention that can result in fractured ribs, punctured lungs, and tremendous loss of dignity. Since approximately 70% of Americans die in health-care institutions, millions are subject to this aggressive, but too often fruitless intervention.

In the early 1980s, a Presidential Commission was established to make specific recommendations about how our society should deal with end-of-life decisions. Its report, *Deciding to Forego Life-Sustaining Treatment: Ethical, Medical and Legal Issues in Treatment Decisions* was highly influential, as were a series of court cases from Karen Quinlan in 1976 to Nancy Cruzan in the

early 1990s. Efforts were made at local and national levels to establish clear guidelines for withholding or stopping potentially life-sustaining treatments (like CPR) and a clear consensus emerged in some areas of end-of-life care.

Consensus for Care

Decisionally-capable patients Decisionally capable adult patients have a right to refuse medical intervention and may insist that any interventions already in place be stopped. This includes not only the patient’s right to refuse resuscitation but also interventions such as mechanical ventilation, dialysis, chemotherapy, admission to an ICU, and even the artificial provision of fluids and nutrition. The latter has been an extremely controversial issue because provision of food and nutrition is so basic to our social relationships. However, provision of fluids and nutrition through a nasogastric tube or a tube surgically placed through the wall of the abdomen into the gastrointestinal tract is considered a medical intervention subject to the will of a competent patient.

Documentation and discussion Patients and their families must be fully informed by the physician of the alternatives and given the choice of how aggressive care will be. Furthermore, these discussions and their conclusions must be documented in the medical record. Decisions should be revisited on a regular basis as clinical circumstances develop and change.

Stopping Life-sustaining treatment does not mean ‘abandonment’ of the patient A decision to allow a patient to die does not signal the end of the physician’s responsibility for the welfare of the dying patient. Attention must turn to comfort—for example, pain control, psychological and spiritual support, and other ways of maximizing the dignity and social function of the patient. As noted below, this set of goals has become the principal mission of the hospice and palliative care movements.

Other Developments

Advance directives Although patient autonomy became the guiding principle in end-of-life decision-making, many if not most patients are no longer competent to make decisions when they must be

made. Patients may be too sick to participate in decision-making because of delirium, coma, or even dementia. Advance directives such as living wills offer the opportunity to carry a person's wishes about treatment into a future in which he or she may no longer be capable of making decisions.

Living wills are the best known example of advance directives. In a living will, a patient may state that (e.g., if they are in a terminal condition and unable to speak for themselves), they want only comfort care. An alternative to living wills is appointing a legal proxy or durable power of attorney. This approach allows patients to designate the person they want to speak for them and gives them a chance to talk in detail with that person ahead of time.

All states have laws recognizing advance directives, but most people have not executed them. Recently, there has been criticism of advance directives pointing out that end-of-life decisions are so varied and complex that no document can adequately anticipate them.

Medical Futility As the patients' rights movement flourished, patients and families experienced an increased influence on end-of-life decisions, supported by hospital policies and professional ethics codes. Although some patients and families exercised their rights by refusing treatment, others demanded it. Physicians and nurses began to object to providing what they considered to be futile care at the end of life. Their professional duty, they claimed, was to benefit patients, not merely cause physiologic effects. For example, providing CPR to patients dying of multiple organ system failure was hopeless and harmful. Furthermore, the rights of patients to refuse treatment were negative rights, found in the law against battery or unlawful touching. Nowhere did the law say patients had a positive right to nonbeneficial care.

Futility, however, is difficult to define and necessarily involves value judgments about how remote a chance has to be before it is not worth taking and what counts as a benefit. Many commentators saw futility disputes as a failure of communication between health professionals and families. Some hospitals have instituted futility policies that include a series of reviews with family and/or patient participation. Some see futility as a stalking horse for rationing—cutting off costly end-of-life care when it has little to offer.

Ethics Committees Virtually all hospitals now have clinical ethics committees to provide education,

formulate end-of-life and other policies, and increasingly provide consultation services to patients, families, and health professionals struggling with tough decisions. Ethics committees are generally interdisciplinary. Their members include: physicians, nurses, social workers, clergy, administrators, and lawyers. Often they include one or more lay members to provide an "outside" perspective. Some hospitals use the individual ethics consultant to provide consultation services. In some large academic medical centers, hundreds of ethics consultations are performed each year. Consultants or committees offer advice, leaving the final decision-making in its traditional place with the responsible physician, the patient, and the patient's family.

Hospice and Palliative Care Until the 1960s and the publication of Elizabeth Kubler-Ross's book, *On Death and Dying*, these subjects were taboo. Physicians regularly withheld information about terminal illness, and patients and families shied away from discussing it. Medical students and residents were taught nothing about how to talk with dying patients who were often isolated in the hospital setting. Following Kubler-Ross, a number of scholars studied the psychosocial phenomenon of dying and offered practical suggestions about how to talk with dying patients in a constructive way. The rise of life-saving technology in the 1970s in many ways sidetracked this newfound interest in helping patients, families, and health professionals deal constructively with the natural phenomenon of dying. Instead, the emphasis was on saving and, too often, extending lives unreasonably. As we have seen, patients and families reacted to this "technological imperative" by establishing a right to refuse unwanted end-of-life treatment. Physicians and nurses reacted by claiming a professional right to deny futile and invasive care.

During this same period, there was a growing recognition that in the midst of our aggressive technological treatment environments, terminal patients too often received inadequate treatment of their pain, depression, social isolation, and spiritual needs. Out of this recognition, the hospice and palliative care movements were born. Like Kubler-Ross, who brought attention to the inadequacy of the psychosocial response to the reality of death and dying in a pre-technological era, a host of scholars and clinicians focused on the ways health professionals could improve the quality of life of patients as they died in the midst of medical technology.

The hospice movement, inspired by Cicely Saunders in England in the late 1950s, emphasized a unique philosophy. It recognized that sometimes aggressive treatment was unwanted and that specialized care could substantially relieve the traditional burdens of the dying. The hospice movement has grown enormously in the United States and hospice care is now supported by health insurance, including Medicare. Part of the motivation of this movement has been the growing recognition of the inadequacy of the care of the dying. Early on, hospices were separate institutions where patients spent their last days in the care of persons technically and philosophically trained to deal with their needs. As the demand for hospice care has grown, its delivery has moved primarily to the home and to nursing homes where patients are dying.

While hospice care has traditionally focused on the dying (some define this as a predicted 6 months to live), palliative care has taken the position that the dichotomy of aggressive treatment or acceptance of death is a false one. Instead, there should be attention to relief of suffering, rehabilitation and support for caregivers all along the spectrum of care. Some observe that hospice and palliative care are not so different. Both are humanistic efforts to relieve suffering and maximize quality of life. Moreover, while hospice deals with terminal patients, many of those patients are happy to be alive and, while emphasizing comfort care, also desire limited measures to prolong their lives.

Conclusion

With new innovations in medical technology, human beings are faced with difficult decisions regarding end-of-life care. Individual decisions are complex and are dependent on a variety of cultural, psychological, and economic factors. Although our society has forged a general consensus about the laws and procedures for dealing with these complicated human dilemmas, we must still deal with the coming realities of rationing of scarce and expensive medical resources.

Related Topics

[▶ Death](#), [▶ Death with Dignity Act](#), [▶ Euthanasia](#),
[▶ Physician-assisted death](#), [▶ Physician-assisted suicide](#), [▶ Quality of life](#)

Suggested Readings

- Helft PL, Siegler M, Lantos J (2000) The rise and fall of the futility movement. *N Engl J Med* 343(4):293–296
- Katz J (1984) *The silent world of doctor and patient*. Free Press, New York
- Kubler-Ross E (1969) *On death and dying*. Touchstone Press, New York
- Lynn J (2001) Serving patients who may die soon and their families. *JAMA* 285:925–932
- Morrison RS, Meier DE (2004) Palliative care. *New Engl J Med* 350:2582–2588
- President's Commission for the study of ethical problems in medicine and biomedical and behavioral research (1983) *Deciding to forgo life-sustaining treatment*. United States Government Printing Office, Washington, DC
- United States Congress, Office of Technology Assessment (1989) *Institutional protocols for decisions about life-sustaining treatments*. Special report, OTA-BA-389 Office of Technology Assessment, Washington, DC

Suggested Resources

- American academy of hospice and palliative medicine 2006, Glenview, IL (February 28, 2006). <http://www.aahpm.org>
- Americans for better care of the dying 2006, Alexandria, VA (February 28, 2006). <http://www.abcd-caring.org>

Endometrial Polyps

Linda Darlene Bradley

Endometrial polyps are benign (noncancerous) growths found within the uterine cavity. Usually they are asymptomatic and remain undetectable for decades. In women without symptoms, they are often found coincidentally when pelvic ultrasound (special procedure to examine the pelvic cavity) is performed for unrelated problems. However, in women with abnormal uterine bleeding, investigation may lead to their detection. Symptoms most often related to uterine polyps include abnormal bleeding, postcoital staining (bloody vaginal discharge after sexual intercourse), chronic vaginal discharge, dysmenorrhea (painful menstrual periods), or infertility. Generally abnormal bleeding is characterized with increased clotting, intermenstrual or premenstrual spotting, or heavier menstrual flow. Women utilizing the medication tamoxifen

therapy have a higher incidence of endometrial polyps. Additionally, one fourth of women with endocervical polyps will have an endometrial polyp.

Luckily, 99% of polyps removed by operative hysteroscopy (procedure to remove polyps via a tube inserted into the uterus) are benign. In symptomatic women, however, operative hysteroscopic removal is imperative to evaluate histology (polyp tissue makeup) associated with the endometrial polyps. What are the usual histological (cellular composition of the tissue) findings detected? Evaluation histologically demonstrates polypoid tissue covered by endometrium (uterine wall tissue) with glands of variable size and shape, and contains fibrotic stroma (fibrous foundation tissue) and thick-walled blood vessels. Functional polyps are defined as having surface endometrium that contains either proliferative (growth type) or secretory (secreting function) phase endometrium. Nonfunctional polyps have inactive endometrium that is in dysynchrony (out of stage) with the endometrium. Endometrial cancer and hyperplasia (excessive tissue growth) rarely occur within an endometrial polyp. In fact, only 1% of endometrial polyps may have a coexisting malignancy present. Endometrial polyps may coexist with other lesions including endometrial hyperplasia and submucosal fibroids (masses/fibroids growing the uterine cell wall). Although cancer is rarely found within an endometrial polyp, removal because of abnormal bleeding is imperative—to both treat menstrual dysfunction and to reliably exclude premalignant or malignant disease. When totally asymptomatic polyps are detected, there is little justification for operative intervention.

Recently transvaginal (through the vaginal opening) ultrasound (TVUS) has become an integral component of modern gynecologic practice. Ultrasound is frequently requested for evaluation of pelvic pain, infertility, screening purposes, and inadequate subjective bimanual examination (normal gynecological examination). On occasion, the ultrasonographic appearance of the endometrial echo (findings of the ultrasound) may be suggestive of an endometrial polyp. Clinicians find ultrasound particularly helpful in imaging the endometrium. The characteristics of the endometrium gauge the health and well-being of the uterus. How is the health of the endometrium measured? Ultrasonographers (ultrasound specialists) can reliably determine the endometrial thickness, echogenicity (ability of the tissue to be permeated by ultrasound), and texture of the endometrium. When

the endometrial echo is thickened, then gynecologists can better ascertain the etiology with saline infusion sonography (SIS) or office hysteroscopy (additional specialized techniques to better visualize the interior of the uterus). These quick office-based procedures can reliably determine the presence of endometrial polyps.

Patients who have symptomatic uterine polyps can be offered minimally invasive treatment with operative hysteroscopy. This technique permits rapid, safe, and effective transvaginal removal of the polyp with minimal anesthesia as an outpatient procedure. The removed tissue is analyzed histologically (under a microscope). Fortunately, polyps rarely reoccur. Less than 1% are malignant. Patients with symptomatic endometrial polyps should have them removed under hysteroscopic guidance, no longer is a blind dilation and curettage (D&C) sufficient or accurate in ensuring that the polyp is completely removed. Gynecologists increasingly are skilled in this novel procedure.

Related Topics

• [Uterine fibroids](#), • [Vaginal bleeding](#)

Suggested Readings

- De Waay DJ, Syrop CH, Nygaard IE et al (2002) Natural history of uterine polyps and leiomyomat. *Obstet Gynecol* 100:3–7
- Gebauer G, Hafner A, Siebzehrubl E, Lane N (2001) Role of hysteroscopy in detection of endometrial polyps: results of a prospective study. *Am J Obstet Gynecol* 184:59–62
- Kamel HS, Darwish AM, Mohamed SA (2000) Comparison of transvaginal ultrasonography and vaginal sonohysterography in the detection of endometrial polyps. *Acta Obstet Gynecol Scand* 79:60–64

Endoscopy

Jason R. Taylor

Endoscopy is an imaging modality used to visualize the gastrointestinal tract. It may be separated into two entities: upper endoscopy and lower endoscopy. Upper endoscopy is commonly referred to as an esophagogastroduodenoscopy (EGD), while lower endoscopy is

known as a colonoscopy. Other endoscopy procedures that are relatively new over the last 10 years include endoscopic ultrasound (EUS) and endoscopic retrograde cholangiopancreatography (ERCP). Specialty trained physicians known as board-certified gastroenterologists perform these procedures predominantly in the outpatient setting.

EGD involves passing a long, flexible black tube with a camera on one end from the patient's mouth, through the esophagus and stomach, and finally to the first part of the small intestine. The camera at the end of the tube relays images to a screen or television in the procedure room. The physician is able to visualize the gastrointestinal tract in real-time on the video monitor as he or she is moving the endoscope. An EGD lasts approximately 15–20 minutes and may be used for diagnostic and therapeutic interventions.

For example, while passing the endoscope the physician may take samples of tissue along the gastrointestinal tract. These tissue samples are collected in special containers and then sent to a laboratory where physicians use high-powered microscopes for evaluation and diagnosis. In addition, the multipurpose endoscope is equipped for treatment of several common disorders including erosions, ulcers, or suspected cancers in the esophagus, stomach, or small intestine.

ERCP is used to diagnose diseases of the pancreas as well as diseases of the ducts that drain the liver and gallbladder. The ERCP is performed using a long flexible black tube similar to the one used for EGD. The tube is passed from the patient's mouth, down through the esophagus to the stomach and into the small intestine. The ERCP tube differs from that of EGD by slight structural variations. The ERCP tube has a small camera on the side, instead of the end like the EGD, and allows the physician to view the opening of the duct that drains the pancreas. The physician may then pass wires through a port next to the camera into the pancreatic ducts. This can help remove stones in the ducts, improve unusual narrowing or blockages, and biopsy suspected tumors.

EUS is a relatively new imaging modality used to visualize the pancreas, the gastrointestinal tract, and their surrounding organs by means of ultrasound. The EUS endoscope is actually fitted with an ultrasound at the end of the long, flexible black tube that relays images to a television screen. This imaging has helped a great deal with the diagnosis of masses or other abnormalities outside of the gastrointestinal lumen.

In addition, a needle may be passed through a port next to the ultrasound device at the end of the tube in order to sample the tissue. Therefore, the gastroenterologist may help diagnose a mass by using the EUS to see the lesion and then take a tissue sample for collection instead of having to refer the patient for open abdominal surgery.

Like the EGD and the ERCP which help diagnose diseases of the upper gastrointestinal tract, a colonoscopy may be used to diagnose diseases of the lower gastrointestinal tract such as abnormal growth of tissue, causes for bloody stools, unexplained diarrhea, constipation, abdominal pain, or anemia. The device used to perform a colonoscopy is similar to an EGD in that it is a long flexible tube with a camera on one end. Preparation for the procedure requires drinking laxatives or enemas the night prior to the procedure and fasting from at least 8 hours prior until after the procedure is completed.

The procedure is performed under local anesthesia (conscious sedation) and typically lasts 30–45 minutes. Therapy with the endoscope may be performed for lesions in the rectum and large intestine; however, the majority of the indications for a colonoscopy are for diagnostic or screening purposes.

Cancers of the colon and rectum are the second leading cause of death in the United States. Therefore, colonoscopy has become an important screening tool for colon cancer. Current recommendations are for a colonoscopy in all patients older than 50. Patients with a family history of colon cancer should have a colonoscopy done earlier than the general population, generally 10 years prior to the age at diagnosis of their first-degree relative.

After an EGD, EUS, ERCP, or colonoscopy, a patient will remain in a waiting room for 30–60 minutes to recover from the procedure and discuss the findings with his or her physician. After conscious sedation, it is not recommended for a patient to drive an automobile. Therefore, patients are recommended to have a friend or family member available to drive them home. If these procedures are performed as an outpatient, it is generally safe to return to work the following day and perform normal activities.

Endoscopy has revolutionized diagnosis of gastrointestinal disorders. It not only allows a physician to directly visualize the gastrointestinal tract but also enables tissue sampling for microscopic diagnosis of abnormal lesions or masses. Patients should feel secure that the procedures have minimal complications,

are widely available, and may be performed in the outpatient setting.

Related Topics

• Colonoscopy

Suggested Readings

American college of gastroenterology action plan for colorectal cancer prevention. (2004). *Am J Gastroenterol* 99(4):574–577

Axon AT, Bell GD, Jones RH, Quine MA, McCloy RF (1995) Guidelines on appropriate indications for upper gastrointestinal endoscopy. Working Party of the Joint Committee of the Royal College of Physicians of London, Royal College of Surgeons of England, Royal College of Anaesthetists, Association of Surgeons, the British Society of Gastroenterology, and the Thoracic Society of Great Britain. *BMJ* 310:853–856

Davila RE, Rajan E, Adler D et al (2005) ASGE guideline: the role of endoscopy in the diagnosis, staging, and management of colorectal cancer. *Gastrointest Endosc* 61(1):1–7

Suggested Resources

American College of Gastroenterology. www.acg.gi.org

Environment

Bettina A. Rausa

The environment is made up of the chemical, physical, and biological agents to which we are exposed during the course of our lives either at home or at work. The environment affects our health through exposure to pollution and other toxins that are largely the result of our own making. In 2002, the Environmental Protection Agency (EPA) launched its aging initiative to examine the environmental health hazards facing older persons. Elders are at a higher risk of the effects of the environment, given the progressive decrease in the functions of several organs and body systems, and the accumulation of toxins in the body manifesting through a variety of diseases that can lead to disability and/or death.

Air Pollution

Indoor air pollution is a special concern for seniors, who typically spend long periods of time indoors. Indoor air, comprising contaminants penetrating from outside and those generated indoors, can contain secondhand smoke, fumes from household cleaning products, and even carbon monoxide, which can be dangerously toxic, especially to those who are at risk of heart disease and stroke. Secondhand smoke is one of the worst indoor air pollutants and contributes to heart disease and stroke. Wood-burning stoves and fireplaces generate fine carbon air particles that can trigger chest pain, palpitations, shortness of breath, and fatigue, especially in elders with heart disease. Prevention strategies include proper ventilation, avoiding smoking indoors and enclosed areas where smoking is permitted, and eliminating indoor wood burning.

Outdoor air pollution consists of particulate matter or soot and gases that originate from a variety of sources including vehicles, power plants, industrial smokestacks, and fires. The EPA set National Ambient Air Quality Standards (The Clean Air Act) for pollutants considered harmful to public health and the environment and over 50% of the US population lives in an area that exceeds those standards including the elderly who are at the greatest risk for lung and heart disease. Studies show that hospitalizations for heart attacks, arteriosclerosis, and pulmonary heart disease increase during bad air days. The immune system is also impacted by air pollution, and the inhalation of toxic gases and particulate matter leads to lung infections, and decreases the defense system cells used to fight off bacteria.

The toll on individual body organs and systems as the result of airborne environmental toxins is considerable. The upper aerodigestive tract is the main route of contamination; and when inhaled, the components of smog can be irritating to the mucous membranes leading to chronic sinusitis. Exposure to solvents, pesticides, and many other inhaled pollutants may also cause tumors, hypertension, and angina.

A wide variety of materials found in air also enter the bloodstream, including benzene, lead, and other heavy metals, carbon monoxide, pesticides and herbicides. These materials have damaging effects on blood cells, bone marrow, the spleen, and the lymph nodes. Carbon monoxide can interfere with the blood's oxygen-transport capability and severe overexposure

can result in death due to asphyxiation or permanent damage to the central nervous system. Lead, mercury, pesticides, and ozone exposure effects on the central nervous system include psychiatric symptoms and disorders involving mood, personality, cognitive, and motor responses such as brain damage, anxiety, depression, and increased aggression.

The skin is the body's external interface with the environment, particularly air pollution and sun exposure. Depletion of the ozone layer, which increases ultraviolet radiation, allows harmful amounts of radiation to penetrate the earth's surface, increasing the risk of melanoma. Because melanoma can take many years to develop, the risk of exposure increases with age. Preventing harmful exposure to the sun includes avoiding sunburns and tanning parlors, wearing protective clothing and sunscreen, and promoting and implementing early skin cancer detection programs. The eyes are also affected by ultraviolet radiation in a number of ways, such as age-related cataracts, sunburn, and degeneration of the cornea, which contributes to age-related macular degeneration resulting in blurred vision and blindness. Wearing glasses that block ultraviolet rays is recommended to help protect the eyes.

Waterborne Pollutants

There are a number of waterborne pollutants. One such pollutant found in drinking water is arsenic—best known for its role in tumor formation and its link to vascular diseases. Consumers should check federally mandated reports from water suppliers concerning arsenic detected in drinking water.

Lead is also commonly found in drinking water and contributes to increased blood pressure and skeletal deterioration. Lead can remain in the bones for decades. Menopause in women leads to the demineralization of the bones, allowing lead to seep out and enter the blood stream, which increases the risk of developing osteoporosis. Diagnosing symptoms of lead poisoning in older adults is difficult because symptoms of exposure are similar to what are commonly considered inevitable problems of old age: poor sleep patterns, slower reaction times, irritability, and impaired visual-motor coordination. Lead also impairs renal function causing slower clearance of medications from the body, resulting in higher concentrations

of drugs and increased risk of side effects—a special concern when elders consume many prescription drugs. To help prevent lead poisoning from drinking water, the EPA suggests running cold water at least 30 seconds, preferably 2–3 minutes, before drinking.

Exposure to lead and to other minerals has been implicated in neurodegenerative diseases seen in old age: Alzheimer's disease and Parkinson's disease. Since most cases of these diseases do not appear to have genetic causes, several different environmental agents may contribute to each disease. People exposed to high levels of lead are more likely to develop Alzheimer's disease, which afflicts half of those in their mid-eighties; pesticides are suspected of contributing to Parkinson's disease, which affects more than 1.5 million people in the United States, most of whom are above 60.

Temperature

“Excessive heat events” are prolonged periods when temperatures reach at least 10°F above the average high temperature. This rise in temperature can lead to heat stroke which causes the body's temperature control system to fail, leading to a rapid rise in body temperature causing severe and permanent damage to vital organs, disability and/or death. People with heart disease and stroke have impaired cooling mechanisms and are more vulnerable during heat events. Certain medications can also make individuals more susceptible to heat events and physicians should be consulted in case of a heat wave. The EPA recommends air-conditioning—even for a few hours a day—to protect against heat-related illness and death. Electric fans are not recommended when temperatures reach the high 90s. Taking a cool shower or bath, wearing lightweight, light-colored and loose-fitting clothing, drinking lots of fluids, avoiding caffeine, alcohol, and large amounts of sugar are also precautionary measures against heat stroke.

Residential and Occupational

Many elderly minorities live in urban areas that fail to meet EPA air quality standards, and many low-income and minority communities are located in close proximity to chemical and industrial settings where toxic waste is produced, including chemical waste disposal

sites, fossil-fueled power plants, municipal incinerators, and solid waste landfills.

Certain occupations expose humans to more potentially toxic chemicals and pollutants in higher concentrations. Farmers, miners, metal, wood, leather and textile workers, and health care workers are all exposed, more frequently and in higher density, to a variety of toxic chemicals, including pesticides, carbon monoxide, lead, ozone, and nitrogen dioxide. Exposure can be reduced by wearing proper clothing, engineering controls, using suitable respirators, masks and other personal protective devices, and proper ventilation. Another harm-reduction strategy is to increase dietary intake of antioxidants (e.g., vitamins A, B, C, and E) as well as magnesium (found in whole grains, legumes, and vegetables), and amino acids (foods of animal origin and some grains and legumes). Although hundreds of new chemicals are developed and added every year to the existing unique chemicals, few of these chemicals have been adequately assessed for potential toxicity, either individually or in conjunction with other chemicals.

Organizations such as the Environmental Alliance for Senior Involvement (EASI) and National Association of Physicians for the Environment (NAPE) believe that one of the best strategies to achieve environmental improvement is to involve elders in efforts to enlist others in NAPE's educational activities. The EPA's aging initiative; other institutions' focus on the environment and its effect on elders' health, and the expected increase in the elderly population as baby boomers age, are giving rise to increased attention and resources targeted to gain a better understanding of the environmental impacts on older adults.

Related Topics

[▶ Alzheimer's disease](#),
 [▶ Cancer](#),
 [▶ Cardiovascular disease](#),
 [▶ Coronary risk factors](#),
 [▶ Morbidity](#),
 [▶ Mortality](#),
 [▶ Parkinson's disease](#)

Suggested Readings

Adler T (2003) Aging research: the future face of environmental health. *Environ Health Perspect* 111:14
 Rapport DJ, Lasley BL, Rolston DE (2002) *Managing for healthy ecosystems*. CRC Press, Boca Raton, FL

Suggested Resources

American Chemical Society (July 3, 2003) The beat goes on: researchers consider aging baby boomers' health. *Environmental science & technology*, Ohio (2005). http://pubs.acs.org/subscribe/journals/esthag-w/2003/jul/policy/cc_aging.html
 Environmental Protection Agency (2005) Fact sheet: environmental hazards weigh heavy on the heart, information for older americans and their caregivers. Washington, DC (01-20-2006). www.epa.gov
 Environmental Alliance for Senior Involvement (EASI) (2005) National conference on air pollution impacts on body organs and systems. Catalett, VA (2005). www.easi.org

Epilepsy

Adriana S. Tanner

Epilepsy is characterized by unprovoked, recurring seizures resulting from abnormal discharges of cortical neurons (nerves). Neurons normally generate and propagate electrochemical impulses that act upon other neurons ultimately producing specific actions. During a seizure, normal neuronal activity becomes disturbed causing changes in behavior, feelings, actions, altered consciousness, and occasional convulsions. The clinical manifestations are many and depend upon the area of the brain involved.

Epilepsy affects about 1% of the population or about two million people in the United States with an incidence of approximately 50 new cases per 100,000 population annually. In third world or developing nations, the incidence can be as high as 100–190 per 100,000 (Sander and Shorvon 1996). The prevalence of epilepsy ranges from 40–100 per 100,000 in developed countries to 500 per 100,000 in developing nations. Between 3% and 8% of the population have one or more seizures during their lifetime. The cumulative risk of having at least one or more epileptic seizure during an 80-year life span is 1:10.

Epilepsy affects people of all ages. The prevalence of epilepsy demonstrates a bimodal (two peaks) distribution with respect to age. Rates are higher in the first decade, decline after this and during most of adulthood, and rise again after 60. Some studies have

suggested a shift to increased incidence in the elderly because of increases in stroke, cancer involving the brain, and dementia in aging. Men have a slightly higher risk than women in both the young and old.

Epilepsy is a wide spectrum of diseases that share at their source recurrent, unprovoked seizures caused by uncontrolled electrical discharges from nerve cells in the cerebral cortex. Epileptic seizures fall into two general categories based upon the origin of onset. Generalized seizures typically occur when neurons in both halves, or hemispheres, of the brain are activated at the same time, whereas focal or partial seizures occur when only a group of neurons in one region of the brain is activated. In a *simple focal seizure*, the person will remain conscious but may experience unusual feelings, movements, or sensations. In a *complex focal seizure*, the person has altered awareness and may display strange, repetitious behaviors such as hand and mouth movements. These repetitious movements are called *automatisms*.

Generalized seizures include: (1) *absence seizures* (where the person may appear to be staring into space), (2) *tonic seizures* (there will be stiffening of different groups of muscles), (3) *clonic seizures* (repeated jerking movements of different groups of muscles), (4) *tonic-clonic seizures* (stiffening of the body followed by repeated jerks of the arms and legs as well as loss of consciousness), and (5) *atonic* (where there is a loss of tone in the body).

Epilepsy is further classified into syndromes according to a set of common characteristics including type of seizures, findings on the electroencephalogram (EEG), age of onset, and cause. For some of these syndromes, the cause appears to be hereditary. For other syndromes, the cause is unknown. The classification used currently for both epileptic seizures and epilepsy syndromes is that of the International League Against Epilepsy (ILAE) which incorporates the basic categories of partial and generalized seizures, EEG findings, prognosis, pathophysiology, and etiology.

The evaluation of epilepsy starts with an adequate history and physical examination taken by a qualified health professional. A detailed account of the circumstances surrounding the seizure including symptoms or signs preceding it, warning signs or aura, description of the seizure, and the recovery or postictal period, is paramount. The individual's history should be thoroughly explored looking for risk factors and provoking

incidents. Questioning should also explore diseases that mimic epilepsy.

The EEG remains one of the most important tests for epilepsy. This test assesses distant potentials of the brain cortex using electrodes strategically located on the overlying scalp. The pattern and localization of epileptiform abnormalities not only help make a diagnosis of epilepsy but also assist in characterizing the type of epileptic disorder or epileptic syndrome.

Imaging is also a very important tool with recent electronic advances. A contrast-enhanced image of the brain using magnetic resonance or computed tomographic imaging is required following an initial seizure. Imaging assesses pathologies in the brain including tumors and vascular anomalies along with subtler abnormalities such as hippocampal sclerosis and cortical dysplasias. Finding these abnormalities could change the patient's management. Advance imaging techniques such as magnetic resonance spectroscopy (MRS), magnetoencephalography (MEG), positron emission tomography (PET), and single-photon emission computer tomography (SPECT), are being investigated to aid in evaluating patients with refractory epilepsy who might be candidates for brain resection surgery.

The treatment of epilepsy involves several modalities including behavioral modification, antiepileptic drugs, the vagal nerve stimulator, and surgery. Adequate rest, good nutrition, stress reduction, and avoidance of provoking factors such as alcohol and illicit drug use begin therapy. Special diets are sometimes used for refractory patients. The ketogenic diet, a diet rich in fats and low in carbohydrates, causes oxidation of fats instead of carbohydrates. Ketoacids are produced resulting in a metabolic acidosis. This diet's mechanism of action in preventing seizures is not well understood, but its effects in seizure reduction in children are well documented. Patients with epilepsy must also comply with driving restrictions and follow precautions such as avoiding heights, and swimming alone.

Antiepileptic drugs (AED) are the cornerstone in the treatment of epilepsy. The choice of which AED to prescribe depends on many different factors including the type of seizures or epileptic syndrome, seizure frequency, the patient's age and gender, likelihood of becoming pregnant, and other medical conditions. About 60–70% of patients with epilepsy achieve

adequate control with one medication. The remaining 30% require multiple agents and develop seizures that are resistant to medical treatment.

Surgery is an important treatment strategy in patients felt to be refractory to medication and in whom the area of the brain triggering the seizures is well identified. If the above is not a region considered *eloquent* (i.e., visual area, language area, movement area), the patient is thought to be a good candidate for epilepsy surgery. The most common type of surgery performed is resection of the temporal lobe with a success rate of about 70% seizure freedom, 1 year following surgery, in the United States. Patients believed to be uncontrollable with other therapies seem to benefit from surgery more when they are referred at an early stage.

The vagal nerve stimulator (VNS) is another alternative for patients who do not respond to medications and are not surgical candidates. This technique isolates the left vagus nerve in the neck and electronically stimulates the brainstem with retrograde impulses decreasing its seizure susceptibility. VNS decreases seizures by about 50% in about 50% of patients.

Related Topics

▶ [Electroencephalogram](#), ▶ [Frontal lobe dysfunction](#)

Suggested Readings

- Commission on Classification and Terminology of the International League Against Epilepsy (1989) Proposal for revised classification of epilepsies and epileptic syndromes. *Epilepsia* 30:389–399
- Engel Jr J, Pedley TA (1997) In: Engel Jr J, Pedley TA (eds) *Epilepsy: a comprehensive textbook*. Lippincott-Raven, Philadelphia, PA, pp 499–512
- Hauser WA, Hesdorffer DC (1990) *Epilepsy: frequency, causes and consequences*. Demos Press, New York
- Heck C, Helmers SL, DeGiorgio CM (2002) Vagus nerve stimulation therapy, epilepsy, and device parameters; scientific basis and recommendations for use. *Neurology* 59(Suppl 4):S31–S37
- Kwan P, Brodie MJ (2000) Early identification of refractory epilepsy. *New Engl J Med* 342:314–319
- Luders HO, Comair YG (2001) *Epilepsy surgery*, 2nd ed. Lippincott Williams & Wilkins, Philadelphia, PA
- Sander JWAS, Shorvon SD (1996) Epidemiology of the epilepsies. *J Neurol Neurosurg Psychiatry* 61:433–443

The Error Catastrophe (Accumulation) Theory of Aging

Jessica Diggs

The error catastrophe theory of aging states that aging is the result of the accumulation of errors in cellular molecules that are essential for cellular function and reproduction that eventually reaches a catastrophic level that is incompatible with cellular survival. The central dogma of molecular biology refers to the unidirectional transfer of genetic information from deoxyribonucleic acid (DNA) to proteins. DNA carries all of the cells genetic information and instructions for carrying out the functions of the cell. Proteins serve a variety of functions. Some proteins serve in metabolic or structural processes, while others serve to catalyze cellular reactions.

The transfer of genetic information from DNA to protein occurs in a series of coordinated processes. The first process called *transcription* involves the transfer of genetic information from double-stranded DNA to single-stranded messenger ribonucleic acid (mRNA) that is able to transport this information from inside the nucleus of the cell, where DNA is housed, to the cytoplasm that surrounds the nucleus, where protein will be made. After this mRNA copy of the DNA is created, the mRNA leaves the nucleus for the cytoplasm and protein is synthesized through a process called *translation*. Once synthesized, these proteins fold into a three-dimensional form with grooves that can allow specific molecules to bind. The unique structure of the molecules formed, allow proteins to serve as enzymes that catalyze essential chemical reactions in the cell, including those reactions involved in transcription and translation. For example, RNA polymerase II is the protein (enzyme) responsible for the initiation of DNA transcription, and the aminoacyl transfer RNA (tRNA) synthetases are group of enzymes that catalyze the addition of amino acids (the building blocks of proteins) to tRNA molecules during protein translation.

The error catastrophe theory of aging was proposed by Leslie Orgel in 1963. This theory is based on the assumption that transcription and translation are

inexact processes that will result in a small, but potentially cumulative amount of error. Orgel proposed that these errors would accumulate with age until reaching a catastrophic level at which the organism could no longer sustain life.

Consequences of Error Accumulation

Errors that occur during transcription or translation may result in misincorporation of amino acids into proteins, or errors in the protein sequence that may lead to a spectrum of structural and functional alterations of the protein and the cell. Some errors may not affect the final protein sequence; if the change resulted in a duplicate code for an amino acid, then no misincorporation will occur. Other errors that do lead to a change of amino acid may result in the misincorporation of an amino acid, but if it is one of similar structure, the protein molecule may still be fully functional, because the error did not effect the folding of the protein molecule, or may be in a location other than the protein's active site (the space where other molecules bind during chemical reactions). Errors that lead to the incorporation of incorrect amino acids that are dissimilar to the appropriate amino acid, or changes in the amino acids that line the groove/active site of the protein may potentially alter its affinity of the protein for its substrate (the specific molecule that the protein is designed to bind to), leading to a significant change in the function of the protein.

Because proteins are eventually degraded, if errors occur in a protein serving a metabolic or structural function, there may be some level of cellular dysfunction, but when these proteins are removed, the evidence of this error will be lost. If however this error occurs in a protein molecule involved in transcription or translation, more errors will be produced with each step, leading to an exponential increase in the error rate as successive molecules are produced. These errors and dysfunctional molecules would eventually accumulate in the cell, reaching a threshold where an error catastrophe would occur. At this point the cell can no longer function and cell death would ensue.

Public Health Perspective

Although some scientific investigations have provided evidence of the accumulation of altered proteins

with aging, these changes have been attributed to post-translational modifications of the proteins, instead of transcriptional and translational errors. There were no alterations in the amino acid sequences of these proteins that would suggest errors in protein manufacturing. Other research has documented that while the fidelity of protein synthesis may be less than that of DNA, it remains relatively constant over time. Although this theory has been discounted based on available scientific evidence, there is still much left to be explained, for example, the accuracy of protein synthesis in young and old and the threshold at which errors may lead to cellular dysfunction. Filling these gaps in knowledge may elucidate the role of protein error in aging, which may ultimately have important implications for public health and aging.

Related Topics

[▶ Accumulative waste theory of aging](#),
 [▶ Anti-aging remedies](#),
 [▶ Cellular theory of aging](#),
 [▶ Life expectancy](#)

Suggested Readings

- Boron WF, Boulpaep EL (2003) *Medical Physiology: a cellular and molecular approach*. Saunders, Philadelphia, PA
- Holliday R (1996) The current status of the protein error theory of aging. *Exp Gerontol* 31(4):449–452
- Orgel LE (1963) The maintenance of the accuracy of protein synthesis and its relevance to ageing. *Proc Natl Acad Sci United States* 49:517–521
- Rothstein M (1987) Evidence for and against the error catastrophe hypothesis. In: Warner HR (ed.) *Modern biological theories of aging*. Raven Press, New York, pp 139–154
- Timiras PS (1994) *Physiological basis of aging and geriatrics*, 2nd ed. CRC Press, Boca Raton, FL

Ethics

Ryan Spellecy · Laura Roberts

Ethics is concerned with how we should live—the decisions we make, the actions we undertake (or fail to undertake), and the underlying concepts, values, and motivations that influence these choices.

In the field of bioethics, there are several principles that shape ethical decision-making. These principles include justice (the distribution of scarce resources such as health care in society), confidentiality (refraining from divulging private information entrusted to a person), veracity (truth-telling), autonomy (respecting the informed choices of capable persons and safeguarding vulnerable or compromised persons), beneficence (doing good or enhancing benefit), and nonmaleficence (doing “no harm”). These principles can sometimes align closely, for example, when a person with depression genuinely and knowledgeably consents to confidential treatment that has a high likelihood of benefit, and at other times be in conflict, for example, when a delirious patient demands discharge from the hospital against the advice of the clinical team shortly after undergoing surgery.

Ethical Issues in the Care of Aging Persons

The ethical issues one is likely to encounter in an aging population do not differ fundamentally from those in other populations, though certain issues arise with greater frequency. One example is informed consent, especially in relation to individuals with diminished capacity for health care decision making and end-of-life care.

Informed Consent and Health-Care Decision-Making

Informed consent is a foundational ethical element in the physician–patient relationship, and there are a number of useful models. At its core, informed consent requires that the patient receive the information he or she needs in a readily understandable and usable manner in order to make a decision in light of his or her own values and goals. The presentation of this information will of course vary from individual to individual, and may require slowing down, repeating information, engaging a translator for persons for whom English is not the primary language, illustrations, and other steps. Additionally, it is important to remember that informed consent is not a piece of paper that someone signs, and it is not an isolated event. Rather, informed consent is an ongoing process

that should be reviewed and updated with each visit or change in the treatment plan.

The reason informed consent is given such high priority is the recognition that medical advances have resulted in a wide array of options for patients, and the “right” treatment is a medical and intensely personal decision. Which outcome would result in an acceptable quality of life, how much risk one is willing to bear, and whether a course of treatment is too much of a burden is determined in large part by one’s values, goals, and life plans. The individual patient is uniquely situated to evaluate treatment decisions in accordance with his or her values, goals, and life plans, as they are the patient’s and he or she is intimately familiar with them. Additionally, it is the patient who must ultimately live with the outcome of the decision.

For individuals whose decision making ability is compromised, the requirement for respectful, personal value-guided decisions is no less. For instance, if a person has executed a health care power of attorney (POA, also known as a durable POA for health care) and appointed a health care agent or advocate should he or she become incapacitated, that person should make decisions for the patient as the patient would have wanted. At times, the agent appointed under the POA might make decisions as he or she would want, or makes decisions out of guilt or remorse for not having “been there” for the patient in the past. While this is a difficult situation, the agent needs to be reminded that he or she has a “job description,” that is, to make decisions according to the wishes and values of the patient. Useful questions to encourage such a decision making mindset include: “Did [patient’s name] ever discuss what she would want if she were in this situation?” “Did [patient’s name] ever have a friend or family member in a similar situation, and what did she think about it?” “If [patient’s name] were sitting here with us right now, what do you think she would tell us about the level of treatment she is receiving? What would she consider an acceptable outcome?”

However, if the patient does not have a health care POA, guidance concerning what the patient would want should be sought from family and friends. While local laws may (or may not) specify a chain of succession in legally recognized surrogate decision-makers, it is useful and appropriate to involve multiple family members and friends, as they may recall different conversations or experiences with the patient. Putting together the pieces of the patient’s values from

various sources can be done by holding a family meeting, in which social workers, chaplains, and the hospital ethics committee can be resources.

If there is no one available to make decisions as the patient would want them made, or provide insight into his or her values, a “best interests” approach should be used. A best interests approach is contrasted with the more subjective approaches discussed earlier because one must seek to make decisions in a more objective manner since information regarding the patient’s wishes is absent. This approach often seeks to make decisions that are consonant with what a reasonable, average, informed person would want in a similar situation. As with all of these approaches, local laws vary and should be consulted.

End-of-Life Care Issues

End-of-life care poses many salient ethical concerns. Some of the common issues are whether there is a meaningful ethical difference between withholding and withdrawing treatment, adequate pain management, as well as questions of futility.

Ethically, there is wide consensus that voluntarily withholding treatment is equivalent to voluntarily withdrawing treatment, when done appropriately. Thus, if a patient who suffers from chronic obstructive pulmonary disease, or her surrogate, requests that mechanical ventilation not be started, or if ventilation is used on a trial basis and is found not to change the underlying disease progression, the two courses are ethically equivalent. A major reason is that the relevant cause of death is the underlying disease, not the actions of the health care team. This difference sets withholding and withdrawal apart from active euthanasia. In euthanasia, it is the actions of the physician, and not the underlying disease, that cause the death of the patient. Although there is some debate as to whether the reasons that lead us to consider withholding and withdrawing treatment as morally on par with one another would also ethically justify active euthanasia, there is widespread ethical acceptance of both withholding and withdrawing of life-sustaining therapies.

Provision of compassionate care is a central commitment of the profession of medicine. Patients trust that their caregivers will offer comfort and seek to relieve suffering in the context of a therapeutic relationship. Nevertheless, management with narcotic

(opioid) medications at the end of life may have the secondary effect (or a “double effect”) of suppressing physiological processes and potentially hastening death. Physicians at times express reluctance about using very high doses of pain-relieving narcotics for fear of causing the death of the patient; yet effective and intensive pain management at the end of life is not only ethically appropriate and compassionate but also ethically required.

There is an ethical tension intrinsic to the problem of alleviating suffering in a manner that may hasten death. The doctrine of double effect is often cited in defense of such practices, as it isolates the positive professional intent of the physician. Double effect has four criteria that must be satisfied for this rationale to be invoked:

1. The act must be good or at least morally neutral, that is, the treatment of pain and suffering in a terminally ill person must fulfill the requirement of seeking to benefit the patient.
2. The agent must intend the good effect and not the bad effect, which may be foreseen but not intended. In this situation, the intention is just to prevent pain and suffering, and not to end the life of the patient. A useful test here is to ask whether one would consider treatment a failure if the patient’s pain were controlled, and yet the patient lived. If not, one intends the good effect, not the bad.
3. The bad effect must not be a means to the good effect. Here one must not use the patient’s death as a means to end the suffering, although death may be foreseen, as noted above.
4. There must be a proportionately grave reason to risk the bad effect. In this instance, preventing intolerable pain and suffering at the end of life is certainly proportionate.

Another ethically important consideration in end-of-life care relates to the concept of futility. There are situations when a seriously ill person is nearing death and the health care team is concerned that aggressive treatment may be both burdensome and futile, and yet the patient or the surrogate decision-maker continues to ask for intensive therapeutic intervention. These situations are often very complex, emotionally as well as ethically.

To help anticipate and resolve decisions that may arise under such difficult circumstances, there have been numerous attempts to define futility so that set

criteria exist for whether or not a physician is obligated to provide care he or she believes to be futile. Distinctions between quantitative futility, in which the treatment has an extremely low chance of success, and qualitative futility, in which the treatment, even if successful, will be of no benefit to the patient but will merely prolong dependence upon intensive medical care, were initially thought to hold promise. However, if the chance of success is greater than zero, a strong case can be made for deferring to the patient, and defining benefit in relation to the values and preferences of the patient who must live out the illness and the consequences of intervention or nonintervention in his or her remaining weeks, days, or hours. This is at the heart of the underlying tension in the futility debate, that is, resolving the conflict between the wishes of the patient and the perceived professional obligations (e.g., beneficence, nonmaleficence, veracity) of the physician.

Approaching Ethical Problems Constructively

The process of arriving at an ethical course of action in a complex health care situation often entails several steps. First, it will involve carefully identifying and clarifying which bioethics principles are involved and may be in conflict. It is often important to gather additional information (e.g., clinical data, background information on patient preferences, life history, and personal values, relevant institutional policies or legal requirements) and to seek counsel from colleagues or specific expertise from other professionals. Difficult ethical issues need not and should not be addressed alone. Identifying and consulting ethics resources, such as trusted mentors, associates, educational programs, and hospital ethics committees are wise strategies. In this collaborative, consultative process, it may be possible then to resolve and balance the competing concerns that exist in the situation. Finally, in almost all circumstances, it will be important to communicate sensitively, and with great care for confidentiality requirements, the decision process, rationale for choices undertaken, and anticipated outcomes. It is also important to listen and respond to the concerns that may arise for the relevant and often diverse “stakeholders” in the situation such as clinicians, family members, and hospital attorneys.

Related Topics

[▶ Advance directives](#), [▶ Death with Dignity Act](#), [▶ Doctor–patient relationship](#), [▶ Durable power of attorney](#), [▶ Euthanasia](#), [▶ Informed consent](#), [▶ Lesbian ethics](#), [▶ Patients’ rights](#), [▶ Physician-assisted suicide](#), [▶ Stem cell research](#), [▶ Suicide](#)

Suggested Resources

- Beauchamp T, Childress J (2001) Principles of biomedical ethics, 5th ed. Oxford University Press, New York
- Moody H (1996) Ethics in an aging society. Johns Hopkins University Press, Baltimore, MD
- Roberts LW, Dyer AW (2004) Concise guide to ethics in mental health care. American Psychiatric Press, Washington, DC
- Schneiderman LJ, Jecker NS, Jonsen AR (1990) Medical futility: its meaning and ethical implications. *Annals Intern Med* 112:949–954

Ethnicity

Teddy D. Warner

“Ethnic” usually refers to characteristics of a people, especially a group of people that share a distinct and common set of characteristics such as culture, religion, language, race, and nationality. This list of central characteristics used to define an ethnic group suggests the complexity of the concept and the varied ways in which it is used. In comparison, “race” (see Race) has traditionally been used to refer to groups defined by biological factors that are the basis of group differences, especially observable physical features. The validity of this conception of race has been seriously questioned by many authorities, and it is now common to consider race to be a social and political construction. “Culture” usually refers to shared elements that provide a basis for perceiving, believing, communicating, evaluating, and behaving within a common context. However, no consensus exists regarding precise definitions of ethnicity, race, or culture, and each concept has overlapping yet distinct meaning. It is unfortunately very common for people to use the terms ethnicity, race, and culture interchangeably.

The United States has long included many ethnic groups, races, and cultures. The country's recognition of this diversity and the considerable strength that such variety brings to the country are increasing. Many other nations are also experiencing increasing diversity among people, and tendencies to devalue cultural differences and to keep cultural and ethnic groups segregated are also declining. Diversity among peoples and groups of people with different ethnic characteristics enriches a society, bringing a greater breadth of perspectives, ideas, values, attitudes, and contributions. Over the last 50 years the world has increasingly recognized, although certainly not fully accepted, the value of cultural and ethnic differences. However, ethnic strengths historically have been built upon maintaining similar values and characteristics within a given ethnic or cultural group and keeping these characteristics distinct from those of other groups. Increasing diversity within a geographic area may lead to a blending of ethnic differences, thus risking the loss of unique aspects of various cultures and ethnicities over time.

For many in the United States, ethnic group also connotes "minority group," that is, a smaller group within the larger dominant group. This is an "ethnocentric" application of the concept—wherein it is used to refer to those outside the greater group but not to those among the majority group. Furthermore, ethnicity often connotes "race" or "nationality" to many people, particularly so-called races or nationalities that are not among the majority population. Thus, by this usage in the United States, whites or Anglos are not ethnic groups in the minds of most people, but Asians, blacks or African Americans, Hispanics or Latinos, American Indians, Alaskan Natives, and Pacific Islanders are, primarily because none of these latter groups represent a majority. In contrast, in Central and South America, non-Hispanic whites are in the minority and many local people may consider them ethnic groups in those locales. Furthermore, in parts of various American states, whites are not in the majority. For example, in New Mexico, no traditionally labeled group represents a majority (about 44% Hispanic, 44% non-Hispanic whites, 9% American Indians, and 3% other groups). The logical absurdity of this ethnocentric usage and meaning of ethnicity as commonly applied in the United States thus becomes apparent. More objectively, any group sharing a distinct and common set of characteristics would be considered an ethnic group, irrespective of its numbers relative to other groups, including whites,

Caucasians, and Anglos. But this suggests an additional problem in assessing and using ethnicity or race as a means by which to predict or classify groups of people—whites, Hispanics, blacks, Native Americans, and other large groups are not homogeneous regarding culture, religion, language, values, or nationality; in fact, it is clear that people within each "group" are quite diverse in all respects. Thus, although ethnicity is usually measured by simple broad self-assigned labels, it is actually a complex concept that reflects many dimensions.

The assessment of ethnicity is usually accomplished by asking people how they describe themselves, either with an open-ended question or, more commonly, by asking them to check which listed label best applies to them. Historically, a variety of such lists of ethnic group labels have been used, and the lists have changed over time. Currently, the following list is increasing in use in the United States: Asians or Asian Americans, blacks or African Americans, Native Americans (or American Indians) and Alaskan Natives, Pacific Islanders, white or Anglo, and "mixed" or "other." The latter category allows people to identify with more than one ethnic group. Note that "Hispanic or Latino" is omitted from this list because it is now recognized that Hispanic status represents a separate dimension relative to the larger list. In this fairly recent assessment scheme, Hispanic status is measured with a separate question that precedes the one above, thus recognizing that "Hispanics or Latinos or those of Spanish descent" may be among white or black "races" and also that Hispanic people are not a homogeneous group. Of course, Hispanic people are not homogeneous in many nonracial senses as well because Hispanic people who "originate" from Spain, Mexico, the Caribbean, South America, and the United States often have distinct cultures and other characteristics.

The current US categories used to assess "ethnicity" emanate from the US Federal Office of Management and Budget, which announced this system in 1998 and encourages other Federal agencies to follow it for the sake of consistency in reporting. The Department of Health and Human Services and the US Census Bureau among others have adopted this two-question approach. Those who use it, often to meet federal standards, are encouraged by government guidelines to consider making such ethnicity assessments at a finer-grained level, but they are not required to do so. This too suggests that the sociopolitical systems that have evolved this scheme recognize that ethnicity

is more complex than what these simple half-dozen categories or labels imply.

Assessing ethnicity (or race) in a population usually serves one of two major purposes. The first is descriptive, wherein the percentage of people that can be attributed to a particular broad ethnic group is provided as information to characterize a population. The second is analytic, wherein differences in other nonethnic characteristics or behaviors are reported to vary as a function of membership in different ethnic groups. We will discuss some of the issues concerning the analytic use of ethnicity, but first we will turn to a brief and simple review of the known general relationships of ethnicity to several major health status measures in the United States to illustrate the analytic use of ethnicity.

Health status indicators (HSIs) were developed as a part of *Healthy People 2000*, a set of objectives of the Department of Health and Human Services intended to help reduce disparities in health care among various groups in the United States and to encourage significant improvement for the population overall. In addition to reporting the rates of various illnesses, an “index of disparity” was used to summarize ethnic or racial differences in the HSIs. Examination of trends for the period 1990–1998 showed that most of the 17 HSIs improved for most ethnic and racial groups, although differences between groups did not change very much.

Infant mortality is often used as a principal measure of health status among groups and nations worldwide. In the United States, rates of infant mortality have been much lower for non-Hispanic whites, Hispanics, Asians, and Pacific Islanders than for blacks and Native Americans or Alaskan Natives, roughly by a factor of 2. During the 1990s, infant mortality decreased notably for all groups to 6.0/1,000 for whites, 5.8 for Hispanics, and 6.6 for Asians by 1998; although it declined by approximately 25%, it remained much higher for non-Hispanics blacks (13.9) and for American Indians or Alaskan Natives (9.3). Rates for low birth weight showed the opposite trend, increasing by as much as 18% for some groups over the decade: whites (6.6/1,000), Hispanics (6.4), Asians (7.4), blacks (13.2), and American Indians or Alaskan Natives (6.8). The percentage of women with no prenatal care during their first trimester of pregnancy ended with a marked decline of 24–35% in 1998 compared with 1990: whites (6.6/1,000), Hispanics (6.4), Asians (7.4), blacks (13.2), and American Indians or

Alaskan Natives (6.8). The rate of live births for females aged 15–17 showed a much more gradual decline for all groups over the decade, ending with the following rates: whites (18.4/1,000), Hispanics (62.3), Asians (13.8), blacks (58.8), and American Indians or Alaskan Natives (44.4).

The total death rate is also used as a prime HSI nationally and globally. The total death rate decreased over the 1990s by approximately 10% for all groups except American Indians or Alaskan Natives, who showed a 4% increase in death rate; the 1998 rates are: whites (453/100,000), Hispanics (343), Asians (265), blacks (711), and American Indians or Alaskan Natives (458). The ratio of rates between highest and lowest groups was 2.7 in 1998, the same as in 1990, indicating no reduction in overall health differences among groups.

Death rates by “violent” means showed substantial overall declines during the 1990s: homicide (28%), suicide (10%), and motor vehicle crash (15%). Percentages of decline across ethnic groups were roughly similar, with two major exceptions: (1) the rate of suicide in American Indians or Alaskan Natives actually increased (8%), and the rates of decline in death by homicide (11%) and motor vehicle crash (4%) were much lower than for the other groups; (2) Asians showed much lower decline in suicide rate (2%) than other groups, probably because their rate was already the lowest (6.0/100,000). The ratio of highest to lowest rate among ethnic groups (disparity ratio) actually increased over the period for motor vehicle crashes (2.6 to 3.7) and suicide (2.1 to 2.3), but declined for homicide (9.7 to 8.2).

Death rates by major diseases are also used as important indicators of health status in the United States. For example, rates of death from heart disease declined overall by 16% over the 1990s, and this decline was uniform for all ethnic groups, except it was notably lower for blacks (11%) and American Indians or Alaskan Natives (8%). End-of-decade rates by group were: whites (124/100,000), Hispanics (84), Asians (67), blacks (188), and American Indians or Alaskan Natives (97). The disparity ratio among groups actually increased slightly from 2.7 to 2.8. The decline in stroke death rate was much lower overall (9%) than for heart disease and was not uniform among groups, with that in American Indians or Alaskan Natives actually increasing (3%). Rates in 1998 by group were: whites (23/100,000), Hispanics (19), Asians (23), blacks (43), and American Indians

or Alaskan Natives (20), with an ethnic disparity ratio of 2.2, down from 2.5 in 1990.

A number of other trends in major HSIs illustrate the substantial differences in health among the various major ethnic and racial groups in the United States. Comparison of disparity indices in 1990 to those in 1998 reveals that for 11 of 17 HSIs, ethnic difference has shown a decline, but statistically only for 6 of the indicators, while 5 showed increases, and 3 of them significantly so. Thus, overall, little decrease in health differences seems to have occurred over the 1990s, and for some groups on some measures, notable increases were revealed, particularly for American Indians or Alaskan Natives. In fact, it is because of such health differences that the National Institutes of Health (NIH) now require all researchers whom they fund to include as research participants all minority (ethnic) groups, members of both genders, and children, unless satisfactory scientific justification for their exclusion is provided. NIH-funded researchers must report annually the number of research participants who fall into each of the ethnic group categories who have enrolled in their study. In addition, various institutes of NIH have released special announcements to solicit research focused on helping understand and eliminate health differences among Americans who are members of different ethnic, racial, or “minority” groups.

Much debate has focused on the appropriateness of using self-reported ethnicity or race as a variable to predict or explain differences in health and other outcomes. A substantial scientific literature over the last two decades discusses the serious scientific concerns surrounding the use of ethnicity as an independent variable. However, ethnicity and race (and gender) continue to be used as if they are potential causes of a wide range of health outcomes, in spite of the fact that many experts agree that measuring and using ethnicity for this purpose produces nothing more than descriptive results at best, and erroneous results at worst. Many authorities argue that ethnicity and race are simply sociopolitical concepts that have little, if any, basis in scientific reality. Others, however, argue that underlying genetic differences exist among ethnic and racial groups (and other groups), and that these genetic differences may well be important factors that contribute to risks for both mental and physical illnesses—knowledge about such factors might contribute to more effective diagnosis and better treatment. However, in the future the prediction and treatment of

disease are likely to be based upon individual genetic profiles, suggesting that distinctions made on broad racial or ethnic classifications will become unimportant. Still others argue that even if group genetic differences do not matter, cultural and social differences between ethnic groups contribute greatly to behaviors that are causes of, or associated with, a variety of health factors.

However, several experts have pointed out that the amount of variability in social, behavioral, cultural, and even genetic characteristics among individuals within specific ethnic or racial groups is almost always much greater than the variability between such groups. That is, it has often been argued that although genetic, behavioral, social, and cultural differences among ethnic groups may be predictors of average health status between such groups, it is much more important to examine differences within members of an ethnic group to understand the causes of health and illness and to increase effectiveness of diagnosis and treatment.

In addition, researchers often assume that all individuals in an ethnic group share some common characteristic associated with culture, and that the cultural characteristic is associated with mental or physical abnormality or some other issue. Two major problems are apparent with this thinking. First, as previously discussed, there is considerable variation among individuals within an ethnic group on almost all characteristics; that is, members of ethnic groups are not homogeneous regarding most characteristics. Second, ethnicity is usually only distantly associated with the health or other outcome being investigated and, indeed, ethnicity usually serves as a substitute or proxy for some other concept of more direct interest such as culture and, in particular, specific features of culture. That is, ethnicity is often used as a substitute measure for culture, or for attitudes or behaviors that are the actual causes of health or illness. Culture, attitudes, and behaviors are usually much more difficult to measure, and thus researchers simply assess ethnicity with self-reported labels instead, but at the cost of considerable imprecision in assessing the relationship between culture or behavior and health outcomes.

Measuring variables that are believed to directly cause outcomes is much more scientifically defensible. For example, if one were studying use of birth control and determined that those who identified themselves as “Hispanic” were significantly less likely to use birth

control pills, it would be scientifically imprecise (some would argue flat wrong) to say that being a member of an ethnic group “causes” use of specific birth control methods. A variable that might be closer to actually influencing the use of a specific birth control method might be “religious preference” because Hispanics predominantly identify themselves as Catholics, and the Catholic formal doctrine forbids use of birth control pills. But “religious preference” would still be a substitute variable because, although many Hispanics express a Catholic religious preference, all Catholics do not agree with church doctrine about birth control, and therefore some do use birth control pills. A more proximate predictor of pill use would be “attitudes about birth control,” the “degree of acceptance of Catholic religious doctrine,” or “prior experiences with using or not using birth control methods.” Measures of these possible causal variables are much more likely to accurately predict birth control use than ethnic group membership. Hence, researchers should carefully think about the likely causes of the outcome under study and measure the characteristics that are the most directly associated with the outcome, if feasible. Commonly, that means measuring past behaviors or current attitudes, beliefs, or values rather than asking people to report their ethnic group status. Good science requires directly measuring the variables that are related to culture, attitudes, or beliefs that are predicted to cause differences in outcomes—not relying on imprecise self-assessments of ethnic or racial group status.

Another serious question in assessing ethnicity involves how to meaningfully categorize individuals who are of “mixed” ethnicity or individuals who are not aware of their “full ethnicity.” If the attitude, belief, behavior, or value that was closely associated with the outcome under study were assessed instead of ethnicity, this dilemma would disappear. The great diversity within ethnic groups is often compounded by researchers who “homogenize” ethnic groups by comparing the responses of all “minority” ethnic groups to responses of whites, as if all members of all minority ethnic groups share something in common.

Another problem is that in many studies that detect differences in outcomes between various ethnic groups, the ethnic groups vary in many ways other than underlying culture, attitudes, or beliefs that are associated with ethnic status. For example, such groups often differ in educational and income level, age distribution,

language fluency, general acculturation, and many possibly unknown ways. Researchers sometimes attempt to “control” for such differences using statistics, but interpretation of analyses that “equate” groups using various “covariates” is fraught with serious logical problems. Simply put, real differences in groups cannot be meaningfully eliminated using mathematical “corrections.” Thus, ethnic groups that are different in many ways cannot be made equal with statistical controls in any clearly interpretable manner. Thus, unless various ethnic groups are equated on important variables, such as educational and income level, the effect of ethnic status on outcome variables is confounded with these other variables, and ethnic status cannot be attributed as the cause of outcome differences.

Several guidelines for using ethnicity in research have been made by many authors:

1. Make clear the assumptions that are the basis of the use and assessment of ethnicity in a particular context.
2. Test hypotheses about specific aspects of culture or other characteristics rather than using ethnicity as a substitute variable.
3. Consider matching samples of different ethnic groups selected for studies while retaining as much diversity within the group as feasible.
4. Report fully the sample characteristics and ways in which the sample was selected in studies.
5. Use large enough sample sizes to adequately detect the differences that are likely to be found in naturally occurring groups.
6. Use several measures and several assessment methods where feasible ensure that the concept that is being measured is actually the causal factor being studied (i.e., convergent validity).
7. Use cultural and/or ethnic experts to ensure appropriate translation of language and concepts of the measures being used.
8. Use study results to generate further research rather than assume that findings are valid based on single studies.

Thus, use of the concept of ethnicity should entail careful thinking and planning to enable the collection of data of the highest quality that most directly address the research question.

Irrespective of the fact that assessment of ethnic group status is usually very imprecise, it is clear that “ethnic groups” as commonly crudely assessed differ

on many measures of health status, but it is also true that such groups differ on many other characteristics, such as income, education, language use, general acculturation, attitudes, beliefs, values, and probably a host of other variables. It is thus inappropriate to attribute differences in health status to characteristics of ethnic status in any simple or direct manner. Different ethnic groups experience the world in different ways for many reasons, which in turn leads to differences among and within ethnic groups in many complex patterns. Indeed, different ethnic groups express different cultures in diverse ways, and it is the more direct study of specific features of culture (or biological factors that vary across populations) that may lead to greater understanding of the differential ethnic experience. This is superior to stereotypically treating all members of the same ethnic group as the same. That is, it is important to recognize the diversity between the many ethnic groups in the United States and in the world, but it is also important to recognize the immense diversity among members within each of those groups.

Related Topics

[▶ Acculturation](#), [▶ African Americans](#), [▶ American Indians and Alaskan Natives](#), [▶ Asians and Pacific Islanders](#), [▶ Latinos](#), [▶ Minority seniors](#), [▶ Morbidity](#), [▶ Mortality](#), [▶ Race](#)

Suggested Readings

- Alvidrez J, Arean PA (2002) Psychosocial treatment research with ethnic minority populations: ethical considerations in conducting clinical trials. *Ethics Behav* 12:103–116
- Healey JF (2005) *Race, ethnicity, gender, and class: the sociology of group conflict and change*, 4th ed. Sage Publications, Thousand Oaks, CA
- Keppel KG, Pearcy JN, Wagener DK (2002) Trends in racial and ethnic-specific rates for the health status indicators: United States, 1990–1998. *Healthy People Statistical Notes* No. 23, Jan:1–16
- Okazaki S, Sue S (1995) Methodological issues in assessment research with ethnic minorities. *Psych Assess* 7:367–375
- Phinney J (1996) When we talk about American ethnic groups what do we mean? *Am Psychol* 51:918–927
- Triandis HC (1996) The psychological measurement of cultural syndromes. *Am Psychol* 51:407–415
- Walsh ME, Katz MA, Sechrest L (2002) Unpacking cultural factors in adaptation to type 2 diabetes mellitus. *Med Care* 40:129–139

Suggested Resources

Guidelines on Multicultural Education, Training, Research, Practice, and Organizational Change for Psychologists. American Psychological Association, approved by the APA Council of Representatives, August, 2002. <http://www.apa.org/pi/multiculturalguidelines/definitions.html>

Euthanasia

Cynthia M.A. Geppert

Euthanasia literally means “good death” in Greek and its initial connotation was an act of “mercy killing” in which a physician intentionally caused the death of a patient to relieve intolerable and hopeless suffering. Voluntary euthanasia for the elderly was practiced in several ancient societies. Euthanasia has historically been viewed as a violation of Judeo-Christian values, and was therefore prohibited during most of Western history. The secularization of postmodern culture and the technological revolution in medical science reignited the debate over euthanasia and rendered it one of the most controversial issues in contemporary bioethics. Public discussion of euthanasia is often confused and conflated with physician-assisted suicide, and although some ethicists question the usefulness of the distinctions, it is important to understand the difference and nuances of vocabulary related to assisted death. The terms most often used in discussions of end-of-life ethics are defined in [▶ Table 1](#).

At the time of this writing, all forms of euthanasia remain illegal in the United States. Voluntary euthanasia was first legalized in Australia’s Northern Territory in 1995, although the law was repealed in 1997. The maximum experience with euthanasia has come from the Netherlands, which legalized active euthanasia and physician-assisted suicide in 2001 after years of unofficial toleration of the practices. Belgium passed similar legislation in 2002. Almost all laws and legislative proposals require conditions for justification of euthanasia which generally include that (1) the decisionally capable patient makes a voluntary request over a period of time; (2) the patient is suffering intolerably and there is no meaningful hope of recovery or relief; (3) the physician obtains appropriate consultation with at least

■ **Table 1**

End-of-life ethics terms

Term	Meaning
Physician-assisted suicide	A physician provides the means, such as prescribing a large amount of barbiturates, for a patient to take his own life
Passive euthanasia	A physician refrains from performing an act that would be life-sustaining, such as placing a patient with respiratory failure on a ventilator
Active euthanasia	A physician intentionally causes the death of a patient through administration of a lethal dose of medication
Voluntary euthanasia	A competent patient requests that a physician end his or her life either through passive or active means
Involuntary euthanasia	The life of an incompetent patient is ended without his or her request, such as disconnecting the respirator of a patient in a persistent vegetative state

one other colleague who agrees with the decision to perform euthanasia; and (4) certain designated clinical, regulatory, and public health provisions, such as reporting to the authorities, are completed.

Euthanasia and Aging

The unresolved legal and moral issues surrounding euthanasia make it difficult to determine a precise prevalence, although most experts believe it is relatively rare even in the Netherlands. In a 1998 study in the United States Meier found that 18% of physicians reported receiving a request for euthanasia, but only 5% administered a lethal injection. Opponents of euthanasia have always been particularly concerned that the practice would be inappropriately utilized in vulnerable populations such as the elderly and terminally ill. Data from the Netherlands suggest that such exploitation has not occurred on any widespread scale. In 1995, approximately 59,700 individuals above 80 died in the Netherlands; 756 were euthanised. Among 44,110 nursing home patients with serious diseases who died over a period of 4.5 years, only 77 of the deaths were by euthanasia. Another objection to euthanasia often raised is that its availability would decrease older patients' trust in their physicians. Hall's 2005 national sample of 1,117 adult Americans found that only 27% of the elderly thought that the option of euthanasia would decrease trust. This and other studies have shown that members of minorities, the religious, and those with lower education and income were less favorably disposed to euthanasia.

Apprehensions regarding the influence of depression, anomie, and other forms of psychosocial distress on older patients' requests for euthanasia are empirically validated. One research team surveyed

158 patients 60 years and older who were hospitalized for nonterminal illnesses, with and without depression, to assess their attitudes toward euthanasia. The depressed patients who initially supported euthanasia were significantly more likely to reject the option when questioned 6 months later. Greater suffering and poorer subjective health were also correlated with acceptance of euthanasia.

Euthanasia, Aging, and Public Health

Research showing that members of disadvantaged populations are less likely to support euthanasia reinforces the need for health-care professionals in the public health sector to safeguard the rights of these patients to competent and compassionate end-of-life care. As the population ages, and the birthrate declines, there will be increasing financial and political pressure to control the everspiraling costs of health care through reducing medical expenditures on the elderly, especially those with terminal illnesses, disabilities, and dementia.

The legality and ethicality of euthanasia is a momentous political decision that must be made through informed and deliberate decisions of an entire society, not as a measure of economic expedience. Similarly, data that show a relationship between an older person's experience of unrelieved suffering, perceived burden on their families, and weariness of living mandate equal access of all older persons to the highest quality of palliative care and social support. Conversely, the findings in many surveys that many of the elderly believe euthanasia is an acceptable option at the end of life requires serious consideration if the medical goal of death with dignity for every patient is to be actualized.

Related Topics

- ▶ [Death with Dignity Act](#), ▶ [End-of-life care](#),
- ▶ [Physician-assisted suicide](#), ▶ [Rational suicide](#),
- ▶ [Suicide](#)

Suggested Readings

- Blank K, Robinson J, Prigerson H, Schwartz HI (2001) Instability of attitudes about euthanasia and physician-assisted suicide in depressed older hospitalized patients. *Gen Hosp Psych* 23:326–332
- Hall MF, Trachtenberg F, Dugan E (2005) The impact on patient trust of legalizing physician aid in dying. *J Med Ethics* 31:693–697
- Meier DE, Emmons CA, Wallenstein S, Quill T, Morrison RS, Cassel CK (1998) A national survey of physician-assisted suicide and euthanasia in the United States. *New Engl J Med* 338:1193–1201
- Muller MT, Kimsma GK, van der Wal G (1998) Euthanasia and assisted suicide: facts, figures and fancies with special regard to old age. *Drugs Aging* 13:185–191
- Muller MT, van der Wal G, van Ekik JT, Ribbe MW (1995) Active euthanasia and physician-assisted suicide in Dutch nursing homes: patient's characteristics. *Age Ageing* 24:429–433
- Van der Wal G, Muller MT, Christ LM, Ribbe MW, Van Eijk JT (1994) Voluntary active euthanasia and physician-assisted suicide in Dutch nursing homes: requests and administration. *J Am Geriatr Soc* 42:620–623

Suggested Resources

- Beauchamp TL, "Euthanasia" (2005) Microsoft Encarta Online Encyclopedia, January 21, 2006. <http://encarta.msn.com>
- University of San Diego, Ethics Updates (2006) Euthanasia and End-of-Life Decisions, January 21, 2006. <http://ethics.acusd.edu/Applied/Euthanasia>.

The Exchange Theory of Aging

Jessica Diggs

The exchange theory of aging, proposed by James Dowd in 1975, is a social theory that addresses a perceived loss of status and power associated with aging. It is actually derived from a larger theoretical

base known as social exchange theory. Social exchange theory in essence is an economic theory in which the social status of a person is determined by the ratio of rewards to costs associated with interaction with that person. In this context, a reward may be defined as anything actual or perceived that results in the recipient's satisfaction or gratification. Rewards could be in the form of currency, information, goods, services, respect, power, social support, social acceptance, social approval, etc. There are several underlying assumptions that guide this theory. The first is that a person's behavior is in part determined by the person's desire for personal benefit or reward. The second is that activities or interactions that are positively reinforced will continue while activities that do not yield sufficient benefit or rewards will be discontinued. In order for this process to occur people involved in social interactions must have some resources to exchange although the distribution of these resources may be unequal.

In isolation, the ability of this theory to predict behavior is limited because it takes a purely rational and cross-sectional approach to explaining behavior, basically stating that behavior will continue as long as the benefits outweigh the costs. This theory does not address the impact of the context in which the exchange occurs, or how the value or reward may change over time or in a given situation. The availability of alternatives for supplying one's needs may also impact the likelihood of participation in an exchange relationship, independent of the cost to benefit ratio. This theory also lacks consideration of the marginal value of a reward, whereby the relative amount of a reward that an individual has obtained will determine the value of additional reward. Expected rewards may be just as valuable as actual rewards. An illustration of this might be a person who continuously engages in a social relationship that is costly to them in expectation of some future reward or payback. Nonmaterial drivers of behaviors like emotions (love, guilt, self-esteem) are difficult to quantify although they may contribute to the exchange equation.

Implications for Elders

In applying this theory to aging individuals, Dowd proposes that aging individuals in industrialized nations lose power and social status due to the

decreasing value of goods and services that they have to exchange with others as they age. Dowd views the elderly as having the least amount of social power based on his belief that aging individuals lose control over their money, knowledge, and other resources that eventually lead them to be economically and socially dependent. This can be due to factors such as mandatory retirement, technological developments and changes over time that may render their skills obsolete, and changes in health status, all of which can limit the ability of the aged to remain socially or financially viable. According to this theory, the elderly will have very limited resources to exchange for valued resources that they need. In terms of bargaining power, the elderly are thought only to have the ability to comply with the wishes of others to offer in the exchange. Because of the decreased resources for exchange among the elderly, the exchange relationship between younger persons and the elderly will decrease, secondary to the unequal exchange process that will make these interactions more costly for the younger person.

Research in this area has shown, however, that many relationships between older and younger generations are bidirectional, whereby the elderly contribute both material and nonmaterial resources to their younger counterparts. These resources may be financial or can also be in the form of work or time, through volunteering, childcare, housework, or offering advice or counsel. As people age, there will be an inevitable change in their relationships, social support networks, and social status; however, it is important for the aging individual and society to focus on what the aging person has to offer (knowledge, wisdom, life experience, time), and to use those resources fully for the benefit of people of all ages.

Related Topics

- ▶ [Coping](#), ▶ [Domestic partnerships](#), ▶ [Emotions](#),
- ▶ [Family relationships](#), ▶ [Friendship](#)

Suggested Readings

- Hooyman NR, Kiyak HA (1999) *Social gerontology: a multidisciplinary perspective*, 5th ed. Allyn & Bacon, Boston, MA
- Keyes CL (2002) The exchange of emotional support with age and its relationship with emotional well-being by age. *J Gerontol B Psychol Sci Soc Sci* 57(6):518–525

- Klein DM, White JM (1996) *Family theories: an introduction*. Sage Publications, Thousand Oaks, CA
- Maddox GL (1987) *The encyclopedia of aging*. Springer, New York
- Osgood NJ, Sontz AHL (1989) *The science and practice of gerontology: a multidisciplinary guide*. Greenwood Press, New York
- Roy FH, Russell CH (1992) *The encyclopedia of aging and the elderly*. Facts on File, New York

Exercise

Jon A. Lehrmann · Jeffrey T. Junig

Exercise is important to good health, and yet many may hold the erroneous belief that exercise is contraindicated or needs to be severely limited in the elderly. To the contrary, with appropriate planning and precautions the overall benefits of exercise for elders are significant. Still, more than 40% of individuals above 65 do not participate in any leisure-time physical activity.

Exercise is extremely important for physical and mental health. Regular exercise and consequent increased fitness are associated with improved life expectancy overall. Further, exercise has been linked with an improved ability to respond to, and metabolize, glucose, with reduced risk for developing type 2 diabetes mellitus, with improved physical function and decreased risk for developing osteoporosis. Exercise has also been linked with improved mood, better-quality sleep, and a general sense of well-being—particularly important for people in middle and late adulthood because up to 13% of elders meet clinical criteria for major depression. Finally, exercise is an effective outlet and coping mechanism for dealing with stress, and has been shown to decrease anxiety in the elderly.

Aerobic and strength or resistance training are two forms of exercise that are especially recommended for elders and for individuals with chronic diseases associated with aging. Aerobic exercise increases cardiovascular fitness as measured by blood pressure and pulse rate, and improves flexibility, maximum physical exertion levels, mood, and perceived health status. Because advanced age is associated with reduced elasticity and increased muscle stiffness, proper warm-up and stretching prior to exercise are very important and decrease the risk for orthopedic injuries. Cooling down with a slow walk and further stretching is also important after aerobic exercise. Strength or resistance

training is recommended by the American College of Sports Medicine as a component of an overall fitness program for the elderly. Strength training and conditioning are defined as training where the resistance against a muscle set is progressively increased over time. With resistance training, even frail institutionalized elderly men can increase muscle strength and muscle mass, and this form of exercise can help with balance, gait speed, and stair-climbing strength. Resistance training is also associated with increased bone density and energy levels. Women and men often have different preferences for the kind of exercise activities they choose. Women are more likely to engage in aerobics and walk, while men are more likely to compete in team sports, jog, and lift weights.

Initiating an Exercise Program

Aging is associated with physical changes that may affect an elder's ability to exercise comfortably and effectively. Lean body mass diminishes with the loss of skeletal muscle mass, and this change may play a role in decreasing an individual's basal metabolic rate. Decreases in muscle mass are often associated with decreases in overall strength and activity levels. In addition, many elders especially in this country do not decrease their calorie intake to match the decrease in metabolism that occurs with aging, and this leads to a disproportionate increase in body fat. Regular exercise can help counter these changes that may adversely affect the health of aging persons.

Before starting a program of exercise, it is important to consider several physical and psychological issues. The American College of Sports Medicine recommends a physician-supervised stress test for those above 50 who intend to begin a vigorous exercise program. Certain individuals should speak with their physician before starting a vigorous exercise program, in particular people who have previously experienced chest pain or who have a history of diabetes, heart disease, high blood pressure, shortness of breath, fractures to wrist, legs, or hips as an adult, unexpected weight loss of more than 10 pounds in the past 6 months, arrhythmias, blood clots, or who have a history of other pulmonary or vascular disease. Their physicians can give guidelines for the initiation of aerobic and strength-training exercise programs.

From a psychological perspective, an individual may deny or minimize how aging may affect his or

her physical performance in exercise. An older person may possess an "internal image" as a much younger person, as measured chronologically. This can lead to a more strenuous approach at the initiation of an exercise program, which in some cases could be harmful. Therefore, a gradual approach during initiation of an exercise program is essential. Once an individual has started exercising, it may be helpful to find a suitable exercise partner or "coach." These approaches have been shown to improve adherence to an exercise program. In choosing the type of exercise activity, an individual should consider the social support systems. It has been reported that individuals who are not married often prefer an exercise activity that involves social interaction. Social support helps decrease loneliness.

In summary, exercise is extremely important in the elderly with proven benefits in strength, function, endurance, and physical and mental health. Care should be taken with the initiation of an exercise program and consultation with a physician is recommended. Strength conditioning and aerobic exercise have been shown to be beneficial, and a balance of strength conditioning with aerobic exercise is often recommended with a fitness program.

Related Topics

- ▶ [Anti-aging remedies](#), ▶ [Back pain](#), ▶ [Body fat](#),
- ▶ [Body image](#), ▶ [Body mass index](#), ▶ [Bone strength](#),
- ▶ [Chronic pain](#)

Suggested Readings

- Bruce A, Anderson M, Arvidsson B, Isaksson B (1980) Body composition: prediction of normal body potassium, body water and body fat in adults on the basis of body height, body weight, and age. *Scand J Clin Lab Invest* 40:461–473
- Cohen-Mansfield J, Marx M, Biddison JR, Guralnik JM (2004) Socio-environmental exercise preferences among older adults. *Prevent Med* 38(6):804–811
- Evans WJ (1999) Exercise training guidelines for the elderly. *Med Sci Sports Exerc* 31:12–17
- Forbes GB, Reina JC (1970) Adult lean body mass declines with age: some longitudinal observations. *Metabolism* 19:653–663
- Hughes VA, Fiatarone MA, Fielding RA, Ferrara CM, Elahi D, Evans WJ (1995) Long-term effects of a high carbohydrate diet and exercise on insulin action in older subjects with impaired glucose tolerance. *Am J Clin Nutr* 62:426–433

- McMurdo ME, Burnett L (1992) Randomized controlled trial of exercise in the elderly. *Gerontology* 38:292–298
- Tanaka H, Taira K, Arakawa M, Toguti H, Urasaki C, Yamamoto Y, Uezu E, Hori T, Shirakawa S (2001) Effects of short nap and exercise on elderly people having difficulty in sleeping. *Psych Clin Neurosci* 55:173–174
- Tsutsumi T, Don BM, Zaichkowsky LD, Delizonna LL (1997) Physical fitness and psychological benefits of strength training in community dwelling older adults. *Appl Hum Sci* 16:257–266

Extended Family

Ingrid Vargas

The term “extended family” is defined as a network of relatives that includes grandparents, cousins, uncles, aunts, and foster children. The term was used by scholars in the nineteenth and early twentieth century. The complexity of the term can be attributed to various multicultural origins of the American families.

Historically speaking, Americans generally have a nuclear family structure, which is common in Western societies. In Europe, Latin America, the Middle East, and Asia, the extended family is part of the basic family unit. The extended family structure is a modern idea that has evolved over time. An extended family member can be a part of the nuclear family. Elderly family members living with their children are also part of the nuclear family system.

The American family structure has undergone changes in the last three centuries due to shifts in family roles, organizational structure, social values, and the economy. Understanding historical events and family shifts help better understand modern families today. The extended family structure was common in preindustrial societies, in which every family member including extended families came together to work in the agricultural industry. Individuals in both nuclear and extended families relied on each other to help with agricultural tasks. This process brought generations of a family together. However, during the industrialization era, when job opportunities were provided to individual family members, the extended family structure shifted to a nuclear family structure. Family members became wage earners and self-sufficient, and therefore depended less on extended family members. Today, Americans are once again looking and reaching out to extended family members for emotional and financial support

due to the complexities and difficulties associated with single parenting and the economy. Poverty also causes families to share households with extended family members.

An important social concern is the growing need for elderly services such as housing. For safety reasons, elderly persons often cannot live alone, and therefore it is common for the elderly to live with family members or in an assisted living facility. One major concern is the cost of assisted living for the elderly who do not have family financial support. Elderly persons have reported a profound sense of loss in living in such facilities. It is then a necessity for the family to provide shelter and support to their elderly relatives. Extended family members participate in providing the elderly with personal development; daily living tasks such as cleaning, laundry, and shopping; assistance during times of crisis, illness, and in overcoming feelings of alienation. Caring for elderly family members can also provide the family with benefits such as spiritual support, familial storytelling and a sense of history, family counseling, mediation during times of conflict, and cross-generational interactions with young family members.

At times, geographical distance does not allow for families to be engaged in the lives of their elder extended family members and family interactions may be limited and casual. The role of extended family in the aging process is very important because in later life many elderly may begin to lose long-standing social connections like clubs, churches, and the community. This is when the extended family can help the elderly maintain social relationships with the community in the aging process.

Related Topics

▶ [Social support](#), ▶ [Stress](#)

Suggested Readings

- Blieszner R, Bedford VH (1995) *Handbook of aging and the family*. Greenwood Press, Westport, CT
- Burton LM, Dilworth-Anderson P (1991) The role of extended family in minority families. *Marriage Fam Rev* 3:1–3
- Surdarkasa N (2001) Conception of motherhood in nuclear and extended families, with special reference to comparative studies involving African societies. *J Culture Afr Wom Stud* 5:3
- Woehrer C (1982) The influence of ethnic families and intergenerational relations. *ANNALS, APPSS* 464:76–77

Eye Care

Monique A. Anawis

With age, routine eye examinations are necessary. Selecting the appropriately trained professional is critical to obtaining proper eye care. The ophthalmologist is a medical doctor trained to recognize eye diseases and the complications of medical conditions such as diabetes and high blood pressure. With this expertise, the ophthalmologist may be the first physician to diagnose diabetes because of typical findings that he or she may observe in the retina. The ophthalmologist also monitors complications or side effects of medications affecting the eye. Ophthalmologists treat ocular conditions, perform surgical and laser operations, prescribe medications and eyeglasses, and fit contact lenses. The ophthalmologist must be licensed to practice medicine in the state in which he or she practices. The internist or primary care physician works closely with the ophthalmologist and other specialists to provide comprehensive care and prevent illness.

Optometrists and opticians provide a different type and level of services compared to ophthalmologists. Optometrists are concerned with defects in the eyes' ability to see that are due to refractive problems including near-sightedness, far-sightedness, and astigmatism. Eyeglasses, contact lenses, and other vision aids are prescribed by optometrists, as well as by ophthalmologists. Some states allow optometrists to prescribe a limited number of medications. Optometrists are not trained or allowed to perform surgical, laser, or other interventional procedures. A few states in controversial decisions are considering allowing optometrists to perform procedures, a policy that has met with obvious criticism and concern. Optometrists must be licensed by the state in which they practice. Opticians make, fit, and sell optical devices, particularly eyeglasses that have been prescribed by ophthalmologists or optometrists.

An annual ophthalmologic examination is recommended after age 50. Many conditions affecting the entire body may cause complications evident in the eyes and need monitoring at a younger age. Diabetes mellitus requires, at minimum, an annual ophthalmologic examination including a detailed evaluation of the retina following instillation of dilating eye drops. Patients with diabetes are at increased risk of developing

cataracts, glaucoma, and typical changes in the retina. The longer a patient has had diabetes mellitus, the more likely it is that eye complications will occur. High blood pressure, particularly when poorly controlled, may cause changes in the body's blood vessels including those of the eye. Ocular complications in high blood pressure and diabetes often have no symptoms, and therefore require routine ophthalmologic examinations.

Medications necessary to treat medical conditions may have side effects and cause complications in the eye. Periodic ophthalmologic examinations looking for anatomic changes in the eye and noting patient symptoms may result in lowering the dose or recommending that the prescribing doctors discontinue the use of certain medications. Although side effects accompany many medications, the more frequent types of medications causing complications are those used for arthritic joint complaints and breathing problems including asthma and emphysema. Medications should never be discontinued without first checking with the prescribing physician.

In addition to monitoring diseases of the entire body and complications of medications, ophthalmologic examinations evaluate diseases specific to the eye. With age, the incidence of glaucoma, cataracts, and macular degeneration increases. Certain eye conditions that may run in families, including glaucoma and macular degeneration, should be monitored at a much younger age. Knowing as much as possible about ocular and medical conditions of blood relatives of the patient helps the physician determine the likelihood of familial diseases and the approximate age at which they may occur.

Glaucoma is a group of eye diseases in which the eye pressure is high. Many types of glaucoma have no symptoms; therefore, annual examinations are important.

Cataracts are the result of aging of the eye's natural lens. Once the lens has enlarged and changed so that it becomes clouded, it is called a cataract. Clouding of different parts of the lens gives rise to different types of cataracts. Smoking, sun exposure, and diabetes are associated with cataract formation.

Age-related macular degeneration (ARMD) is a disease of the center of the retina called the macula. ARMD is the most common cause of irreversible blindness in Western populations in patients above 50. Risk factors for developing ARMD include advanced age, family history, and race (Caucasian).

Smoking and heavy alcohol consumption, particularly of beer, is associated with an increased risk of having advanced ARMD.

Potentially modifiable risk factors have become increasingly important in treating ARMD. High blood pressure, smoking, and increased body mass are all known risks of ARMD which can be modified. The Age-Related Eye Disease study (AREDS) and other ongoing research programs have provided valuable additions to laser, intravenous light-activated medications, and surgical treatments. Antioxidants (vitamins C and E and beta-carotene) and zinc delay the progression from intermediate to advanced ARMD but do not prevent development of ARMD. Although several supplements purporting to be of benefit to the eyes are on the market, only supplements using the dosage and combination of supplements used in the AREDS should be used. AREDS supplements should only be started when recommended by the ophthalmologist and not while concurrently smoking. The primary care physician should be notified when AREDS supplements and any other vitamins or herbal medications are used. Patients should also be careful in combining AREDS supplements with multivitamins to avoid toxicity. Physicians should be consulted regarding doses of vitamins and herbal medications because these can potentially interact with prescription and over-the-counter medications to cause complications.

Lifestyle and preventive care have an increasingly important role in ocular health. Sun exposure is correlated to skin cancer, cataracts, and pterygia. Pterygia are scars that form in the white of the eye and extend to the cornea and represent a sun-related tissue damage seen in people who work extensively outdoors. Use of proper sunglasses, a wide-brimmed hat, and sunscreen have been of benefit in preventing these conditions. While standards vary for sunglasses, general guidelines recommend using large-size sunglasses with side protection, less than 1% transmittance of both UVA and UVB rays, and gray or near neutral color lenses of good optical quality. Store-purchased sunglasses may not

provide written quality guarantees or specificity of sun protection. Opticians, therefore, may provide greater guidance in selective sunglasses of high quality, adequate sun protection, and comfort for sports and leisure.

Significant ocular side effects have been documented in the literature and the National Registry of Drug-Induced Side Effects for canthaxanthine, *Echinacea purpurea*, *Ginkgo biloba*, *Datura*, licorice, niacin, and vitamin A. Future research may support the use of other supplements or herbal medications. Until that time, supplements, herbs, and alternative medications and treatments should be used with the knowledge, and under the guidance, of a physician.

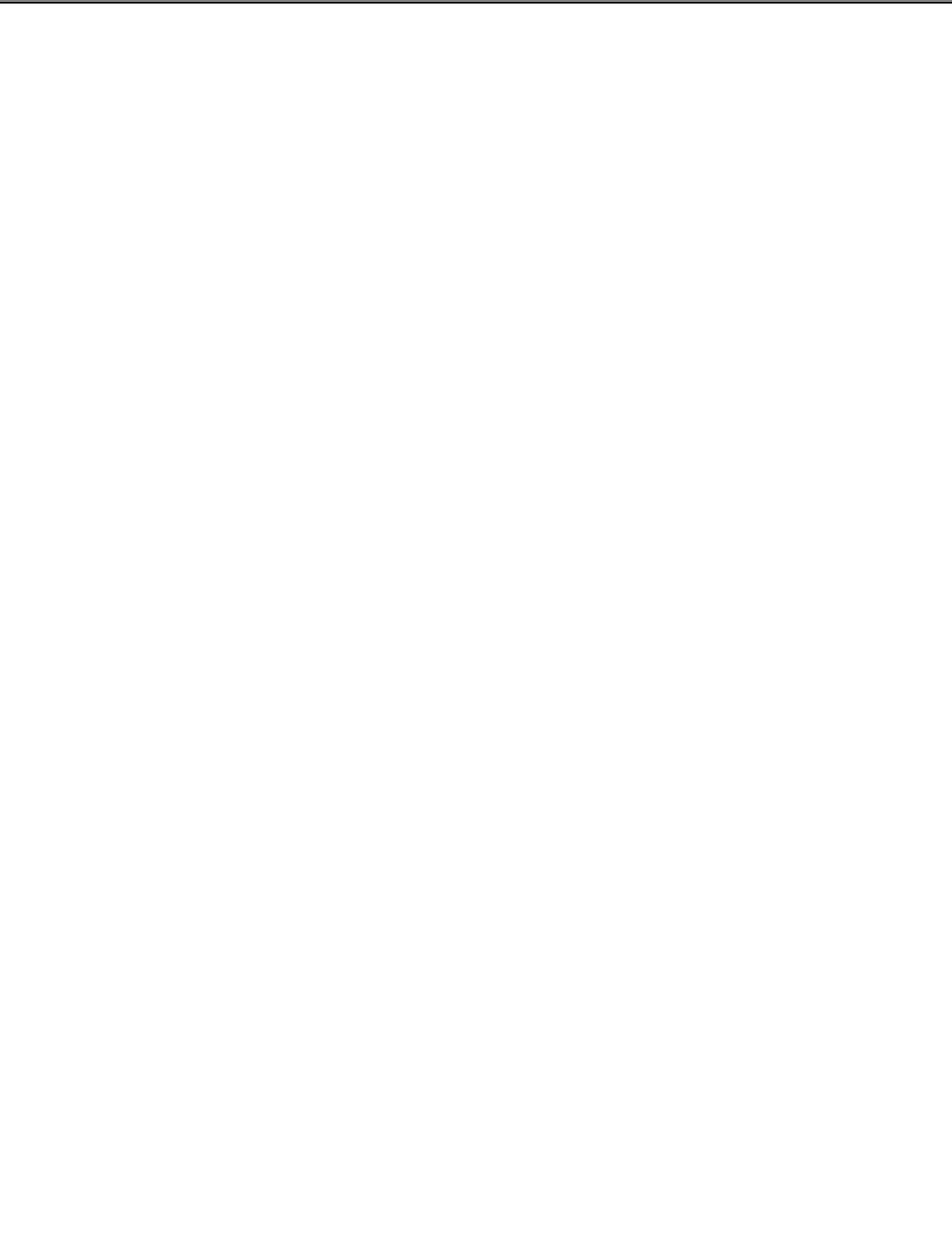
Eye health begins by obtaining routine eye examinations to screen for glaucoma and complications of systemic diseases including diabetes. Eye health continues throughout life by eating a balanced diet, maintaining appropriate weight for one's height, age, and gender, exercising regularly with the approval of a physician, controlling diabetes and high blood pressure, and using supplements as needed. Sun protection, smoking cessation, and limiting alcohol intake are also keys to having healthy eyes and a healthy body.

Related Topics

- ▶ Blindness, ▶ Cataract, ▶ Diabetes, ▶ Diet,
- ▶ Glaucoma, ▶ Smoking, ▶ Vision

Suggested Resources

- American Academy of Ophthalmology. www.aaopt.org
Association for Macular Diseases, 201 E. 64th St., New York 10021,
(212) 605-3719
National Diabetes Education Program. www.ndep.nih.gov
National Eye Institute and National Eye Health Education Program.
www.nei.nih.gov



Failure to Thrive

Kathleen Franco · John Franco

Failure to thrive (FTT) is often thought of as an unplanned or unexpected weight loss. There are many reasons why FTT can occur as one ages. The burden of chronic disease toward the end of life or an acute physical or mental illness can set off the syndrome. It is easier to diagnose in children who do not achieve significant developmental milestones or who “fall off” the weight/height chart in the pediatrician’s office. In an adult it can be much more difficult to discern.

Initially a little weight loss can even be welcomed, but once the body seems to melt away, it can be harder to reverse. It is important to determine as early as possible what triggers FTT. There may or may not be an obvious acute response or adaptation. For example, if pneumonia is treated effectively or a fracture heals quickly with physical therapy, the individual will continue on a recovery trajectory. A delay in treatment or inadequate physical response can lead to a downward pathway and death in a worst case scenario. Often one trigger can set off a domino effect with multiple sequelae each taking its toll. For example, anemia, a low red blood cell count, can follow an infection or chronic illness of almost any type. Anemia allows less oxygen to be carried to all the vital organs reducing their ability to support bodily needs. After a heart attack (myocardial infarction), insufficient pumping of blood can cause kidney failure or infarctions of the brain. After chronic or acute illness, a blood test will indicate lower protein and albumin indicative of poor nutrition. Sometimes lowered appetite, as we see with depression, is the precipitant. Malignancy can present as depression with weight loss. In particular, the first symptoms of pancreatic cancer and small cell lung cancer can be depression with appetite loss.

Multiple other psychiatric conditions can induce FTT besides clinical depression. Bereavement or grief, dementia, extreme anxiety, and psychosis are all capable of initiating FTT. In addition, any functional impairment like immobility from any cause, reduced perception from hearing, or vision loss can make it difficult to obtain and prepare food. Taste is also normally reduced over time making food less pleasurable. Once a certain level of weakness occurs, even feeding oneself can be overwhelming. Patients with strokes, Parkinson’s disease, and blindness can slowly starve

without appropriate help. Unfortunately there are still cases of abuse and neglect, particularly in older patients with dementia, who may not be given food.

It has been reported that about 13% of the males above 65, living in the community, lost over 4% of their body in 1 year. Whether or not that weight loss was intentional and adjusting for age, health status and tobacco had a twofold to threefold higher rate of mortality. Increased skin folds and loss of body fat can give a clue to health-care providers indicating the problem even if laboratory values such as protein and albumin are normal.

Human beings generally socialize while eating. When the elderly live alone, they may find less pleasure in eating, apart from the increased difficulty to obtain and prepare food. In nursing homes, individuals who are unable to join others in the dining room may also lose interest in eating or they may not like the style of food preparation. Even when they can go to the dining room, if some individuals with dementia have lost their judgment and fallen into repulsive eating habits, the others may lose their appetite. In some facilities there may be inadequate staffing and supervision. Louder, more aggressive individuals will demand attention while the quiet, poor eaters may be left on their own.

Individuals with dementia may forget to eat and do not recognize its importance. As they deteriorate further they may forget to swallow and repeatedly chew or hold food in their mouth. It becomes extremely important to have a caretaker who has patience and can take the extra time needed to feed them whether they are at home or in a facility.

Depression in an older individual often does not present with complaints of sad or blue mood, but more often with memory loss, poor self-care, or vague physical complaints of stomach, bowel, head, joints, or extremities. Fatigue is quite common in addition to the loss of appetite. Depressed individuals lose interest in many pleasures including food. Abnormal sleep patterns are common and some elderly complain of constipation. Obtaining a physician’s help to reverse the depression and comorbid symptoms is urgent.

Grief when a loved one dies may not reach the criteria for a major depression, but poor self-care and lower desire to eat occurs frequently. With the elderly, especially males, there is great benefit from family, friends, and neighbors who bring them food or take them out for a meal. All too often they can be forgotten and begin the downward spiral.

Alcoholism is another cause of FTT. It may occur late in life particularly after a loss. Poor self-care, weight loss, and further withdrawal often ensue.

There are physical illnesses which increase the rate of metabolism and cause FTT because the individual can no longer keep up with the intake needed, despite trying and still having an appetite. When the thyroid gland becomes overly active this can occur and must be reversed to stop further detrimental effects.

Cancers, particularly those producing hormones, have multiple effects that lead to weight loss. They can provide interleukin, an inflammatory agent, and tumor necrosis that take away the appetite. Malignancies can also tell the brain that the body is already full or reduce the taste from food. Besides canned supplements, there are agents physicians can prescribe, to stimulate appetite like psychostimulants cyprohepatidine and others.

Neurological disorders such as strokes, amyotrophic lateral sclerosis (ALS, Lou-Gehrig's disease) and Parkinson's disease frequently cause involuntary weight loss. One-third of patients after a stroke can initially have a hard time swallowing. Fortunately for many this will return over time. If the stroke is on the right or for most individuals the nondominant side of the brain, they may not see food on the left side of the plate and omit eating it. Increased metabolism can occur with fine tremors from Parkinson's disease or strokes.

Chronic obstructive pulmonary disease (COPD) causes more rapid metabolism of food and great difficulty in breathing. For some individuals it takes all of their effort to breathe and the respiratory rate may be so rapid that it is hard to coordinate eating and breathing simultaneously. Severe cardiac disease also causes dramatic weight loss and lower levels of protein.

Besides stroke, there are a variety of disorders that inhibit swallowing. Confused patients and those with severe medical illness should be brought up to a 30° angle in bed. Before feeding it is necessary to be certain that they can swallow adequately, to avoid aspiration. Patients with a fungal infection such as candidiasis may have extreme pain in their throat and will try to avoid swallowing. Nutritional loss accompanies pressure ulcers or bedsores in those patients who are in bed for long periods, are not turned, or are confused.

There are other causes of FTT that can result from drugs that reduce appetite or increase satiety. Sometimes patients will choose to take drugs to lose weight and may lose control over the weight loss similar to a

younger person with an eating disorder. Some individuals have read that being slim may give them a longer life, but restrictive dieting may actually have just the opposite effect when more than 4% of body weight annually is lost in later years.

In summary, besides the normal losses secondary to aging, there are multiple etiologies of FTT. A thorough history, physical examination, and laboratory studies is necessary for the doctor to begin untangling the single or multiple reasons that could be causing weight loss. The physician may need to order imagery or other testing to round out the work-up and avoid missing important causes since there often can be more than one concern particularly if there is already considerable weight loss. Treating reversible physical and psychosocial causes altering diet, reevaluating medications and education of the patient and family can be critical in reversing the symptoms of the FTT syndrome before it is too late. Hospitalization may be necessary at the start to identify causes and provide intravenous or parenteral feedings. Thoughtful planning of post-hospital care can allow the individual to maintain gains and coordinate planning with the family.

Related Topics

[Alcohol use](#), [Bereavement](#), [Cancer](#), [Dementia](#), [Depression](#), [Diet](#), [Elder abuse and neglect](#), [Grief and grieving](#), [Institutionalization](#), [Loneliness](#), [Nursing home](#), [Nutrition](#), [Stress](#), [Weight Control maintenance](#)

Suggested Readings

- Morley J (1990) Anorexia in older patients: its meaning and management. *Geriatrics* 45(12):59-66
- Olin J, Masand P (1996) Psychostimulants for depression in hospitalized cancer patients. *Psychosomatics* 37:57-62
- Palmer R (1990) Failure to thrive in the elderly: diagnosis and management. *Geriatrics* 45:47-55
- Schillerstrom J, Seaman J (2002) Modafinil augmentation of Mirtazepine in a failure to thrive geriatric patient. *Int J Psychiatry in Med* 32(4):405-410
- Sullivan D (1995) The role of nutrition in increased morbidity and mortality. *Clin Geriatr Med* 11(4):661-673
- Wallace J, Schwartz R, LaCroix A, Uhlmann R, Pearlman R (1995) Involuntary weight loss in older outpatients: incidence and clinical significance. *J Am Geriatr Soc* 43:329-337
- Verdery R (1995) Failure to thrive in the elderly. *Clin Geriatr Med* 11(4):653-659

Falling

Dahlia Fuentes

Falls are common and occur more often with advancing age. Falls are a major public health problem among older adults causing medical complications, reduced functioning, loss of independence, hospitalizations, premature nursing home admission, and considerable mortality. According to the Centers for Disease Control and Prevention (2005), more than one third of adults aged 65 and older fall each year. In 2003, more than 1.8 million older adults were treated in emergency departments for fall-related injuries, and more than 421,000 were hospitalized. In older adults, falls cause the majority of fractures, and the most common are fractures of the hip, vertebrae, forearm, leg, ankle, pelvis, upper arm, and hand. Hip fractures continue to be the most serious, leading to the greatest number of fall-related health problems and deaths. Although women sustain the majority of all hip fractures, men have the highest fall-related death rates. In 2002, nearly 13,000 people aged 65 and older died from fall-related injuries; more than 60% of fall-related mortalities were of persons aged 75 and older.

Falls have serious implications for health-care resources. The cost of fall-related injuries is often expressed in terms of direct costs, which usually includes out-of-pocket expenses and charges paid by insurance companies for treatment of fall-related injuries. In 2003, acute care costs of falls among 460,558 hospitalized older adults exceeded \$8 billion. These figures do not account for the long-term consequences of these injuries, such as disability, decreased productivity, or reduced quality of life.

Falls are a complex phenomenon, with interactive risk factors, both personal and environmental. A fall may be an indicator of an acute problem (infection, cardiac arrhythmia, dehydration), may signal the progression of a chronic disease (dementia, arthritis, diabetic neuropathy), or may be a sign of the onset of “normal” age-related changes in vision, gait, balance, and strength. While some risk factors are directly involved in causing falls (e.g., balance impairment, weakness), other risk factors are markers of other underlying causes (e.g., prior falls, use of an assistive device, or aged 80 and over). Fear of falling has become an emerging public health concern, as it often results in reduced physical and social activity, which in turn

leads to physical deconditioning that increases the risk of falling. Environmental factors, such as unsecured rugs, lack of rails, household clutter, and poor lighting, also contribute to the complex relationship between risk factors, underlying causes, precipitating events, and falls.

A great proportion of falls and fall-related injuries in older adults are thought to be preventable with careful medical and environmental evaluation and intervention. Inquiry about recent falls and regular screening for fall risk factors is vitally important among older adults and forms the basis for effective fall prevention. Effective intervention strategies in reducing fall incidence rates and fall-related injuries among the older adult population include targeted and nontargeted exercise-based interventions, environmental modifications, injury minimalization aids (such as hip protectors and assistive devices), cognitive and behavioral interventions (to reduce fear of falling), health promotion and education, medication withdrawal or adjustment, nutritional and vitamin supplementation, or hormonal and other pharmacological therapies. Multifactorial intervention strategies designed to first identify and then minimize the intrinsic and/or extrinsic risk factors are likely to produce the most successful outcomes.

Related Topics

- ▶ Accidents, ▶ Dementia, ▶ Diabetes, ▶ Disability,
- ▶ Exercise, ▶ Falls prevention, ▶ Hip fracture,
- ▶ Home modification

Suggested Readings

- Centers for Disease Control and Prevention. National Center for Injury Prevention and Control. <http://www.cdc.gov/ncipc/>
- Gillespie L (2004) Preventing falls in elderly people. *BMJ* 328:653–654
- Lach HW (2005) Incidence and risk factors for developing fear of falling in older adults. *Public Health Nurs* 22:45–52
- Roudsari B, Ebel B, Corso P, Molinari N, Koepsell T (2005) The acute medical care costs of fall-related injuries among the US older adults. *Injury* 11:1316–1322
- Rubenstein LZ, Josephson KR (2002) The epidemiology of falls and syncope. *Clin Geriatr Med* 18:141–158
- Stevens JA, Olson S (2000) Reducing falls and resulting hip fractures among older women. CDC recommendations regarding selected conditions affecting women's health. *Morbidity and Mortality Weekly Report* 49(RR-2):3–12

Falls Prevention

Mary Jane Nottoli

Accidents are the fifth leading cause of morbidity and mortality in the population above 65 years, and falls account for 66% of those accidents. Individuals aged 70 account for 25% of falls while the percentage increases to 35 in those aged 75. Most falls occur at home and are associated with toileting and getting in and out of bed or a chair. These account for one-fifth of the hospital admissions in the older population and result in nursing home placement 40% of the time, particularly for clients with a history of falls. Hip fractures are the usual admitting diagnosis and frequently result in functional losses and increased dependence, but other injuries resulting from falls are bruises, lacerations, and subdural hematomas. Psychologically falls often cause the individual to experience increased fear with resultant decreased activity, diminished functionality, and increased social isolation.

In addition to the physical and psychological impacts, there are personal, societal, and economic impacts resulting from the increased use of medical services such as emergency departments, hospitals, rehabilitative therapy services, home care, and long-term nursing home care.

As with many other types of accidents, falls are often preventable. Identification and management of risk factors is key to reducing the incidence of falls and fall-related injuries. There are two types of risk factors:

1. Intrinsic risk factors include age (incidence increases markedly after 75 years), gender (women are at higher risk than men), sensory deficits (particularly visual and auditory), medical conditions (particularly neurological, cerebral, or cardiovascular), and musculoskeletal, cognitive, or debilitating chronic diseases. Gait abnormalities, balance difficulties, and a history of previous falls are also intrinsic risk factors.
2. Extrinsic risk factors are environmental (e.g., poor lighting, slippery or uneven surfaces, clutter or other physical barriers). Inappropriate footwear, improper or improperly used assistive devices such as canes or walkers and the excessive use of alcoholic beverages are also considered extrinsic risk factors. Prescribed medications, medical treatments, or devices such as intravenous poles and

tubing that increase the risk of falls are considered iatrogenic factors.

Generally there are combinations of factors involved in falls, some of which can be eliminated while others are only manageable. Careful systematic assessment using one or a combination of tools helps identify and differentiate risk factors. A simple method for initial screening, useful in a variety of settings, involves observing a client stand, from a sitting position, without using his or her arms, walk several paces, return and resume their seat. Difficulty with any aspect of this warrants further assessment. While this initial assessment can be carried out by a paraprofessional with some training, follow-up assessments should be done by a qualified health-care practitioner.

Management of extrinsic risk factors may be as simple as eliminating obstacles from the environment. For example, scatter rugs or throw rugs increase the risk of tripping or slipping resulting in falls. Therefore, the simple removal of throw rugs or scatter rugs will reduce the risk. The arrangement of furniture to provide a straight path from one area to another, particularly from bedroom to bathroom, reduces risks significantly since the majority of falls at home are associated with going to or coming from the bathroom. Other beneficial environmental changes include raised toilet seats, grab bars for toilet and shower, shower chairs, chair level faucets, sharply contrasting floor colors when and where a level change exists, adequate lighting, and seating surfaces that are firm and maintain the hips and knees at a 90° angle. Information about community-based programs that address some intrinsic factors such as muscle strength, flexibility, and balance should be shared and clients encouraged to attend. By pointing out that such programs often help maintain function and independence, participation is frequently increased. The local Area Agency on Aging in each region is a good source for information regarding these health maintenance programs.

When multiple factors contribute to the increased risk for falls, a health practitioner specializing in gerontology can best assess the individual and manage them. For example, medication adjustments, diagnosis and treatment of new and emerging symptoms, changes in visual acuity, or the need for physical therapy are most appropriately dealt with by a specialist.

Assessing for, eliminating or managing fall risk factors in vulnerable populations is an important step

toward decreasing this largely preventable form of accident. Such measures can increase safety, independence, and quality of life for individuals as they age while decreasing fall-related injuries and subsequent burdens, both individual and societal.

Related Topics

[▶ Accidents](#), [▶ Area Agency on Aging](#), [▶ Bone strength](#), [▶ Falling](#), [▶ Home modification](#), [▶ Substance use](#)

Suggested Readings

Miller CA (2002) The connection between drugs and falls in elders. *Geriatr Nurs* 23:109–111

Suggested Resources

National Association of Area Agencies on Aging, Area agencies on aging: a link to services for older adults and their caregivers, Washington, DC. <http://www.n4a.org/aboutaaas.cfm>

National Center for Injury Prevention and Control September 9, 2005. A toolkit to prevent senior falls. Centers for Disease Control and Prevention, Atlanta, GA, December 2005. <http://www.cdc.gov/ncipc/pub-res/toolkit/toolkit.htm>

National Guideline Clearinghouse, Guideline for the prevention of falls in older persons. Agency for Healthcare Research and Quality (AHRQ), US Department of Health and Human Services (1998–2006). http://www.guideline.gov/summary/summary.aspx?doc_id=2973&nbr=002199&string=Guidelines±AND±prevention±AND±falls

Family and Medical Leave Act

Nathan J. Bailey

In 1993, the Congress enacted the Family Medical Leave Act (FMLA) in order to grant family leave and temporary medical leave under certain circumstances. The FMLA was one of the first major bills signed by President Bill Clinton, providing millions with enhanced job security and a greater ability to care for

themselves and their family. Before the enactment of FMLA, many American employees were subject to losing their jobs if they chose to take leave in family emergency situations. The Congress found that an increasing number of working families faced a choice between job security and parenting, while individuals faced this same choice when confronted with a serious health condition. The Act's purposes revolve around protecting relationships existing within the family unit and an individual's right to take reasonable medical leave without sacrificing employment. The Act also promotes equal employment in the workplace and helps to prevent employment discrimination on the basis of sex, recognizing that family caretaking often falls on women because of the traditional gender roles in the American society.

Under the Act, covered employees can take up to 12 weeks of unpaid, job protected leave per year, to care for a new child, seriously ill family members, or their own well-being. The Act defines family members as the employee's parents, children, or spouse. The Act also allows both husband and wife to take leave because of a child's birth or the adoption of a newborn child. If practicable, an employer may require 30 days notice of family and medical leave, and may require certification from a health care provider to confirm that the requested leave is due to a serious health condition of the employee or his or her immediate family member. Upon return from family or medical leave, an employer is required to place the employee in either the same job position or a similar position. Covered employees include those who work for an employer with 50 or more employees working within a 75-mile radius of the employee's worksite for at least 20 weeks during the current or preceding calendar year. In addition, employees who work for public agencies and public or private elementary and secondary schools are covered without regard to the number of employees.

The FMLA does not take away any existing benefits that employers confer upon employees, but it does ensure that the rights created by the Act are conferred upon covered employees. The FMLA does not diminish an employee's right to enforce collective bargaining agreements or employee benefit programs that provide greater family or medical leave rights. Likewise, collective bargaining agreements or employee benefit programs cannot diminish the rights created by the FMLA. As with most acts, regulations necessary to carry out portions of the FMLA can be found in the

US Code of Federal Regulations. These regulations put forth definitions of terms in the Act and provide detailed requirements of employers and employees. The FMLA requires employers to post a notice explaining the Act's provisions and provide complaint procedures under the Act. Further, employers must include information about the FMLA in any employment benefit handbook. Enforcement of the FMLA is the responsibility of the Wage and Hour Division of the US Department of Labor, an agency with offices in most major cities.

The FMLA gave millions of Americans an opportunity to care for themselves and their family without sacrificing job security and continues to protect the American family unit today.

Related Topics

[▶ Access to health care](#), [▶ Caregiver burden](#), [▶ Caregiving and caregiver burden](#), [▶ Employment](#), [▶ End-of-life care](#), [▶ Informal caregiving](#), [▶ Long-term care](#)

Family Relationships

Mitzi Dearborn

Family relationships in later life are complex and often involve several layers of multigenerational interactions. Family relationships are not static, and relationship patterns change over time. As the older population continues to increase in size, roles of elders have expanded and diversified within families, and positive contributions of older adults are being highlighted. Family relationships are shaped by a combination of early life experiences, development over the life span, and historical and social conditions.

Family Units

Only a small percentage of families in the United States have the traditional nuclear family composition. It is common to have various family units, such as single parent families, grandparents parenting children, post-divorce blended families, step families, adult child and

parent coresidence, extended families, adult sibling households, homosexual couples with biological or adopted children, and surrogate kin families. Recent literature about older adults has increased focus on living arrangements and household relationships in the elderly population in both developed Western countries and in the developing world.

Later-life adults in developed Western countries are more likely to live alone. In the United States in 2000, 9.7 million older adults (above 65 years) lived alone, and 75% of them were women. In a large sample of developing countries, older adults frequently lived in large households and were more likely to be living with an adult male child. Regional patterns have shown higher rates of coresidence in Asia. In Africa, there have been higher rates of elderly people living alone, being head of household, and living with adults who are not offspring or spouses. Overall patterns show that family living arrangements become more nuclear as the country's educational level rises.

Married Couple Relationship

Couples in later life have various issues and challenges that are different from younger couples. Older couples often need to adjust to changing roles and health problems, cope with end-of-life stressors, renew romantic partnership, adjust to changing parent-child interactions, and redefine the relationship after one spouse has retired. Husband-wife roles often change in the context of caregiving and illness/disability. With longer life expectancy for women and with husbands often being older, wives are more likely to be caregivers for their husbands. Frequency of widowhood increases with age, and older women are widowed more often than older men. The divorce rate has increased in later life, and the number of couples celebrating their fiftieth wedding anniversary has declined. Later-life divorce has a significant negative effect on economic well-being with sharp declines in income following divorce. Overall later-life couples report less conflict and more positive shared activities as compared to younger or middle-aged couples.

There is little research on later-life remarriages, and most of those studies focus on remarriage after widowhood. Remarriage rates for widowed men are significantly higher than widowed women. Older remarried couples tend to be happier and less likely to divorce as compared to younger remarried couples. Remarriage

can be complicated because couples need to merge social circles, extended families, and previous family histories.

Parent–Child Relationship

Adult children provide a significant amount of informal care for the older adult population. Female children provide more caregiving to parents than male children. Women who marry and have children, later find themselves juggling multiple roles and simultaneously caring for their children and older family members; this is referred to as the “sandwich generation.” The “club sandwich” refers to simultaneous caregiving for an aging parent, minor children, grandparents, and grandchildren. Although women do more of the caregiving in the family, male members are involved in caregiving as well. Caregiving for parents may involve parent–child coresidence. Relationships between adult children and older parents can be quite complex with changed roles that sometimes resemble role reversals. Due to multiple caregiving demands, adult children may experience significant financial, physical and/or emotional strain. With increased strain, respite services can be important in reducing caregiver burnout, maintaining the quality of relationships, and preventing any potential for elder abuse or neglect. Intergenerational respect, communication, and adaptive problem solving are essential in making these adjustments and coordinating these roles.

Parent and adult child coresidence may also occur as a mutually beneficial arrangement, not limited to adult children caregiving for the older adult. With coresidence, older adults may benefit from social, financial, and/or health assistance from adult children, and they in turn benefit from the older parent’s reciprocity in providing caretaking for younger children and/or for the home. A pseudo-coresidence has been utilized to maintain contact and regular interaction, while having independent households that are in the same building, next door, or very nearby.

Grandparent–Grandchild Relationship

The grandparent is often an important figure in a grandchild’s life. The grandparent’s role can be important in various ways: such as emotional support,

socialization, sharing cultural background, listening, supervision, financial support, and surrogate parenting, and providing reassurance in being there. Great-grandparenthood is occurring more frequently. Divorce of adult children can impact grandparents, with weakened grandparent–grandchild relationships on the noncustodial side but strengthened on the custodial side. Following divorce, grandparents may need to struggle with the formal negotiation of grandparent visitation. When adult children remarry, grandparents’ roles can be quite complicated with the addition of stepgrandchildren of various ages. Even though there are stressors associated with grandparenting, the overall positive benefits of being a grandparent appear to be greater than the negatives. Grandparents adjust better to the negative aspects of aging than older adults who are not grandparents. Grandparent–grandchild relationships have been found to remain strong with intergenerational solidarity over the years.

The frequency of “grandparents parenting grandchildren” has increased significantly in the last 35 years. For one third of the 3.9 million US children living with grandparents, neither parent was present in the household; this “skipped generation household” has had the fastest growth in the last 15 years. Grandparents parenting grandchildren occurs most frequently in African American families. Primary factors for the increase of grandparents raising grandchildren are: parental substance abuse, teen pregnancy, AIDS or other illness, divorce, unemployment, incarceration, death, military service, and legal and policy changes favoring kinship placement arrangements for children. There often are economic, physical, and emotional complexities for grandparents who were providing substantial caregiving to grandchildren.

Childless Relationship

The childless elderly population in the United States has grown rapidly in recent years, but studies on this population are limited. Childless couples are expected to be one of the fastest growing segments of the elderly due to delayed marriage, infertility, voluntary childlessness, and higher divorce rates. There have been estimates that one quarter of the elderly population in the 70–85 age group will not have a living spouse, living children, or living stepchildren in year 2030. Although it often is assumed that childless adults have decreased well-being in older ages, most of the findings do not show

significant differences in psychological well-being between older adults who are parents and childless older adults. Childlessness appears to have little impact for older married couples as long as both spouses are alive and together. Negative effects of childlessness are more common in unmarried men than unmarried women. Childless men who were divorced or widowed had the greatest likelihood of loneliness and depression. Childless older adults tend to rely more on siblings, nieces, and nephews than older adults who have children.

Sibling Relationship

There have been increases in the variety of later-life relationships between siblings. It is estimated that more than three fourths of older adults have living siblings. Most remain in some contact with siblings throughout the life span. The sibling relationship typically is the longest one that an older adult will experience throughout the lifetime. In the last 20 years, sibling relationships are receiving greater focus in the literature; findings indicate that older adult relationships with siblings are especially important to adults who are 80 years and older. Findings also suggest that the sibling relationship becomes especially important in later years for women who are widowed or unmarried. Often sibling relationships are renewed in later years of life.

Summary and Future Directions

Family relationships evolve across time with changes and adjustments as individual members develop and as societal, cultural, and environmental factors change. Many family studies have focused mostly on older adults in a limited number of traditional roles at a discrete time point. Recent research is beginning to identify components of changing intergenerational relationships across time within complex and nontraditional families, such as homosexual couples, blended families, stepfamilies, and surrogate families. With evidence of increased diversity in the later-life population, effects within ethnic and racial groups are being considered. It will be important that future studies further address intergenerational family relationships across the life span, with increased emphasis on nontraditional family structures, longitudinal assessment of family relationships, ethnicity and race, gender effects, global studies, and multicultural components.

Related Topics

➤ [Caregiving and caregiver burden](#), ➤ [Coresidence](#), ➤ [Extended family](#), ➤ [Grandchildren](#), ➤ [Grandparents as parents](#), ➤ [Marriage](#), ➤ [Siblings](#)

Suggested Readings

- Bonngaarts J, Zimmer Z (2002) Living arrangements of older adults in the developing world: an analysis of demographic and health survey household surveys. *J Gerontol: Soc Sci* 57B(3):S145–S157
- Dickson F, Christian A, Remmo CJ (2004) An exploration of the marital and family issues of the later-life adult. In: Vangelisti AL (ed) *Handbook of family communication*. Lawrence Erlbaum, Mahwah, NJ, pp 153–174
- Fuller-Thomson E, Minkler M (2001) American grandparents providing extensive child care to their grandchildren: prevalence and profile. *Gerontologist* 41(2):201–209
- Hareven TK (2001) Historical perspective on aging and family relations. In: Binstock RH, George LK (eds), *Handbook of aging and the social sciences*. Academic Press, San Diego, CA, pp 141–159
- King DA, Wynne LC (2004) The emergence of family integrity in later life. *Family Process* 43(1):7–21
- McKay VC, Caverly RS (2004) The nature of family relationships between and within generations: relations between grandparents, grandchildren and siblings in later life. In: *Handbook of communication and aging research*, 2nd ed. Lawrence Erlbaum, Mahwah, NJ, pp 251–271
- Musil CM, Warner CB, Stoller EP, Andersson TE (2005) Women and intergenerational caregiving in families: structure, ethnicity, and building family ties. In: *Successful aging through the life span: intergenerational issues in health*. Spring Publishing, New York, pp 143–158
- Zhang Z, Hayward MD (2001) Childlessness and the psychological well-being of older persons. *J Geront: Soc Sci* 56B(5):S311–S320

Suggested Resources

- AARP Grandparent Information Center. www.aarp.org/families/grandparents
- Administration on Aging Elders and Family. www.aoa.dhhs.gov/eldfam/eldfam.asp
- Children of Aging Parents Organization. www.caps4caregivers.org/links.htm
- Generations United Grandparents as Parents. www.gu.org
- Legacy Project of Intergenerational Relationships. www.legacyproject.org
- National Family Caregivers Association. www.nfcares.org
- United Nations Programme on Aging. www.un.org/esa/socdev/ageing/
- US Bureau of Census, 2000. <http://factfinder.census.gov>

Family Violence

Sally Shepherd

According to a 2003 study cited by the National Center on Elder Abuse, one to two million Americans aged 65 or older have been injured, exploited, or otherwise mistreated by someone caring for them. Most cases of elder abuse take place at home and about 90% of the abusers are family members. Paid caregivers may also be abusers. Abuse may result in obvious injuries, but it may also be very subtle. Substance abuse appears to be a key factor in most cases of elder abuse and neglect. The perpetrator may be an abusive partner whose violence is heightened under the influence of drugs or alcohol. A family caregiver may resort to drugs or alcohol as a misguided coping mechanism. An older adult with a history of alcohol or substance abuse is more likely to have poor relationships with other family members, making them reluctant to assume caregiver responsibilities.

Physical Abuse

Physical abuse can range from slapping or shoving to severe beatings or restraining. Signs of abuse may include: broken bones, sprains or fractures; rope or strap marks on the chest, hands, arms, or legs; bleeding from the mouth, nose, anus, or other body openings; matching bruises on both arms; bruises of different colors; injuries that haven't been treated; and missing hair or teeth accompanied by signs of violence. The older adult is not able to explain how they got hurt, the explanation may not fit, or family members may offer differing explanations.

Sexual Abuse

Sexual abuse may involve rape, molestation, or any sexual contact. Signs may include: pain, irritation, or bleeding from the vaginal or anal areas; bruises on the genitals, inner thighs, or breasts; difficulty walking or sitting; torn, stained, or bloody underclothing.

Domestic Violence and Homicide

Family members commit over 25% of homicides where an older person is killed. Often the incident is related to

the escalation of a family argument. In most cases, the homicide is committed by the older adult's spouse, with husbands more likely to be the perpetrators.

Psychological Abuse

Psychological abuse represents a form of emotional violence directed at the older adult. It can range from degrading name-calling to intimidating or threatening: anything that causes fear, mental anguish and emotional pain, or distress. It can involve isolating the person from family and friends. Victims may show signs of stress in the form of high blood pressure, unexplained weight loss, sleeplessness or nightmares, and depression and confusion. They may cower in the presence of the abuser, or demonstrate emotional upset, agitation, or withdrawal. Regressive behavior such as rocking, sucking, or biting may be attributed to dementia.

Neglect

Neglect is a less obvious form of violence that may be intentional (resentment, anger, meanness, indifference) or unintentional (lacking the financial resources, strength, stability, or skills needed to provide good care). The home may be unclean or unsafe. Physical signs may include lack of personal hygiene, weight loss, decubiti (bedsores) or rashes, dehydration, or untreated medical conditions. Eyeglasses and dentures may be missing. Neglect may result in increasing confusion and physical deterioration. The caregiver may deliberately isolate the older adult in order to conceal the situation.

Caregiver Issues

Issues leading up to such behaviors can be very complex. There may be a history of an angry relationship or marriage. Family violence and abuse are often related to a substance abuse problem affecting the caregiver, particularly in the case of adult children. On the other hand, the caregiver may be experiencing severe stress while caring for their older relative, and develop significant health problems. Stress, burnout, lack of sleep, inadequate exercise, and nutrition may leave them vulnerable to physical and emotional problems. The older adult may be confused, aggressive, or abusive and

very difficult to manage. Caregivers may have been forced into a dependent situation because of their financial situation or job loss related to their responsibilities. They are frequently forced to neglect their own families in order to care for an older family member. They may feel obligated to remain in the role of caregiver even though they lack the resources to do so. They may lack the skills or physical capacity to provide appropriate care, and may be unaware of education, support, and respite services available in the community.

Reporting incidences of abuse is mandatory for staff in most agencies. Individuals may also report suspected abuse. The National Center on Elder Abuse maintains listings for states' toll-free elder abuse reporting numbers. It is important to understand, however, that even though protective service agencies may be alerted to the situation, they may be powerless to intervene without the consent of the client (victims). Agencies must act within the limits of the laws regarding self-determination when dealing with suspected cases of family violence (victims may refuse to accept help to press charges against the perpetrator). The level of competence of an abused older adult may need to be determined. Law enforcement agencies may not become involved unless there is evidence of criminal activity.

Prevention of elder abuse ultimately requires targeted educational programs for seniors, caregivers, social services agencies, legal entities, law enforcement, and the community at large. It is essential to understand the normal process of aging in order to spot potential signs of abuse. Employees must be aware of and comply with mandatory reporting rules. Community members should know where to report suspected cases. It is no less important for caregivers to learn to identify triggers that cause stress or anxiety. They must learn to cope with stress, anger, guilt, or resentment. They must develop healthy self-care habits and avail themselves of respite and support services in the community. Counseling related to alcohol and substance abuse should be provided. In the final instance, it may be preferable to move the older adult to a different, safer setting even though this may entail placing the individual in a nursing home.

Related Topics

➤ [Elder abuse and neglect](#), ➤ [Intimate partner violence](#), ➤ [Posttraumatic stress disorder](#), ➤ [Sexual abuse](#)

Suggested Readings

Sandell S and Hudson L (2000) *Ending elder abuse: a family guide*. QED Press, Fort Bragg, CA

Suggested Resources

National Committee for the Prevention of Elder Abuse: <http://www.preventelderabuse.org>

American Psychological Association online: <http://www.apa.org/pi/aging/homepage.html>

Federal Poverty Level

Christopher J. Levy

Also known by the term “the poverty guidelines,” the federal poverty level (FPL), is the minimum annual income an individual or family needs for food, clothing, shelter, transportation, and other necessities. The US Department of Health and Human Services annually adjusts the FPL according to inflation. The FPL is issued in February of the year to which it applies and is designated by the year in which it is issued. The US Department of Health and Human Services prefers the term “the poverty guidelines” to “federal poverty level” as it considers the latter ambiguous, especially where precision is required in administrative and legislative settings.

Persons or families with annual income below the FPL are officially considered to lack adequate subsistence and to be living in poverty. Conversely, individuals or families with income above the FPL are not considered to be in poverty. Income considered in determining poverty status includes earnings, unemployment compensation, workers' compensation, social security, supplemental security income, public assistance, veterans' payments, survivor benefits, pension or retirement income, interest, dividends, rents, royalties, income from estates, trusts, educational assistance, alimony, child support, assistance from outside the household, and other miscellaneous sources. Noncash benefits, such as food stamps and housing subsidies, are not considered, and the calculation considers income before taxes, excluding capital gains or losses.

For purposes of determining a family's poverty status, the income of all family members living within a household is added. This excludes the income of nonrelatives living within the household. The sum total of all family members' income determines whether or not the family is living in poverty. Each family member has the same poverty status.

The FPL should be differentiated from "the poverty thresholds" which are used mainly for statistical purposes. While both the FPL and the poverty thresholds are two different versions of the broader term "federal poverty measure," the latter is used, for example, in preparing estimates of the number of Americans in poverty each year. The FPL is a simplified version of the poverty thresholds used for administrative purposes. There are 48 thresholds, and the FPL is a one-figure simplification of those thresholds. Furthermore, the poverty thresholds are issued annually by the Census Bureau according to the family size, number of children, and, for single and two-person units, whether or not the members of the family are elderly. The poverty thresholds apply to all 50 states and the District of Columbia. The FPL, on the other hand, varies only by size of family, and levels are issued for the contiguous 48 states and the District of Columbia, with separate levels for Alaska and Hawaii.

The FPL is mostly used to determine financial eligibility for federal assistance programs, such as Head Start, the Food Stamp Program, Medicare, parts of Medicaid (28% of Medicaid recipients in 2003 used the FPL as a criterion), State Children's Health Insurance Programs, Community Health Centers, Family Planning Services, National School Lunch Program, Legal Services for the Poor, and the Senior Community Service Employment Program. Such programs use the FPL, or a percentage multiple of the FPL (such as 125%, 150%, or 185%) as one criterion for eligibility. Federal programs which do not use the FPL to determine eligibility include the Supplemental Security Income Program, Section 8 Low-Income Housing Assistance, the majority of Medicaid (72% of Medicaid recipients in 2003 did not use the FPL as a criterion), Earned Income Tax Credit, and Temporary Assistance for Needy Families (TANF). TANF, more commonly known as welfare, is a monthly cash assistance program, and a recipient's eligibility is based on the monthly income. Again, the FPL is an annual measure of income. A complete list of federal programs that do or do not consider the FPL as an eligibility criterion may be found at the US Department of

Health and Human Services website. The 2005 FPL, according to the Federal Register, is \$9,570 for an individual, adding \$3,260 for each additional family member. For Alaska, the FPL is \$11,950 for an individual, adding \$4,080 for each additional family member, and for Hawaii, the FPL is \$11,010 for an individual, adding \$3,750 for each additional family member.

Nationwide poverty statistics have been available since 1959. Since then, the number of Americans in poverty has decreased from 40 million to 37 million in 2004. The percentage of those aged 65 and older in poverty has decreased from approximately 29% in 1965 to 9.8% in 2004. Those aged 18–64 with incomes less than the FPL increased from approximately 10% in 1965 to 11.3% in 2004, and those younger than 18 years decreased from approximately 27% in 1959 to 17.8% in 2004.

In recent years, the "living wage" movement has developed in efforts to reduce the percentage of Americans living in or marginally above poverty. Local living wage ordinances establish a wage floor above federal or state minimum wage, and such ordinances provide higher wages for laborers of specified classes and jobs for the unemployed. However, establishing a nationwide living wage is difficult because of two primary obstacles: (1) variation in cost of living expenses between cities in the United States and (2) lack of consensus involved in defining reasonable comfort. As suggested by Shaw, "[o]ne person's 'reasonable comfort' might be the next person's 'outrageous fortune.'"

Related Topics

- [▶ Access to health care](#), [▶ Health insurance](#), [▶ Individual retirement account](#), [▶ Long-term care insurance](#), [▶ Medicaid](#), [▶ Medicare](#)

Suggested Readings

- Abarbanel E (2005) A practical guide to Medicaid and Medicare, DuPage County Bar Association. Brief 17, June, pp 8–14
- Lipp MB (2002) Legislators' obligation to support a living wage: a comparative vision of justice, *So Cal L Rev* 75:475–528
- Perkins J (2002) Medicaid: past successes and future challenges. *Health Matrix: J L-Med* 12:7–38
- Quigley W (2001) Full-time workers should not be poor: the living wage movement. *Miss L J* 70:889–944

Shaw JD (2001) What's in a wage? The living wage movement and the effect of a living wage on a minimum wage family. *Miss L J* 70:1037–1045

Suggested Resources

Federal Register, vol 70, No 33, Feb 18, 2005, pp 8373–75

United States Census Bureau, Housing and Household Economics.

Statistics Div, Poverty, 2005, Washington, DC (Aug 30, 2005). <http://www.census.gov/hhes/www/poverty/poverty.html>

United States Department of Health & Human Services. Frequently asked questions related to the poverty guidelines and poverty, 2005, Washington, DC (Oct 18, 2005). <http://aspe.hhs.gov/poverty/faq.shtml>

United States Department of Health & Human Services. The 2005 HHS poverty guidelines, 2005, Washington, DC (Oct 18, 2005). <http://aspe.hhs.gov/poverty/05poverty.shtml>

United States Department of Health & Human Services. Office of Family Assistance, 2005, Washington, DC (Nov 10, 2005). <http://www.acf.dhhs.gov/programs/ofa/>

Feeding Behavior

Rajkumari Richmonds

Food is an essential component in quality of life. Meals may add a sense of security, independence, and control. Eating patterns of the elderly are influenced by factors such as physiological changes of aging, culture, lifetime preferences, living arrangements, finances, transportation, and disability.

The physiological changes of aging affect the overall nutritional status of elderly people. These changes are: decrease in basal metabolic rate (BMR), decreased secretion of saliva, altered thirst, dentition, sensory loss, loss of appetite, anorexia, and swallowing.

The energy expenditure at complete rest (BMR) decreases by 20% between 20 and 90 years. This is possibly due to a decrease in muscle mass (sarcopenia). If elderly people continue to consume the same amount of calories as they did when they were young, they may gain weight. In the elderly, weight gain is mostly in the abdominal region (central obesity). Inactive lifestyle results in further weight gain. Central obesity predisposes to insulin resistance and type II diabetes.

Dietary habits may be influenced by poor oral health. Individuals with difficulty in chewing due to

loose teeth, poorly fitting dentures, or oral lesions may have a tendency to eat soft foods that are usually high in fat and refined carbohydrates but deficient in essential nutrients like proteins, vitamins, minerals, and fibers. Insufficient quantities of fiber decrease gastrointestinal mobility and causes constipation. Avoidance of meat decreases the intake of high biological value protein.

When salivary flow is deficient, swallowing becomes difficult. It also produces a salty or metallic taste in the mouth. Altered thirst often results in dehydration. Dehydration is a form of malnutrition, a major problem in older adults, particularly those above 85, and the institutionalized. Fear of incontinence and increased arthritic pain resulting from numerous trips to the toilet may also interfere with consumption of adequate fluid intake. In older adults dehydration can result in constipation, fecal impaction, cognitive impairment, functional decline, and death.

The key predictors of malnutrition are loss of appetite and anorexia. The regulation of appetite in older adults is characterized by early satiety. Poor appetite contributes to undernutrition among adults who are institutionalized as well as living in the community. Other factors that influence feeding behavior of older adults are alcohol consumption, smoking, polypharmacy, and self-medication.

Excessive alcohol intake leads to deficiency of thiamine and niacin. Heavy drinking damages the organs involved in the absorption of nutrients. It also decreases appetite. Alcohol consumption is commonly underestimated in the elderly.

Long-term drug treatment and self-prescribing practices with over-the-counter drugs can interfere with each other and with nutrition. Use of antiaging remedies may also affect the nutrition.

Many older adults select foods that are familiar to them from the time selection was limited. Often an elderly individual is not willing to purchase food that has better nutritional quality. Retirement income of the elderly is much less than that earned during working years. Maintaining one's previous lifestyle is difficult. They are also reluctant to accept food aids. Elderly people try to choose food that is less expensive but will satisfy their hunger. This is one of the reasons why older adults are prone to malnutrition.

Social isolation places older adults at high risk for malnutrition, depression, and other problems. Eating with others may increase social interactions, as well as

food consumption. The positive psychological and social aspects of eating are important pleasures of life that persist throughout one's life.

Even though our elderly populations have set habits, practices, and preferences many of them are willing to adapt to the new foods. Caretakers must be cautious not to name them as unwilling to change or uncooperative. Mechanical soft diets should not be continued forever, only until they are able to handle normal food. Old age is not a sickness. It is just another stage of life. Lifestyle changes such as physical activity and eating healthy should be encouraged to stimulate normal eating and reduce the risk of nutrient inadequacy.

Related Topics

[Anti-aging remedies](#), [Exercise](#), [Failure to thrive](#),
[Isolation](#), [Loneliness](#), [Nutrition](#)

Suggested Readings

- American Dietetic Association (2002) Position of the American Dietetic Association: liberalized diets for older adults in long-term care. *J Am Diet Assoc* 102:1216–1223
- American Dietetic Association (2000) Position of the American Dietetic Association: nutrition, aging, and the continuum of care. *J Am Diet Assoc* 100:580–595
- Morley JE (2001) Decreased food intake with aging. *J Gerontol Biol Sci Med Sci* 56A:81–88

Feminism

Sarah Smith · Angela Pattatucci Aragón

To speak of feminism in the context of a set of overarching ideals that define a unified movement is a misrepresentation. It is more accurate to speak of feminisms, which highlights the fact that identifying oneself as a feminist can mean different things. Characteristic of any expanding movement, there are disagreements and overlap between feminists. This does not mean to suggest that feminism is fragmented, but rather to emphasize the diversity of feminist thought and belief that is respected.

Broadly there are five modes of feminism: liberal, Marxist/socialist, radical (including lesbian feminism), feminists concerned with race/ethnicity, and postmodern/poststructuralist feminism. Although this list is certainly not exhaustive, and does not include ecofeminism or psychoanalytic feminism, it does represent the most widely influential modes of feminist thought within the United States. Each of the perspectives offers insights into the lives of older men and women.

Almost all forms of feminism begin with a critique of how women and men are treated differently. Patriarchy (institutionalized male dominance) and misogyny (the belief that women are inferior to men, lacking the emotional and physical capacity to be true subjects and citizens) are typically the objects of critique. Differences between feminisms tend to emerge over how patriarchy is related to other systems of oppression and the issue of how to respond to such oppression.

Liberal feminism is the variety of feminism that works within the structure of mainstream society to integrate women into that structure. It is basically a social justice movement that seeks equality for women and traces its roots back to the feminism of past centuries, such as the suffragist movement.

Conversely, radical feminists reject mainstream society and seek to dismantle patriarchy. In response to women's second-class status (economically and ideologically), radical feminists revalue femininity and critique masculinity as symptomatic of misogyny. They view the oppression of women as the most fundamental form of oppression, one that cuts across boundaries of race, culture, and economic class.

Socialist/Marxist feminists view patriarchy as more rooted in economic conditions than psychological or social, and therefore, focus their efforts on transforming economic relations. Drawing on and revising Marxist theories and ideology, they continue to analyze how capitalism and patriarchy structure society.

Traditionally, feminism has focused on issues defined by white women, rendering women of color invisible. However, out of the Civil Rights Movement of the 1960s emerged a strong group of feminists of color that paralleled the philosophy and the dynamic nature of radical feminism in many respects but would not, because they could not, limit their focus to women's issues. Feminists of color maintain that women's oppression must be considered in a broader context than just a myopic focus on sexism. Feminists concerned with race/ethnicity (also referred to as "multicultural feminism") have

illuminated the intersectionality of oppressions, or the ways in which sexism, racism, classism, ableism, and so on can be mutually reinforcing and inseparable. The focus on the intersections of race, ethnicity, gender, sexual orientation, class, and geography has been extremely productive across modes of feminism, especially in our contemporary mode of late capitalism and globalization.

Feminists influenced by postmodern or poststructuralist theories challenge universal truths, grand narratives, and accepted categories, including the notion that “women” exist as a meaningful group. Postmodern feminists focus on the multiple ways power is deployed to construct identities, creating contradictory and intersecting experiences of subjectivity and oppression.

Recently, there has been a call to incorporate feminisms into gerontology to address the specific needs and circumstances of older women. Feminist perspectives illuminate the ways gender inequality exacerbates women’s problems as they age. Women’s lower socioeconomic status and economic dependence on men can lead to increased financial concerns and distress in later life, especially in retirement.

Feminists have also connected ageism and sexism to explore the differing social value and prestige of older women and men. Older women are more typically represented as unattractive and asexual than older men in popular culture. Similarly, older men are considered more productive in later life. Such attitudes may contribute to women’s increased risk of elder abuse, neglect, and abandonment.

Additionally, feminists critique the medicalization of women’s bodies. Some feminists suggest that ageism and sexism intersect to create menopause as a “disease.” Thus, the loss of estrogen, and corresponding decline of feminine markers, becomes something to be monitored and controlled by physicians and medicine. From this perspective, Hormone Replacement Therapy is particularly controversial.

Related Topics

[Femininity](#), [Gender](#), [Gender role](#), [Lesbian](#),
[Lesbian ethics](#), [Masculinity](#), [Queer](#)

Suggested Readings

Beasley Chris (1999) *What is feminism? an introduction to feminist theory*. Sage Publications, London

Browne Colette V (1998) *Women, feminism, and aging*. Spring Publishing, New York

Hooks B (2000) *Feminism is for everybody: passionate politics*. South End Press, Cambridge, MA

Femininity

Angela Pattatucci Aragón · Sarah Smith

Femininity is defined in various dictionaries in either a circular manner as the quality of being feminine or indirectly as qualities associated with the female sex. This is because femininity is typically conceptualized as a constellation of multiple interacting elements that coalesce to yield an energy, an essence, or a state of being. We recognize femininity when it is encountered, but it is difficult to distill the interacting elements to a single, unifying definition that can be applied uniformly. Femininity also is often confused with gender role, which is a categorized distinction of activities and responsibilities deemed socially appropriate for females and males in a particular society.

The dominant conceptualization of femininity in most modern societies is best described by sex-role theory, which proposes that humans unconsciously integrate archetypical ways of behaving that are appropriate to their assigned sex from society’s institutions. Sex-role theory organizes women’s behavior as passive, intuitive, submissive, and subjective, whereas men’s behavior is classified as aggressive, rational, dominant, and objective.

Idealized versions of sex-role theory in which these qualities are alleged to complement each other in a balanced way can be found in the folklore of many cultures (e.g., yin/yang, sun/moon). However, sex-role theory fails to account for the fact that cultures do not value the characteristics of each sex equally. Women are not esteemed for their passivity to the same degree as men are for their aggressiveness.

Feminist scholars exposed the limitation of sex-role theory by emphasizing that different power levels exist in society’s femininity/masculinity archetypes. In response, sociologists scrutinized sex-role theory and deemed it too rigid in several key areas. Primary among these is that it fails to recognize that women and men do not always embody their respective archetypes, other than to label this diversity as deviant.

Furthermore, it does not address individual differences in behavior in various situations. Femininity, as it is characterized by sex-role theory, is an archetype that few, if any, women exemplify all the time. The theory also fails to articulate how characteristics become assigned to feminine and masculine archetypes. Regardless of how femininity is conceptualized, more often than not, it occupies a position of lesser value relative to masculinity, a reality all but ignored in sex-role theory.

Responding to the inadequacy of the sex-role theory to provide an accurate representation of how women and men relate to each other, sociologists developed a new theoretical framework that appropriately considers the structure of power, the sexual division of labor, and the social organization of sexuality and attraction. The theory of hegemonic masculinity proposes that an archetypal form of masculinity exists in a given culture within a particular historical period, that masculinity always defines itself as different from and superior to femininity, and that social processes are organized to maintain masculine power by ensuring that subordinate groups view male dominance as fair, reasonable, and in the best interests of society. Thus, femininity is constructed around adaptation of male power. Its core component is attractiveness to men, around which revolve physical appearance, chastity, exclusive heterosexuality, sexual availability in the absence of sexual assertiveness, nurturance of children, obedience and deference to male authority, and ego-massaging (among others). In this respect, femininity could be construed as a social euphemism for female subordination to male dominance.

In contemporary Western cultures, femininity is intimately tied to youth. Idealized femininity is marked by soft, smooth, spotless skin, as well as the ability to conceive and raise children. Thus, menopause is often construed in both popular culture and medicine as a pathological loss of femininity. Feminists concerned with aging and health have been highly critical of the medicalization of menopause. The use of hormone replacement therapy continues to be controversial as various studies point to a number of adverse side effects, such as increased heart disease, cancer, and other maladies. Nevertheless, many women choose hormone replacement therapy because it can stall the signs of aging and retain a degree of idealized femininity.

The feminine ideals of passivity and submission may also play a complicating role in models of

“successful aging,” which emphasize personal autonomy and independence. Although more research is needed that examines the relationship between aging and femininity, preliminary work suggests that learned helplessness, economic dependence on men, and lack of education—all traits that infer femininity—may become magnified by the aging process. Thus, men may be more “successful” at aging because masculinity values autonomy, financial security, and self-concern. Conversely, however, femininity may predispose women to seek help and assistance, increasing health seeking behavior and mental health outcomes.

Related Topics

▶ [Feminism](#), ▶ [Gender](#), ▶ [Masculinity](#)

Suggested Readings

- Cruikshank Margaret (2003) *Learning to be old: gender, culture, and aging*. Rowman & Littlefield Publishers, Lanham, MD
- Gannon Linda R (1999) *Women and aging: transcending the myths*. Routledge, London and New York
- Hatch LR (2000) *Beyond gender differences: adaptation to aging in the life course perspective*. Baywood Publishing, Amityville, NY
- Hofstede G and Arrindell WA (1998) *Masculinity and femininity: the taboo dimension of national cultures (Cross-cultural psychology, vol 3)*. Sage Publications, Thousand Oaks, CA
- Houck JA (2003) ‘What do these women want?’: feminist responses to feminine forever, 1963–1980. *Bull Hist Med* 77:103–132

Fibroids

Jacqueline Spiegel

Uterine fibroids are benign tumors arising from the muscle layers of the uterus, developing inside the uterine cavity or attached to the external uterine wall. Fibroids can be very small and difficult to detect on examination and ultrasound, but they can also grow to fill the uterine cavity weighing several pounds. Uterine fibroids are the most common pelvic tumor present in 15–20% of reproductive-age women, and 30–40% of women over 35. Fibroids occur three to nine times

more frequently in African American women than in white women. The cause of fibroid tumors of the uterus is unknown. Fibroid growth seems to depend on regular estrogen stimulation. It rarely affects women younger than 20 or postmenopausal except those exposed to extra amounts of estrogen through oral contraceptive agents, pregnancy, or hormone replacement therapy. Once present, they seem to enlarge with continued estrogen exposure, even though the growth is quite slow. Although it is possible for a single fibroid to develop, usually there are multiple growths, which begin as small seedlings and spread throughout the muscular walls of the uterus.

Three fourths of women with uterine fibroids are asymptomatic, and the diagnosis is made on routine pelvic examination. If symptoms are present, they may include sensation of fullness or pressure in the lower abdomen, pelvic cramping or painful periods, increased urinary frequency, heavy menstrual bleeding or passage of blood clots. As stated, the majority of women have no symptoms of uterine fibroid(s).

Upon pelvic examination, a uterus with fibroids is irregularly shaped, lumpy, or enlarged. This finding is usually adequate to make a proper diagnosis, but to confirm and determine location and size, pelvic ultrasound is recommended. There are two ways to perform a pelvic ultrasound: (1) trans-abdominal (placing the ultrasound probe on the abdominal surface) and (2) trans-vaginal (placing the ultrasound probe within the vaginal canal). In ultrasound, high frequency sound waves are sent out, which bounce off body structures to create a picture. With the transvaginal technique the probe is closer to the pelvic structures than with conventional transabdominal means and therefore provides superior image quality. Additional tests such as dilatation and curettage (D&C) and pelvic laparoscopy may be performed to rule out other potential causes of symptoms.

Methods of treatment depend on the severity of the symptoms, the patient's age, her pregnancy status, her possible desire for future pregnancies, her general health, and characteristics of the fibroids. Treatment may consist of simply monitoring the rate of growth with periodic pelvic exams or ultrasound, nonsteroidal anti-inflammatory medications like ibuprofen or naprosyn to decrease lower abdominal cramping or pain with periods, and iron supplementation to help prevent anemia in women with heavy bleeding due

to fibroids. These methods are usually sufficient in premenopausal women. Another option is hormonal treatment, involving drugs such as injectable depo leuprolide. This method is used for short-term treatment before surgical intervention or when menopause is imminent. The treatment lasts several months and during this time estrogen concentrations are reduced allowing the fibroids to shrink. Significant side effects associated with this treatment include hot flashes, vaginal dryness, and loss of bone density.

Fertility preserving surgical intervention is the most frequently chosen treatment for premenopausal women who want to bear children, because it preserves the integrity of the uterus to support fetal growth. Myomectomy can be accomplished through a traditional inpatient procedure where the fibroid tumor is removed from the muscle wall or via hysteroscopic approach (outpatient) in which a small camera and instruments are inserted into the uterus through the cervix and the fibroid tumor is removed. Variations of myomectomy in which the fibroid(s) are destroyed surgically without actually removing them includes, myolysis, where an electric current destroys the fibroid(s) and shrinks the blood vessels that feed them, or cryomyolysis, where liquid nitrogen is used to "freeze" the fibroids. Along with preserving fertility, another advantage of a myomectomy is that it controls pain and excessive bleeding. One disadvantage is that myomectomy often cannot remove very small fibroids that may continue to grow and cause symptoms in the future. A more permanent treatment option is total hysterectomy in which the entire uterus is surgically removed. This is a curative option that is often chosen by older women or those who no longer anticipate childbearing.

Uterine artery embolization is a new procedure aimed at preventing the need for a major surgery. Small catheters are placed through veins in the pelvis and advanced to the arteries that supply the uterus with blood. Materials are then injected to block these arteries permanently. The decreased blood supply to the uterus prevents further growth of the fibroids and causes them to shrink. The long-term effects of this procedure are still unknown, and the safety of pregnancy after this treatment is questionable.

MRI-guided focused ultrasound surgery (FUS), approved by the Food and Drug Administration (FDA) in October 2004, is the newest, noninvasive treatment option. This procedure is performed while

the patient is inside a specially crafted MRI scanner that allows doctors to visualize the anatomy, and then locate and destroy fibroids using focused high-frequency, high-energy sound waves without making an incision. A single treatment session is done in an on-again and off-again fashion, sometimes spanning several hours. Initial results with this technology are promising, but its long-term effectiveness is not yet known.

As a general rule, fibroids don't interfere with fertility except when the tumor blocks the fallopian tubes and prevents fertilization of eggs or when the tumor interferes with implantation of a fertilized egg in the uterine wall. During pregnancy, existing fibroids may grow due to the increased blood flow and estrogen levels. Typically, the tumor will return to its original size after delivery. Most women are able to carry a pregnancy to term, but some of them end up delivering prematurely due to lack of space in the uterus to sustain full fetal growth. Cesarean delivery may also be needed if a fibroid tumor blocks the birth canal or causes the baby to be positioned abnormally. After menopause, new fibroids rarely develop and those already present usually shrink.

Related Topics

◆ Abdominal pain, ◆ Ultrasound, ◆ Vaginal bleeding

Suggested Readings

- Chavez NF, Stewart EA (2001) Medical treatment of uterine fibroids. *Clin Obstet Gynecol* 44(2):372–384
- Manyonda I, Sinthamoney E, Belli AM (2004) Review: Controversies and challenges in the modern management of uterine fibroids. *BJOG: Intl J Obstet Gynaecol* 111(2):95
- Pritts EA (2001) Fibroids and infertility: a systematic review of the evidence. *Obstetrical & gynecological survey* 56(8):483–491

Suggested Resources

- Center for uterine fibroids: Brigham and women's hospital. <http://www.fibroids.net/>
- National Uterine Fibroids Foundation (NUFF). <http://www.nuff.org/>
- Society of Interventional Radiology: uterine fibroid embolization. <http://www.sirweb.org/patPub/uterine.shtml>

Fibromyalgia

Lori B. Siegel

Fibromyalgia (FM) is a syndrome of chronic pain that is often both underdiagnosed and overdiagnosed. Many practitioners use this diagnosis too loosely when a person has pain that cannot be easily explained, while some others deny the disease exists. FM represents a specific pattern of symptoms associated with risk factors that often presents in a classic clinical fashion; this disease cannot be diagnosed with positive blood tests or biopsies. The incidence of FM increases with age and can occur in patients with existing medical conditions.

The main symptom of FM is chronic, widespread pain that involves the muscles or the joints. However, close examination of muscles and joints do not reveal any true muscle disease or arthritis. The pain often gets worse over time but may cycle in severity from day to day. A key feature in FM is difficulty in sleeping and, if the patient does sleep, they awaken feeling unrefreshed, as though there had been no sleep at all. Other symptoms that patients may have are shortness of breath, fatigue, tingling of nerves, headaches, irritable bowel, and some mental cloudiness or confusion. Routine evaluation of these complaints usually yields normal tests with no measurable disorder of the lungs, nerves or intestines. A complete physical examination will also be relatively normal except for the finding of specified tender points. The diagnosis is made using the following criteria: tenderness in 11 out of the 18 classic tender points and widespread pain of at least 3 months duration. Unless specifically trained to evaluate for FM, a general practitioner may not know how to appropriately diagnose or evaluate this condition.

Since FM is a diagnosis of exclusion, it is important that other treatable conditions be considered before the diagnosis of FM is made. These conditions include endocrine conditions, common thyroid abnormalities, sleep apnea, autoimmune disorders, infections such as hepatitis C, Lyme disease and parvovirus, vitamin deficiencies, or internal organ derangements. Structural problems in the neck may also present to the doctor with symptoms of FM such as cervical stenosis.

FM itself may be a primary or a secondary condition, depending on whether it is associated with an

underlying medical condition. The true pathological cause of FM in either case is not clearly understood but is thought to be related to an underlying sleep disorder. The disorder is usually stress related, whether emotional or physical, in which the patient has suffered a stress, which has led to poor sleep. The poor sleep has then caused increased stress, which manifests as physical pain. The pain then causes further disruption of sleep leading to a vicious cycle of lack of sleep and accelerating pain. Patients who develop secondary fibromyalgia may have a known chronic medical illness such as rheumatoid arthritis or pulmonary condition, which is essentially well controlled, but bothersome enough to cause disrupted sleep, ultimately leading to generalized pain.

Once diagnosed, the treatments are based upon restoring sleep with gradual cardiopulmonary reconditioning if possible. A vigorous exercise program can be harmful. Depending upon how long the condition has existed before appropriate treatment, the response may be slow. It is important, therefore, that the patient keeps a diary of daily activities and pain levels so that they can monitor their improvement and compare how they are feeling during treatment to how they were earlier. Education is key to improvement and good communication along with proper goal setting with the provider will help in recovery. Although over-the-counter and prescription nonsteroidal anti-inflammatories may be helpful, other traditional pain medications and sleeping agents may worsen the condition. Narcotics and benzodiazepines are to be avoided. Low dose tricyclic antidepressants (TCAs) and/or nightly muscle relaxants are most helpful and restore proper sleep. Commonly used agents are amitriptyline, imipramine, trazodone, and doxepin. Cyclobenzaprine is often a helpful adjunct and useful in those who cannot tolerate TCAs. It is important to start very low doses and gradually increase. It is also important to let the patient know that even though they are being treated with antidepressants, the medication is not being used at doses to treat depression, but only to treat the sleep and pain disorder. Once the patient is getting appropriate and restful sleep, the symptoms should abate to some extent. At this point gradual stretching and aerobic activity can be started. Although many patients are treated with medications for a long time, some are gradually able to taper off the medication. Many patients find support through FM support groups and newsletters. Patients should be cautious regarding Internet cures and remedies.

Related Topics

- [Chronic fatigue syndrome](#), ➤ [Chronic pain](#),
- [Regional rheumatic pain syndromes](#)

Suggested Readings

- Klippel JH (ed) (2001) *Primer on rheumatic diseases*, 12th ed. Arthritis Foundation, Atlanta, GA
- Klippel JH, Dieppe PA (1998) *Rheumatology*, 2nd ed. Mosby, St Louis, MO
- Klippel JH, Dieppe PA, Ferri FF (2000) *Primary care rheumatology*. Harcourt, London

Suggested Resources

- National Center for Biotechnology Information. www.ncbi.nlm.nih.gov
- Mayo Clinic. www.mayoclinic.com

Financial Abuse

Sally Shepherd

Financial abuse is rampant in this day and age. Each year nearly \$14 billion are lost to seniors as a result of financial fraud and abuse. The incidence of these crimes is dramatically underreported. Typical victims of financial abuse are seniors with a high family income (many have savings, pensions, and Social Security income), city rather than rural residents, and homeowners rather than renters. They are commonly separated or divorced.

Financial exploitation includes fraud, taking money under false pretences, forgery, forced property transfers, purchasing expensive items with the older person's money without their knowledge or permission, or denying the older person access to his or her own funds or home. Identity theft is a crime in which an imposter obtains key information such as Social Security and driver's license numbers to obtain credit, merchandise, and services in the name of the victim.

Scams are typically carried out by strangers but the majority of financial abuse is actually committed by persons well known to the victim and in a position of

trust, such as caregivers, adult children, siblings, even so-called friends. Fraud committed by family members includes theft or the improper use of legal guardianship arrangements, powers of attorney, or conservatorships. This type of fraud is made easier by the fact that very few states require these determinations to be registered, few require a lawyer's involvement in drafting the document, and witnesses are not required to ensure the elder's signature is voluntary. Although most states require notaries, they are not trained to assess mental capacity and therefore cannot protect an impaired elder from abuse. Joint bank accounts, deed transfers, living trusts and wills can be manipulated to facilitate financial abuse. Family members may borrow money and not pay it back. They may deny services or medical care in order to preserve funds.

Financial exploitation perpetrated by strangers includes a variety of scams by sales people for health-related services, mortgage companies, and financial managers. Investment scams are common. Health, funeral, and life insurance fraud succeed because the older adult may be afraid of not being able to cover future expenses or to become a burden to their children. They may be misled by bogus charities, sweepstakes scams, telephone solicitations, or offers of building or repair services by unlicensed contractors.

Successful frauds share common elements. The offenders gain trust and confidence through their charisma, by using a business name similar to that of a well-established organization, or by communicating a concern for the elder's well being. They often encourage their victims to make an immediate decision or commitment to purchase products or services, which effectively limits the opportunity for consultation with others. Seniors defrauded by strangers may not report the incident because they are embarrassed or ashamed. They do not want to be labeled as "incompetent" and risk being placed in a nursing home. Seniors exploited by relatives and caregivers may experience different feelings. They may fear what the offender may do if they do not comply with his or her demands. They may also have long-term emotional ties to the offender that create conflict about reporting abuse, and may cause them to feel protective of the offender once the abuse is discovered.

Signs of financial abuse may first become apparent when life circumstances don't match with the size of the estate. There may be difficulty in covering basic expenses such as food and utilities, when income should support these needs. There may be unpaid bills despite there being enough assets to cover the

payments. Banking irregularities may include large withdrawals from bank accounts, switching accounts, or unusual ATM activity. Signatures on checks may not match the account owner's signature. Bank tellers may notice a senior withdrawing a large sum of money from the bank when accompanied by another person. Abrupt changes in wills, trust, contracts, the power of attorney, property titles, deeds, or mortgage accounts may point to financial abuse by a family member or caregiver.

Seniors should be encouraged to avoid financial abuse by protecting their banking information, checks, credit and ATM cards, and Social Security cards. They should not keep large amounts of cash on hand. They should use a shredder to dispose of documents. All valuable items should be inventoried and kept under lock and key. They should consider using a post office box instead of a mailbox at their home. Caller-ID devices, answering machines and the Do Not Call Registry can block calls from unscrupulous merchants. Caregivers should only be hired from bonded and insured agencies after an extensive background check, and should never be given financial responsibility for an elderly person. They should only be permitted to make purchases on behalf of their client using cash or checks. References of legal and financial advisors should be thoroughly checked.

Particularly when investigating financial exploitation, questions often arise as to whether the victim understood the transaction, appreciated the value of what he or she gave away or signed over, and comprehended the implications of the transaction. It may seem obvious that a senior is no longer able to handle his or her financial affairs, but agencies cannot simply take over without their permission. For the senior, this may be just one more thing they are being forced to give up, and it may be traumatic for them.

Related Topics

- ▶ Elder abuse and neglect, ▶ Financial planning, ▶ Probate

Suggested Readings

Johnson KD (2003) Financial abuse against the elderly, Problem-oriented guides for police (No 20). US Department of Justice, Office of Community Oriented Policing Services. www.cops.usdoj.gov

Suggested Resources

The Federal Trade Commission has a toll-free number to report identity theft. Call 1-877-IDTHEFT (877-438-4338) or go to their website www.consumer.gov/idtheft

Financial abuse should be reported to Adult Protective Services by calling 1(877) 4-R-SENIORS or by calling the local police department

Names can be removed from national direct mail lists by writing to the Direct Marketing Association at PO Box 9008, Farmingdale, NY 11735-9014

To avoid telemarketing calls, the National Do Not Call Registry allows the option of blocking telemarketing calls at home or on a cell phone. Most telemarketers should not call a registered number once it has been on the registry for 31 days. Registration is free and is effective for five years. Complaints about violations can be filed at the DoNotCall.gov website

Financial Planning

Sandra J. Buzney · Carol J. Culley · Lisa Montoni

Financial planning is the process of taking positive steps to ensure the future we want. While many seniors may deny that they have a need for financial planning, the truth is that most people engage in this process to some extent. Whether it is keeping a record of expenses (check registers, credit card receipts), filing tax returns (especially itemized ones), or following a budget, most people do some form of financial accounting. Some seniors take time to go to the next step and actively plan for their financial future.

During our working lives, some of us plan for the years when we will be “retired” by participating in a retirement plan offered by our employer (401k, 403b, pensions). Some of us do this on our own through personal savings and/or contributing to individual retirement arrangements (IRAs). Many do both, however, and still worry. How can we be sure that we will be “okay” in our later years and not find ourselves in a financially uncomfortable or intolerable state? Many single seniors, especially women, experience anxiety related to their financial future.

Like most challenges in life, these concerns are not solely solved by money. Developing and sustaining a set of people to socialize with and care for, can be crucial to our long-term mental and emotional health. But, money has its uses. Primarily, money buys choices

and provides options. Our desire for financial independence does not diminish with age and in some cases it grows. Therefore, periodically, it is useful to step back and make sure we are on course to get where we want to go.

Securing Enough Income to Support the Lifestyle to Which You Have Become Accustomed

At one time, continuing to work past 65 was not an option for most people. You may remember your parents or grandparents working until 65 and then being forced into retirement. However, working beyond 65 is common enough these days that it is considered the fourth leg on the retirement planning “stool.” Traditionally, the symbol of a three-legged stool is used to represent retirement security—Social Security retirement benefits, employer pensions, and personal savings. Today, fewer people can rely on their employers for providing a guaranteed income in retirement, and, for some individuals, personal savings for long-term goals like retirement is less than it should be. If you are one of those who never earned enough or saved enough, working past 65 may be in your future. However, one should remember that there can be other benefits derived from working besides income, such as social connections, learning opportunities, and healthy daily routines.

When the time comes to decide whether you may or must, for health reasons, work less (i.e., earn less), you may opt to begin taking distributions from a company-sponsored retirement plan or an individual retirement account. You can arrange to receive this money on a regular basis, either monthly, quarterly, or annually. You may formally annuitize your retirement savings account over your lifetime by contracting for a guaranteed income stream. This is one way people can ensure that they do not outlive their money. One caution is that the value of money is less over time (postage stamps used to cost 3 cents and now cost 39 cents), so be sure to take this into consideration as you make your decisions. Also, beginning the year after you turn 72½, the Internal Revenue Service will require you to begin receiving income at least annually from some tax-advantaged plans. If you contribute to these plans with preincome tax earnings, these distributions will be countable as taxable income and may result in additional income tax. Consider asking a financial professional—preferably one with a professional designation like certified financial planner (CFP), chartered financial consultant (ChFC), or certified public accountant (CPA)—to help you examine your options.

Health Concerns Many of us have received employer-paid or employer-sponsored health care benefits during our working careers, or we have opted to buy health insurance for ourselves. Our desire for this protection continues so long as we are alive, and our need for health services frequently increases, as we get older. Most of us will qualify for Medicare once we reach 65. Medicare is the bedrock health plan for most seniors, but it has its limitations. First, there is a premium cost for Part B (coverage of physicians and outpatient services), and often a premium for Part D (outpatient drug coverage). Then, there are deductibles and copayments. Inevitably, there are “holes” or items not covered by Medicare (over-the-counter medicines and supplies, and prescription medicines when you are between \$2,500 and \$3,600 of annual expenditures, to name a few). The biggest gap in Medicare, however, is the lack of coverage for long-term care, such as assisted living or nursing home care.

When people develop disabling health conditions which limit their ability to handle the incidental activities of daily living (such as money management, shopping, and transportation), and eventually the basic activities of daily living (like bathing dressing, independent mobility, and continence), they need help. Some seniors experience reduced mental functioning that impairs their ability to make decisions for themselves, to manage their physical needs, and sometimes even to recognize family and friends. Seniors in this situation especially need help, sometimes all day, every day.

It is important to understand that assisted living and long-term nursing home care are not generally covered by Medicare. Medicare pays for very little of the cost associated with providing long-term supportive care for disabled seniors, and nothing towards services which would help make life easier for older Americans, like housecleaning, yard maintenance, and home repairs. In most cases, people pay for long-term care from their income and savings, by collecting benefits from a long-term care insurance policy, or through the public welfare program called Medicaid.

For those who do not have enough personal savings to pay for the services they need when they face gaps in Medicare coverage, and for those who want their personal savings to go farther, there are insurance products such as Medigap Plans and Long Term Care Insurance which can provide the dollars needed to fill these “holes.” Again, consider asking a financial professional, with one of the professional designations mentioned earlier, to help you examine your options.

The Need to Name a Surrogate Decision-Maker

No one is promised a tomorrow. Anything can happen at anytime, and we may find ourselves in a position unable to temporarily or permanently handle health care or general financial matters independently. Fortunately, state laws generally allow you to choose someone you trust, called a surrogate decision-maker, to make decisions and handle matters when you cannot. There are several options for doing this, including a Durable Power of Attorney for Health Care and a Durable General Power of Attorney for personal financial business. The requirements for executing these documents are a matter of state law. Therefore, it is important that the documents that you use, have the provisions required by state law and are signed or “executed” in the required matter. This may include signing the documents in the presence of a notary public, uninterested witnesses, or both.

If you have not executed one of these legal tools prior to becoming unable to manage your personal affairs, the law does provide a fallback plan. Should you become incompetent to make decisions for yourself, the court has the authority to appoint a legal guardian or conservator. This person will have considerable power over your life and finances. Becoming a guardian, and ending a guardianship when someone is once again able to handle their personal and financial affairs, are cumbersome and involve expensive legal processes that may be avoided with future planning, such as executing the documents described above.

When deciding whom to appoint as your agent, or “attorney-in-fact,” through a durable power of attorney, think about whom you would trust to pay your bills or complete financial transactions for you when you cannot do these things for yourself. Similarly, you should take the time to decide who can access medical information and make health care decisions consistent with your wishes if you become unable to make them for yourself. Finally, if you have a preference for what you would like to happen should you become terminally ill, the state law may allow you to make your intentions known through a “living will.” It is important to talk with the individuals you intend to appoint as your agents to confirm that they are willing to accept the responsibility and have values similar to yours.

An attorney specializing in elder law and estate planning should be consulted for help in drafting and executing the appropriate legal documents granting authority to those you want to be able to act on your behalf if serious circumstances related to your health

and mental capacity arise. A little planning while you are capable to make these kinds of decisions may be invaluable both to you and your loved ones if you face serious health issues later in life.

Final Arrangements Even though it is sometimes difficult to come to terms with our own mortality, many seniors have found themselves in the position of having to arrange for the burial or cremation, and the associated funeral services, for someone else. The loss of a loved one may make an individual emotionally vulnerable, and, typically, the stress of this kind of loss is not a good time for financial decision making. Therefore, planning your funeral and other final arrangements may be the best gift you can leave your loved ones.

Several options for preneed funeral planning are available. These include arranging with a funeral director to provide the services in the style you choose, and paying for funeral-related services when they are made or through the assignment of life insurance that will be available at the time of death. These types of arrangements can be insured, and you should take care to understand how your plans would be protected.

Leaving a Personal Legacy Most of us work hard to leave our mark on this world through our families, building a business, supporting religious and community institutions, our jobs or career, and in many other ways. Financial planning can enable these efforts to outlive you for the benefit of others. Legacy planning is typically cemented through legal documents, like trust agreements and wills, and the financial resources left behind give these plans ongoing life.

Most people try to live within their means and save money for the difficult times and circumstances life brings them. Older persons may fall into one of the following scenarios depending on the decisions and circumstances of living a long life:

- Some seniors will spend all their money while alive and have little or nothing of monetary value to leave their heirs.
- Others will be healthier or wealthier, and they will typically want to make provisions for children and grandchildren. Most can buy life insurance during working years to secure their family's well-being, should they die young. Some will elect to keep this insurance in force until death when benefits are available to be paid to the designated beneficiaries.
- Still others will amass large sums and be in a position to make substantial contributions to future generations and to society as a whole.

Whichever category you fall into, you can be proud of what you have accomplished. Not all achievements are fully recognized by monetary rewards. Everyone should consider taking time to record his or her life story on paper, computer file, audiotape or videotape. Each individual life is part of a larger heritage and should be appreciated and preserved. There may be a family history known to you that will either be very difficult to uncover or lost to succeeding generations if you do not record this information during your lifetime. In addition, many individuals will leave "ethical wills" to their survivors so as to communicate their values and aspiration for future generations.

If you are in a position to leave a financial legacy, and have the desire to specify whom you want to benefit, you should recognize that there are complexities involved. It is highly recommended that you consider working with a team of professionals who can give you the legal, financial, and tax planning assistance you need, and who can provide you information about options and choices in ways that you understand. The decisions are yours. The advice provided by these professionals is a tool, and financial planning is all about helping *you* find a way to accomplish *your* life goals.

Related Topics

- ▶ Advance directives, ▶ Assisted living, ▶ Disability, ▶ Durable power of attorney, ▶ Early retirement, ▶ Inheritance, ▶ Long term care, ▶ Long-term care insurance, ▶ Medicare, ▶ Probate, ▶ Retirement, ▶ Social Security

Suggested Readings

Nussbaum M, Raasch BJ, Ratner CL (2004) Ernst and Young's personal financial planning guide, 5th ed. Wiley, Hoboken, NJ

Suggested Resources

American Association for Retired Persons 2005, Washington, DC (January 6, 2005). http://www.aarp.org/money/financial_planning

Society of Financial Service Professionals, Consumer Information 2005, Newton Square, Pennsylvania, (January 6, 2005). <http://www.financialpro.org/Consumer/articles.cfm>

US Federal Government, Consumer Publications 2005, Washington, DC (January 6, 2005). <http://www.firstgov.gov/Citizen/Topics/Money.shtml#vgn-investing-vgn>

Firearms

Juan Hernandez

Worldwide, as of 2001, the total number of small arms—ranging from pistols to assault rifles—in military and civilian hands was estimated at 639 million weapons. Civilians throughout the world legally owned a total of 378 million of these weapons, mostly hunting rifles, shotguns, and handguns. Americans, in particular, have ready access to firearms. Guns are for sale in national retail chains, hardware stores, and sporting goods shops—these are often resold or traded at gun shows. Since the US Constitution's Second Amendment guarantees the right of the people to keep and bear arms, gun ownership in America is considered a basic civil liberty. Consequently, there are more privately owned guns in the United States—an estimated arsenal of 230 million firearms—than anywhere else in the world. Nearly half of American households have guns. Two thirds of these weapons are rifles and shotguns; one third are handguns.

Long arms, such as rifles and shotguns, are sold primarily for hunting and sport, while handguns are heavily marketed for self-defense. Although personal protection often serves as the justification for keeping firearms at home, in one's car, or on one's person, such feelings of enhanced safety may be an illusion. Instead of ensuring personal protection, firearms actually pose a considerable risk of injury or death to their owners, families, or their acquaintances; handguns are especially dangerous. The majority of firearm deaths in the United States are due to suicides and accidental shootings. This appalling statistic is tallied quietly during the course of each year, without the sensational headlines associated with mass murders or school shootings.

Most homicide victims die at the hands of a person previously known to them. One out of three homicides in the United States is an intimate partner homicide; a gun is the most common weapon. The sheer size of the

legal marketplace for guns in America also means that many weapons eventually enter the illegal market, quite easily, when resold or traded at gun shows. Handguns, for instance, are much more likely to be used offensively by criminals for robbery and assault than in legitimate self-defense by law-abiding citizens. In 1998, only 1.2% of handgun homicides in the United States were justifiable self-defense. It seems that Americans are under the gun, in unintended ways.

Gun ownership and aging present a particular problem. Older adults experience more stressful life events and may be inherently more vulnerable to stress as a result of physical illness, cognitive decline, or social isolation and therefore have a higher risk of suicide than the general population, with those aged 65 and older having the highest suicide risk of any age group. Risk factors include being divorced or widowed, having physical illness that imposes substantial disability, or the presence of psychiatric illness. For an older person, having a psychiatric disorder, especially depression, greatly increases the risk of suicide. It is important to remember that depression in an older individual is not part of the normal aging process and should be treated as a medical problem. Help is readily available if only the older person's family, friends, or caregivers recognize the presence and nature of depression. Elderly men are disproportionately impacted by suicide in comparison to women.

High lethality characterizes suicide in the older adults. While in the overall population there are approximately 20 attempts for every case of completed suicide (20:1 ratio), in the elderly there are only four attempts for each completed suicide (4:1 ratio). Tragically, 71% of persons aged 65 or older who committed suicide in 1999 did so with a firearm. The mere presence of a firearm in the home increases suicide risk; asking about weapons and removing them from the home effectively prevents suicides.

Dementia and access to firearms is also a growing public health concern. The prevalence of Alzheimer's disease, which is the most common type of dementia, increases with advancing age: it affects 3% of those above 65; and, up to 50% of those aged 85 or older. Declining cognition impairs one's ability to properly assess situations or react well during an emergency, thereby adversely affecting a person's judgment. About half of all patients with Alzheimer's disease develop delusions as the disease progresses, most often paranoid delusions. Paranoid thoughts are suspicious in nature: ideas of persecution; belief in imaginary

intruders, or thinking that others are stealing one's belongings. The implications for handling firearms are obvious.

Changing demographics and an aging population in many industrialized nations means that an increasing proportion of privately owned firearms will be in the hands of the elderly. The aging process varies widely according to each individual. Some can safely keep a firearm well into old age but many who are frail, depressed, physically ill, or cognitively impaired will place themselves and others at risk, with significant public health consequences. Firearms control and safety legislation, together with increased awareness of firearm-related risk in middle-aged and older adults by family, friends, and health-care givers can save lives.

Related Topics

[Alzheimer's disease](#),
 [Crime](#),
 [Dementia](#),
 [Depression](#),
 [Homicide](#),
 [Suicide](#),
 [Violence](#)

Suggested Readings

- Conwell Y (1997) Management of suicidal behavior in the elderly. *Psychiatr Clin North Am* 20(3):667–683
- Conwell Y, Duberstein PR, Connor K, Eberly S, Cox C, Caine ED (2002) Access to firearms and risk for suicide in middle-aged and older adults. *Am J Geriatr Psychiatry* 10(4):407–416
- Mendez MF (1996) Dementia and guns. *J Am Geriatr Soc* 44:409–410

Suggested Resources

Violence Policy Center, 2001, (November 25, 2005). <http://www.vpc.org>

Foot Care

Wendy Metzner

There are numerous foot problems that are common to many people, such as bunions, heel spurs, Plantar faciitis, edema, hammer toes, ingrown nail, fungal infections, corns, calluses, blisters, warts, and Morton's neuroma.

Bunions

Bunions are often caused by ill-fitting shoes that have a very high heel, excessively pointed toe boxes, or are improperly sized (usually too small). Even if someone is not wearing ill-fitting shoes currently, but has in the past, bunions could still appear, even many years after the fact. Poorly fitted shoes and extended pressure on one's feet places a lot of pressure on the toes, which can cause them to change shape in order to fit the shoes. Bunions can be remedied through the use of properly fitting shoes that provide good support and that have a wider cut. A trained professional can best fit the shoe for someone's feet. Physical therapy in conjunction with wearing orthopedics, or shoe inserts, may also be helpful. A doctor can also prescribe anti-inflammatory and cortisone injections for the pain. Finally, surgery is available to remove the bunions.

Heel Spurs

Heel spurs are sharp calcium growths that appear on the bone near where the tendons and ligaments attach at the heel and are often caused by strain on the muscles in the feet. Standing for long periods of time, wearing poorly fitted shoes, or being overweight can make the spurs worse. Bone spurs are most often found in people above 40 and are associated with poor circulation, osteoarthritis, rheumatoid arthritis, and other degenerative diseases. Heel spurs occur equally in men and women.

Heel spurs can cause considerable pain and suffering; however, they may be completely painless at other times. The pain felt is not usually caused by the spur itself but by the inflammation around the tendons where they attach to the heel bone. Because of this, individuals may feel it more after a long period of rest or when getting out of bed in the morning. The pain will actually decrease after walking because the tendons have had a chance to warm up and stretch out.

One of the best treatments for bone spurs is to stretch the calf muscle twice a day for 30 seconds in order to reduce the tension on the connective tissues. Special orthopedic inserts made for shoes will support the arch of the foot, which will transfer the weight towards the front of the foot, away from the spurs. Other remedies include the application of an ice pack to the area for 10 minutes at night, cortisone injections around the spur, and the surgical removal

of the spurs. Cortisone injections have the ability to ease the symptoms, but they are not a cure for bone spurs.

Plantar Faciitis

Plantar faciitis is the inflammation of the fascia (fibrous tissue network located between the skin and the underlying structure of muscle and bone) on the sole of the foot. Plantar faciitis often causes pain along the inner border of the sole of the foot, which can be crippling for some people and make walking almost impossible. The best treatment for this condition is resting. The recovery process may be slow and it could be difficult for the affected person to stay off their feet for long. Other strategies to alleviate the pain include physical therapy techniques; stretching the sole of the foot before going to bed; using night splints to keep the feet in a stretched position; nonsteroidal anti-inflammatory drugs, such as cortisone injections; and cushioning the insole of the shoe.

Edema

Edema may cause feet and ankles to appear normal in the morning, but swollen by the end of the day. Edema often occurs in people who are overweight and are required to be on their feet for long periods of time. The swelling can be reduced through a reduction in salt intake, which decreases fluid retention; through the use of support stockings, which promote circulation and limit gravitational movement of fluids in the body; through regular exercise to improve circulation; and through weight loss. Some medications may also contribute to causing edema.

Hammer Toes

Hammer toes are identified as the shortening of the tendons that control toe movement. This condition usually affects the smaller toes and is more common in women than men. The toe becomes bent upward at the first joint, giving the toe an almost upside down V appearance. At the onset of the condition the toe is still flexible at the joint and relatively treatable. Early symptoms can be treated by placing a small flexible cushion under the toe to alleviate some of the pain or

individuals can be fitted for an orthopedic device by a podiatrist. The insert is placed in the shoe to correct the position of the toes and help reduce pain and discomfort. Anti-inflammatory drugs and cortisone injections may also relieve the pain and cut down the inflammation of the joints. In later stages, left untreated, the toe will become rigid and the joint immovable. Corrective surgery is usually the only option when the condition becomes this severe.

Ingrown Nail

An ingrown toenail is a painful condition where the side of the toenail grows into the skin of the toe. Ingrown toenails may result from injury, from improper trimming of the nail, pressure of tight stockings or socks, or extreme running. Red, painful swelling on one or both sides of the nail indicates an infection that, if left untreated, may become severe. The recurrence of ingrown toenails can be prevented by retraining the nail to grow above the skin rather than into it, by wearing properly fitted shoes, and by caring for one's feet.

Fungal Infection

An active, live fungus or dermatophytes cause the fungal infection under the nail. Infection may result following trauma, or as the result of transmission from contaminated equipment, such as a shared nail file or nail clippers that have not been properly cleaned. Thick, discolored, or flaky nails are suggestive of a fungal infection.

Calluses

Calluses and corns form to protect the skin and bones from damage whenever there is excessive friction or pressure on the bony areas of the foot. Corns may initially form as calluses but extra pressure from shoes or excess weight on the feet prevent the callus from growing up off the skin and start to push it into the skin. Calluses are generally found on the bottom of the foot, which bears the most pressure when walking, standing or running, and are associated with walking barefoot and wearing shoes with higher heels or narrow toes. Calluses may be alleviated through the use of a foot file, after softening the skin.

Corns

Corns may form when the foot presses against the side of the shoe (usually the small toe) or when two toes are being pressed together. The corn will develop a core or a root that can be very painful. Soft corns usually occur between two toes, especially when the ends of the toes are wider than the middle of the toes. This can be alleviated by wearing a wider-toed shoe or by using padding between the toes that are tender. Hard corns, which are the most common type of corns, result from poorly fitting shoes.

Blister

A blister is a small fluid-filled space that forms between layers of the skin. The blister can be all sizes and shapes, can appear on any part of the foot, and can be filled with a clear fluid or with blood. A blister may form during the breaking-in period for a new pair of shoes, but can also be due to burns, allergic reactions or infections, and excessive foot perspiration. Blisters that have broken should be carefully cleaned out with an antiseptic and covered with a sterile dressing. There are blister-healing bandages on the market that will also help it to heal faster.

Warts

Warts, such as plantar warts, result from viruses. Plantar warts are most commonly found on the soles of the feet. They may be treated through the use of patches containing salicylic acid that are applied to the area on a daily basis. Physicians may also treat plantar warts with applications of liquid nitrogen. This, however, only removes the top layers of the wart so further treatments will be needed until the entire wart is removed.

Morton's Neuroma

Morton's neuroma, caused by the pinching of a nerve between the toes, most frequently occurs between the third and fourth toes. The resulting pain is often experienced as a sharp, burning pain in the ball of the foot or a stinging or numb sensation. The pain can be alleviated by changing footwear, resting feet, and using

arch supports or pads to help remove the pressure from the affected area. In more severe cases, physicians may recommend anti-inflammatory drugs, cortisone injections or even surgery.

Suggested Resources

The Mayo Clinic. www.MayoClinic.com

Web MD. <http://www.webmd.com>

<http://www.hookedonnails.com>

<http://www.beautyweb.com>

Foot Disease

Mark E. Pfeifer

Foot care begins with understanding the structure and changes of the foot as one ages and uses the feet more. The skin of the foot is very sensitive and the environment around it must not be too moist or dry, hot or cold, and without too much pressure; otherwise foot infections can occur. Athlete's foot is caused by fungal overgrowth called *Tinea pedis*. A good way to prevent this is to keep the skin dry. Treatment is soaking the foot in half a cup of white vinegar in a pan of water for 15 minutes 2–3 times a week. Using absorbent powder and allowing shoes to air dry overnight or sit in the sun will also help kill the fungus that may live in the shoes. Mild cases may also be treated with over-the-counter medications, but a foot specialist or skin doctor should evaluate more severe cases. Warts are also caused by a viral infection that invades the skin. They should be treated promptly because they can spread to other parts of the skin or to family and friends.

Nail care is important as well in the elderly and they should be kept trimmed to a comfortable length and contoured to the shape of the toe itself. Performing self-nail trimming/shaping should only be done if one can see the toes fully and reach them easily. Trimming just by "feel" is dangerous and could lead to wounds and infection. Thickened or yellow, brittle, and loose nails are a sign of fungal infection and should be treated by a podiatrist or dermatologist.

In the elderly, circulatory problems in the arteries and veins can cause foot problems. If the lower part of the leg is dark or dusky, one should elevate the leg and

see if the color improves. This may be a sign of vein problems. A cold sensation or bluish discoloration of the toes and loss of hair on the lower legs may be a sign of artery problems. Sensation, or the feeling of touch on the foot can be changed due to an artery problem or more commonly a nerve problem. To look for proper nerve function of the foot, one should be able to tell the difference between light and heavy pressure, sharp and dull, cold and hot. A neuroma, a noncancerous tumor, may occur on the bottom of the foot and cause a nerve type pain with shooting sensations. A specialist should evaluate these. Other bumps and lumps on the foot may be from arthritis or bone troubles and may result in bunions (bumps on the big toes) or hammer toes (deformed toes). A podiatrist or bone doctor should evaluate these since there are surgical and nonsurgical treatments available.

The most important aspect of foot care in any age group, especially the elderly, is the choice and use of proper footgear. When proper footgear is utilized, most foot and ankle problems can be eliminated or greatly lessened. Appropriate protective footwear and stockings are a top priority in the prevention of minor trauma. Shoes must be selected for the specific activity undertaken and walking barefoot should be avoided. Whether walking, running, or participating in sports, feet encounter considerable stress and proper shoe support is essential.

If one already has pain or problems with the feet, professional advice from a podiatrist will help with appropriate shoe selection. During the visit it is important to bring old shoes along so that the pattern of wear/use/and walking style can be evaluated.

When visiting a shoe store, it is important to plan ahead and do the following:

1. Select a store where trained and knowledgeable sales people are available to properly fit the shoe with regard to length, width and depth.
2. Shop in the afternoon; the feet are biggest then due to swelling.
3. Do not assume that the dress shoe size is the same as the athletic shoe size because of additional socks and spreading of feet during activity.
4. Fit the shoe to the larger foot. Remember that with age, feet flatten and get longer and wider so the shoe size should be adapted to the aging process. Shoes should be checked for flexibility, stability, cushioning, shock absorption, and comfort. Style should come last. The heel fit should be checked to

prevent slippage or heel rubbing. Shoe materials should breathe and allow heat and moisture to escape. After new shoe gear is purchased, one should examine the shoes daily for cracks, pebbles, tacks, or anything out of place.

Patient with diabetes, peripheral vascular disease, nerve problems, or arthritis, are strongly urged to seek out early evaluation and treatment to prevent the development of serious problems in the lower extremities and feet. Prevention of problems is key; so check your feet daily, take good care of them and use them well.

Related Topics

▶ Arthritis, ▶ Diabetes, ▶ Neuropathy

Suggested Readings

Dockery GL, Crawford ME (1999) Color atlas of foot & ankle dermatology. Lippincott-Raven, Philadelphia, PA
Subotnick SI (1981) Common foot problems. The Jogger March/April

Suggested Resources

Advances in Skin & Wound Care, The Journal for Prevention and Healing. www.woundcarejournal.com

Foster Grandparent Program

Tambra K. Cain

The first Foster Grandparent Program (FGP) began in 1965, and has expanded to all 50 states of the United States, Puerto Rico, and the Virgin Islands. Foster grandparents provide emotional support, affection, and nurturing for low income, disadvantaged, and/or disabled children. Foster grandparents also provide mentoring to young parents, encouragement to troubled youth, and tutoring to children with low literacy skills.

Foster grandparents are older adults above 60 who have between 15 and 40 hours per week to volunteer.

While additional benefits vary from state to state, foster grandparents are most often provided with monthly training, transportation reimbursement, insurance coverage while volunteering, and an annual physical examination. In addition, foster grandparents who meet certain income criteria may qualify for a small, tax-free stipend to offset the cost of their volunteer work. Currently there are more than 30,000 active foster grandparents in the United States. Foster grandparents serve in day care facilities, hospitals, schools, head start facilities, as well as in residential settings.

President John F. Kennedy created the FGP in 1965 to increase the involvement of persons above 60, who have income limitations. The FGP, as it is today, was authorized in the Domestic Volunteer Act of 1973, and again amended in 1999. While each state has its own program, much of the foster grandparent's work is carried out under the coordination of an independent federal agency, the Corporation for National and Community Service (CNCS), specifically through a program called Senior Corps. The CNCS was signed into legislation in 1994 by President Bill Clinton. In addition to maintaining the FGP, Senior Corps is also responsible for two other senior programs, namely Retired and Senior Volunteer Program (RSVP) and the Senior Companion.

In addition to the modest financial reimbursements of the FGP, there are many other benefits. Volunteers connect with their community in a special way, forming cross-cultural bonds and lifelong associations. Many foster grandparents continue to have a relationship with their foster grandchildren even after their participation in the FGP ends. Participation in programs like the FGP encourages our older population to continue to be active and to lead energetic and dynamic lives. The FGP provides ongoing benefits to both the volunteer and the child.

Related Topics

- [Altruism and volunteerism](#), ➤ [Extended family](#),
- [National Council on the Aging](#)

Suggested Readings

Burgess CE, Maricondi A (1995) Intergenerational sharing and caring: developing and maintaining an adopt-a-grandparent program in your community. American Literary Press, Baltimore, MD

Freundlich M (1997) Medicaid home and community based waivers: a guide for Senior Companion and Foster Grandparent Programs. Corporation for National and Community Service, Washington, DC

Reagan N (1982) To love a child. Bobbs-Merrill, Indianapolis

Stein ES (1994) A time for every purpose: life stories of foster grandparents. Knowledge, Ideas and Trends, Manchester, CT

Suggested Resources

Senior Corps, Foster Grandparents Program pages. Washington, DC (January 2006). <http://www.seniorcorps.gov>

Free-Radical Theory of Aging

Jessica Diggs

According to the free-radical theory of aging, highly reactive molecules called free radicals interact and damage cellular components, leading to cellular dysfunction, aging, and death. This theory was proposed in 1956 by Denham Harman, based on the assertion that aging is a result of a metabolic function, common to all organisms, that is influenced by both genetic and environmental factors. This theory could potentially explain the variability between species during their life span, the occurrence of an increasing proportion of degenerative diseases with age, autoimmune disease, and the life span advantage of females. This theory also provides useful insight into potential mechanisms of extending the life span.

Free Radicals and Reactive Oxygen Species

The term “free radical” refers to a molecule with an unpaired electron. Generally the electrons of stable molecules are paired, making the molecule of neutral charge. If a molecule has an unpaired electron it can associate with another molecule having an opposite charge and an unpaired electron to create a stable molecule with a neutral charge; however when electrons are left unpaired, as in free radicals, these molecules are highly reactive and can react with and cause damage to

other molecules that they encounter, generally irreversibly. Reactions involving free radicals often occur in three stages, (1) *initiation*, the stage in which the free radical is produced; (2) *propagation*, the stage in which the radical reacts with other molecules and generates additional radicals through those reactions; and (3) *termination*, the final stage in which the radical combines with another radical forming a neutral molecule with paired electrons.

Free radicals are ubiquitous and naturally occurring within the body. They can serve useful purposes in the regulation of gene expression, the replication of genetic material, cellular differentiation, and programmed cell death. Free radicals can be generated from several sources including exposure to ionizing radiation, normal metabolism, and aerobic respiration, which are the processes that occur within cells, specifically in the mitochondria of cells, whereby oxygen is utilized to transform energy, consumed as food, into usable energy for the cell in the form of a high energy molecule called adenosine triphosphate (ATP). Some exogenous sources of free radicals include air pollution, cigarette smoke, combustion products, polyunsaturated fats, charred meats, pickled vegetables, and asbestos.

Manifestations of Free-Radical Damage

The manifestations of free-radical damage can be minimal, such as the appearance of wrinkles, secondary to the damage of molecules like collagen and elastin, which provide skin with structure and elasticity, or age spots, which are deposits of “lipofuscin” that are created by the cross-linkage of carbohydrates, proteins, and lipids that accumulate with age; but they can also be very serious. Several degenerative diseases including cancer, arthritis, hypertension, cataracts, and atherosclerosis have been attributed to free-radical damage. Research has shown that the longevity of mammals may be inversely related to free-radical production in heart and kidney tissue as well as the basal metabolic rate. The rate of aging (free-radical damage) of the mitochondria has also been cited as a potential indicator of maximum life span.

Protection against Free-Radicals: Antioxidant Molecules In order to mitigate the damage caused by free radicals, cells have molecules called antioxidants

or free-radical scavengers that help to neutralize these reactive molecules. Two such free-radical scavengers present in cells are the enzymes superoxide dismutase and catalase. Superoxide dismutase converts superoxide radicals into oxygen and hydrogen peroxide; catalase then converts the hydrogen peroxide into oxygen and water. Antioxidant molecules can also be protective against free-radical damage, particularly the antioxidants vitamins A, E (alpha-tocopherol), and C (ascorbic acid), carotenes, selenium, cysteine, uric acid, and 2–6-di-tert-butyl hydroxytoluene (BHT). Supplementing the diet with antioxidants may be protective against some free-radical damage; however exogenous antioxidants may not protect against the damage of mitochondria that is occurring within individual cells.

Protection against Free-Radicals: Caloric Restriction

Caloric restriction, which is accomplished by restricting caloric intake, while ensuring adequate nutrition, has been shown to increase the average life span of experimental animals. While this process does not increase the maximal life span, it does increase the proportion of individuals within a given population that survive to maximum life span. In animal models using rhesus monkeys, reducing caloric intake by 30% resulted in higher activity levels, a lower body temperature, improved glucose metabolism, and a decreased decline in the adrenal hormone dihydroepiandrosterone (DHEA, a precursor to estrogen and testosterone) at 6 years of follow-up. Proponents of this theory have stated that a combination of caloric restriction and an antioxidant-rich diet, with minimal foods that promote free radicals, can lead to a 5–10-year increase in average life span.

Public Health Perspective

In addition to caloric restriction and antioxidant supplementation, other methods proposed to counteract and prevent free-radical damage and aging, include endurance training and control of immune system activation. It is hypothesized that endurance training, which will lead to a reduction in body fat, will in turn decrease free-radical reactions with lipids in skeletal muscles and potentially increase the amount of antioxidants available in the muscle tissue. The immune

system is a likely candidate for efforts to reduce free-radical reactions, because the action of the immune system is mediated in part by free-radical reactions. Early diagnosis and treatment of inflammatory disorders and infections can limit the amount of free-radical generation by the immune system. Although, further studies of free radicals and the relationship to human aging are necessary, current public health measures, such as anti-smoking campaigns and education programs emphasizing healthy nutrition and exercise may already be making an impact toward delaying the aging process.

Related Topics

◆ [Accumulative waste theory of aging](#), ◆ [Cross-linkage theory of aging](#)

Suggested Readings

- Harman D (1992) Free radical theory of aging. *Mutat Res* 275(3–6):257–266
- Harman D (1972) Free radical theory of aging: dietary implications. *Am J Clin Nutr* 25(8):839–843
- Klatz R, Goldman B (1996) *Stopping the clock: why many of us will live past 100—and enjoy every minute!* Keats Publishing, New Canaan, CT
- Hooymaer NR, Kiyak HA (1999) *Social gerontology: a multidisciplinary perspective*, 5th ed. Allyn & Bacon, Boston, MA
- Timiras PS (1994) *Physiological basis of aging and geriatrics*, 2nd ed. CRC Press, Boca Raton, FL

Friendship

Gail E. Souare

As one ages, it is important to recognize that social patterns change. Older adults may retire or take on entirely new work. They may remain in the same neighborhood (aging in place), relocate to a warmer climate, or move closer to family. Friendship patterns in old age may stay the same or change from those focused on work. New friends may be discovered through religious activities, travel, new employment, new learning activities, or volunteer opportunities.

Older adults have more freedom than ever before in choosing their family and friendship patterns. They may move from one location to another with greater ease because of various improvements in modes of travel, such as specially equipped vehicles for persons with functional limitations. Telephones are adapted for persons who are hard of hearing. The use of the Internet enables persons to communicate around the globe through e-mail.

Friends have their own special value; they often share common experiences and similar changes in their lives. Unlike family ties, friendships are voluntary, based on mutual affection and common interests. Friendship generally develops between people who are compatible in terms of their age, activities, and outlook on life. Because friendship involves giving as well as taking, it helps remind people that their lives are useful and important. Loss of friendship through death is inevitable as people grow older, but new friendships can be established at any age. The companionship of one's friends and shared social activities continue to be some of the most satisfying parts of life as people age.

Health Implications

The exact mechanisms by which friendship and social relationships affect health and aging are not well understood; however, there have been some studies to determine the importance of friendships on aging.

Research has shown that the quality of social life for many women actually improves with age; however, little is actually understood about the aging experience in elderly women and how they adapt to changes in aging. One small study of 14 women explored the aging experience among community-living older women participating in activities at a seniors' center. The women reported that the best part about growing older was a sense of freedom and the most difficult was loss of spouse. They all dealt with the changes by maintaining relationships with family and friends, faith, staying physically and mentally active, and staying involved.

Recently, it has been suggested that giving as well as receiving social support may be of benefit. On the basis of evolutionary theories of emotion and altruism, one study sought to test this thesis in a large, ethnically diverse sample of community-dwelling older adults. As expected, levels of social support given were associated with lower morbidity, whereas levels of receiving social support were not.

Australian Longitudinal study

In one of the largest studies of older adults, the Australian Institute of Health and Welfare conducted a 10-year assessment (1992–2002) that tracked the economic, social, behavioral, and environmental factors affecting the health and well-being of people aged 70 and older. Almost 1,500 people were asked how much personal and phone contact they had with their various social networks, including children, relatives, friends, and confidants. The participants were monitored annually for the first 4 years of the study and then at approximately 3-year intervals.

The research team also considered the impact of factors likely to influence survival rates, such as socioeconomic status, health, and lifestyle. Although it found that close contact with children and relatives had little impact on survival rates over the 10 years, those with the strongest network of friends and acquaintances were statistically more likely to be alive at the end of the study than those with the fewest. After controlling for demographic, health, and lifestyle variables, the people in the top third of friends' social networks were found to be 22% less likely to die over the following decade than people in the lowest third. This was evident even if the person had been through major changes such as the death of a spouse or close family members, and the relocation of friends to other parts of the country.

The study concluded that the benefits might be due to the fact that people could choose their friends as opposed to family members. Discretionary relationships, with friends and confidants, as compared with relationships where there is less choice concerning interactions, with children and other relatives, appeared to have important positive effects on survival. The research also suggested that friends might encourage people to look after their health, and help reduce feelings of depression and anxiety at difficult times.

Society needs to include older people more and encourage communities to build the kind of environments that allow social networks to blossom.

Intergenerational Friendships

Intergenerational programs are creative programs and activities that connect children, youth, and elders in volunteer services to each other and to the community. These programs help children improve their school

performance, boost self-esteem, connect with their community, engage with positive role models, learn new cultural and historical perspectives, learn about aging, and better appreciate the legacy seniors have created for them. For older adults, these programs reduce isolation, boost self-esteem, reinforce that they are needed by the community, stimulate mental capacity, promote lifelong learning, reconnect them with their community, increase emotional support, introduce them to new experiences with children from diverse backgrounds, and rekindle the joy of living.

Through these programs, older adults remain productive, useful, and contributing members of society. Intergenerational programs afford older adults an opportunity to participate in meaningful activities and form new friendships. This decreases loneliness, boredom, and depression while increasing self-esteem. Older volunteers report more enriched lives, a rejuvenated sense of purpose, and increased coping skills for their personal struggles. In addition, the sense of purpose, and the friendships that develop from these programs can contribute to the maintenance of good health and can diminish the effects of psychological and physical diseases and disorders.

Related Topics

▶ [Social support](#)

Suggested Readings

- Adams R, Blieszner R, De Vries B (2000) Definitions of friendship in the third age: age, gender, and study location effects. *J Aging Stud* 4:17
- Brown W, Considine N, Magai C (2005) Altruism related to health in an ethnically diverse sample of older adults. *J Gerontol B Psychol Sci Soc Sci* 60(3):143–52
- Cohen S (2004) Social relationships and health. *Am Psychol* 59(8):676–84
- Giles L, Glonek G, Luszcz M, Andrews G (2005) Effect of social networks on 10 year survival in very old Australians: the Australian longitudinal study on aging. *J Epidemiol Community Health* 59(7):574–9
- Hamilton C, Brown S, Alonzo T, Glover M, Mersereau Y, Willson P (1999) Building community for the long-term: an intergenerational commitment. *Gerontologist* 39(2):235–8
- Leon M (2005) Why do friendships matter for survival? *J Epidemiol Community Health* 59:538–539
- Lewittes H (1988) Just being friendly means a lot—women, friendship, and aging. *Women Health* 14(3–4):139–59

Frontal Lobe Dysfunction

Marc D. Winkelman

The cerebral hemispheres compose what most people picture to themselves as the brain: the large, bilaterally symmetrical, dome-shaped organ inside the skull. The surface of the cerebral hemispheres, called the cortex, is thrown into many folds. This arrangement gives it a remarkably large surface area: unfolded, it would cover two full pages of a newspaper. Each hemisphere is divided into four portions (lobes). The frontal lobe, the most anterior, is located above the eyes and behind the forehead and extends back to the ears. The occipital lobe is the most posterior, and the parietal lobe lies between it and the frontal lobe; the temporal lobe is located underneath the frontal and parietal lobes.

Different parts of the frontal lobe have different functions. The symptoms that appear when disease affects the frontal lobes depend on the location and the side. A lesion (i.e., the effect of injury or disease), of the posterior portion of the frontal lobe causes weakness of the face and limbs of the opposite side. A lesion of the posterior inferior left frontal lobe, but not the right side, causes inability to speak and write. Other motor abnormalities follow upon lesions of the anterior portions of both frontal lobes: the gait changes to a slow shuffle; the limbs become rigid; all movement is reduced in quantity; the lips suck and the hands grasp reflexively; speech becomes laconic and reduces to a whisper; and incontinence of bowel and bladder appear.

The frontal lobe is the largest part of the cerebral hemisphere and is larger in humans (30% of the cerebral hemisphere) than in other primates (9% in the monkey); the anterior portion, the prefrontal cortex, accounts for what is uniquely human in us. Bilateral lesions of this region result in characteristic intellectual abnormalities. Patients become inattentive and easily distracted. There is a loss of capacity for abstract thought. They become incapable of solving complex problems, planning for the future, and executing a plan of action. More tangible, easily measured cognitive functions are unaffected, however, including, memory, understanding of language, and the ability to read, describe a route, use tools, operate electronic devices, visualize spatial relationships, and calculate.

Alterations of behavior and personality are a striking feature of diseases and injuries of the anterior and inferior portions of the frontal lobes. Lack of initiative and spontaneity, apathy, and idleness of thought, speech, and action are the most common. The opposite state can also occur: a person may become hyperactive and spend hours in an aimless, meaningless pursuit, such as sorting papers in an attic. There may be a decline in manners, social graces or decorum; for example, using racial slurs or cursing in church. Sexual disinhibition, including provocative remarks and self-exposure, is typical. Placidity is a notable feature; worry, anxiety, self-concern, complaints of chronic pain, and depression, are all reduced in frontal lobe disease. Patients may fail to wash, bathe, groom, and apply make-up properly. They may have body odor, stains on their clothes, and inappropriate clothing combinations. Some patients feel compelled to make silly jokes, inappropriate to the situation. Emotional response is blunted; for example, a patient fails to sympathize with a friend's misfortune or to feel grief when a relative or friend dies. Patients lack insight into their deficiencies. They become mentally rigid and inflexible; for example, unable to see another's point of view or insistent upon eating the same meal every day. Oral behavior changes; patients may put objects in their mouths, consume excessive amounts of food or drink, or eat only candy. Some patients display "utilization behavior," in which seen objects are grasped and manipulated in spite of their irrelevance to the task at hand (e.g., the patient may repeatedly open and close a door or switch a light on and off).

Frontal-lobe degeneration is a disease of nerve cells of the cerebral cortex, which begins in the frontal lobes and only later spreads to other parts of the brain. Its early symptoms are the behavioral and intellectual abnormalities of bilateral frontal-lobe disease, as described earlier. It is the third commonest degenerative dementia, after Alzheimer's disease and dementia with Lewy bodies; it accounts for 3–4% of cases of dementia. It is often hereditary: 38–43% of the patients have an affected first-degree relative (parent, sibling, child). Most people think of dementia as synonymous with Alzheimer's disease, which usually presents itself as a defect in memory, betraying its typical site of inception in the temporal lobe. Frontal-lobe degeneration, presenting as disinhibited behavior or a personality change, often creates the false impression of a psychiatric illness, rather than a neurological one. It

is, however, probably fair to say that such symptoms beginning in later life are more likely due to a dementing illness than a psychiatric one.

Related Topics

➤ [Alzheimer's disease](#), ➤ [Dementia](#)

Suggested Readings

Neary D, Snowden JS, Gustafson L et al (1998) Frontotemporal lobar degeneration: a consensus on clinical diagnostic criteria. *Neurology* 51:1546–1554

Perry RJ, Miller BL (2001) Behavior and treatment in frontotemporal dementia. *Neurology* 56:S46–S51

Victor M, Ropper AH (2001) Adams and Victor's principles of neurology. McGraw-Hill, New York, pp 464–477

Gallbladder Disease

Stephen Haggerty

Gallbladder disease is a concern for people above 65. Cholecystectomy, or removal of the gallbladder, is the most common reason elderly people undergo abdominal surgery, partly because the prevalence of gallstones increases progressively with age. At all ages, gallstones are more prevalent in women, occurring in about 16% of women between the ages of 50 and 59 and 31% between the ages of 80 and 89.

There are several common manifestations of gallstone disease in elderly patients. These include recurrent pain, infection, gangrene and perforation, pancreatitis, and common bile duct (CBD) stones causing obstruction, jaundice, and possibly infection.

The classic presentation of gallstone disease is episodic or colicky pain in the right upper quadrant of the abdomen, starting between 30 and 120 minutes after eating. The pain may radiate to the back or shoulder blade and the patient may have nausea or occasional vomiting. The pain may last from minutes to several hours. Severe prolonged pain or constant pain is a sign of gallbladder infection. Severe epigastric pain radiating to the back may indicate pancreatitis, while the passage of CBD stones can cause excruciating pain that slowly subsides. Many nonspecific symptoms may also be associated with gallbladder disease, especially in the elderly. These include dyspepsia, bloating, indigestion, gassiness, and fatty food intolerance. In addition, elderly patients are more likely to have few or no symptoms until they reach a point of severe infection. Thus, delay in diagnosis is more common in this population. Any clinician caring for elderly patients must have a high index of suspicion for gallbladder disease.

A thorough physical examination is important. Jaundice or yellowing of the eyes, is a sign of elevated bilirubin and can indicate CBD stones. Palpation of the abdomen with attention to the right upper quadrant is the most important component of the physical examination. The degree of tenderness can indicate the severity of inflammation or infection of the gallbladder. Guarding or rebound tenderness are signs of peritonitis and may indicate gangrenous or perforated cholecystitis. On the contrary, the examination in an elderly patient can also be misleading and they may not have any signs of peritoneal irritation on examination.

Some laboratory tests are important. Elevated white blood cell count is a sign of infection or severe inflammation of the gallbladder. Elevated liver transaminases may be seen in cholecystitis because of irritation of the liver. Elevated bilirubin and alkaline phosphatase are indicators of CBD stones. Amylase and lipase are also checked because they are elevated with gallstone pancreatitis.

Combining the history, physical, and laboratory data with imaging tests and possibly endoscopy can make the diagnosis. The most informative test to rule in or out gallstone disease in the elderly is transabdominal ultrasonography of the liver, bile ducts, and gallbladder. Signs of acute cholecystitis include gallbladder wall thickening and fluid around the gallbladder. A dilated CBD is associated with CBD stones about 50% of the time. Computed tomography (CT) scanning of the abdomen and pelvis identifies gallstones less accurately, but can effectively rule out other causes for symptoms such as diverticulitis, small intestine disease, ulcers, or cancer. Hepatobiliary nuclear imaging (HIDA scans) can add valuable information to the work-up and may show obstruction of the gallbladder duct, which is diagnostic for cholecystitis. Magnetic resonance imaging (MRI) has become valuable to assess the bile ducts when stones or obstruction are suspected. The gold standard for nonoperative evaluation of the biliary tree is endoscopic retrograde cholangiopancreatography (ERCP). Using a scope advanced into the duodenum, the internal opening of the bile duct is examined and if stones are found, they can be removed. ERCP is more than 95% successful in clearing the duct of stones and is performed prior to gallbladder surgery.

Gallstones are often identified in many patients as an incidental finding, however, prophylactic cholecystectomy is generally not recommended.

Surgical removal of the gallbladder, known as cholecystectomy, is the treatment for nearly all gallbladder diseases. Most gallbladder operations in the United States are approached in a minimally invasive fashion, although up to 5% of the time, it is necessary to convert to an open procedure. Studies show that laparoscopic cholecystectomy is safe and feasible in elderly patients, including octogenarians. It allows removal of the gallbladder through four incisions of less than half inch. The recovery is shorter and there is less pain. Unfortunately, 12% of patients above 80 require an open operation after the laparoscopic procedure.

Cholecystostomy, or drainage of the gallbladder infection through a catheter is an alternative to cholecystectomy, which has less morbidity and mortality in elderly sick patients. An advancement in this procedure is percutaneous cholecystostomy performed using ultrasound guidance to place the catheter through the abdominal wall into the gallbladder without an operation. Other nonoperative treatment modalities such as contact dissolution using extracorporeal shock wave lithotripsy and oral dissolution using bile acids to break down the stones have generally poor results and a high rate of recurrent stones.

Patients with intermittent classic abdominal pain and gallstones are considered to have symptomatic cholelithiasis or chronic cholecystitis. These patients have a considerable chance of hospitalization for the symptoms, developing cholecystitis, pancreatitis, or CBD stones. In addition, elderly patients are more likely to present with minimal symptoms but have severe disease, causing them to have a higher complication rate than younger patients. Therefore, patients with symptomatic cholelithiasis should have a laparoscopic cholecystectomy if they are at an acceptable operative risk.

Patients who have an infection of the gallbladder are considered to have acute cholecystitis. They usually present with constant abdominal pain, tenderness, a high white blood cell count, stones, and a thick gallbladder wall on ultrasound. Admission to the hospital is necessary for fluids, antibiotics, bowel rest, and surgical consultation. Removal of the gallbladder within 48 hours is currently the standard of care. Studies have clearly shown that patients do better by promptly removing the gallbladder as opposed to giving antibiotics and letting it “cooldown” for 4–6 weeks before an operation. If a patient presents with signs of gangrene or perforation, he or she should have either emergent cholecystostomy or cholecystectomy. The classic presenting signs are severe pain, exquisite tenderness with guarding, high white blood cell count, and air in the gallbladder wall or fluid around the gallbladder on ultrasound. Patients above 65 have a much higher chance of having severe disease requiring an emergency operation than those who are younger. The postoperative course is generally longer in elderly patients with severe infections, sometimes requiring the intensive care unit and a long course of antibiotics with a mortality rate nearly 10% in the elderly.

The most severe form of cholecystitis leads to perforation of the gallbladder. Gallbladder perforation can cause bile peritonitis, with a fistula to the skin, bile duct, or bowel. Frequently, the diagnosis is not made until the time of the operation. Many times the patient needs an open operation to remove the gallbladder, lavage the abdomen, and drain of any abscess.

CBD stones are another complication of gallstones with a rising incidence with increasing age. If the diagnosis is made preoperatively, an ERCP and sphincterotomy is done to clear the duct of stones. Laparoscopic cholecystectomy will then remove the gallbladder and stones, preventing future complications. If the duct has not been assessed preoperatively, and there is suspicion of CBD stones, intraoperative cholangiogram is used to image the biliary tree. If stones are found, there are three options: (1) laparoscopic CBD exploration, (2) open CBD exploration, and (3) postoperative ERCP. The choice depends on the skill and experience of the surgeon in managing CBD stones laparoscopically and the success rate of the gastroenterologist in removing the stones endoscopically. The gold standard is open surgical CBD exploration by opening the duct and flushing or grasping the stones.

Gallstone pancreatitis occurs when a CBD stone passes into the duodenum, through the sphincter, causing a backflow of bile into the pancreas. This activates the digestive enzymes in the pancreas, causing severe inflammation of the organ. Once the pancreatitis is resolved, laparoscopic cholecystectomy is performed to prevent future bouts of pancreatitis.

Related Topics

[Abdominal pain](#), [Pancreatitis](#)

Suggested Readings

- Borzellino G et al (1999) Emergency cholecystostomy and subsequent cholecystectomy for acute gallstone cholecystitis in the elderly. *Br J Surg* 86:1521–1525
- Cameron JL (2004) *Current surgical therapy*, 8th ed. Elsevier/Mosby, Philadelphia, PA
- Rosenthal RA, Zenilman ME, Katlic MR (2001) *Principles and practice of geriatric surgery*. Springer, New York

Gastroesophageal Reflux Disease

Rodney A Samaan

Gastroesophageal reflux is commonly known as “heartburn.” All individuals have normal reflux of stomach acid (whose function is to digest food) into the esophagus causing an intermittent occurrence of a sensation of heartburn. However, when this occurrence becomes a chronic problem such as weekly heartburn or acid regurgitation symptoms, the patient has gastroesophageal reflux disease (GERD).

The prevalence of GERD is substantial with 10–20% of patients reporting weekly symptoms and 15–40% noting this monthly. The elderly describe even higher rates of GERD and subsequent complications (inflammation, stricture, and cancer of the esophagus). In 2000, the direct costs attributed to GERD were estimated at \$10 billion by the Agency for Healthcare Research and Quality (AHRQ).

The reasons for GERD are complex and include the following contributors: (1) the abnormal relaxation of the lower esophageal sphincter (LES), (2) impaired esophageal motility, and (3) impaired esophageal mucosal integrity.

The LES is a muscular structure, whose role is to prevent gastric (stomach) acid and pepsin (an enzyme that helps to digest food), which are highly erosive, from entering into the esophagus. The transient relaxation of the LES when not swallowing causes the reflux into the esophagus. In the elderly, the situation is worsened because they are more likely to take medications that relax the LES such as nitrates (i.e., nitroglycerin and isosorbide nitrate), calcium channel blockers (a blood pressure medication), benzodiazepines (antipsychotic medications), and antidepressants. Furthermore, patients with a hiatal hernia (a disorder where a portion of the stomach protrudes upward into the chest through an opening in the diaphragm) are more likely to have abnormal relaxation of the LES.

Elderly patients also have less saliva production and impaired propulsion of food through the esophagus. There are also many diseases that can decrease the motility of the esophagus such as diabetes mellitus, Parkinson’s disease, and stroke, which are more likely to

be found in elderly individuals. Finally, medications such as nonsteroidal anti-inflammatory drugs (NSAIDs), potassium supplements, and bisphosphonates (medications for osteoporosis) can directly damage the esophageal mucosa when taken for long periods.

The typical symptoms of GERD include heartburn, taste of acid, belching, and nausea. However, in the elderly, there is a decrease in the pain perception of GERD, which may be one reason for the higher incidence of complications since they are more likely not to have symptoms. Heartburn is a sensation of pain that usually localizes to the abdomen; however, one can feel the pain in the chest, throat, and back. It is more likely to occur when lying down, after eating large meals or exercising.

Other symptoms that can be associated with GERD include difficulty in swallowing, which may begin with solids and progress to liquids and solids, asthma, cough, hoarseness, and globus sensation (a feeling of fullness in throat). Dysphagia (pain with swallowing) is an important clinical symptom because it can indicate a worsening of GERD leading to a stricture (narrowing of the esophagus) or a more serious type of cancer (Barrett’s esophagus) related to the chronic reflux of gastric contents into the esophagus.

The risk of Barrett’s esophagus is as high as seven times in patients with recurrent symptoms of chronic reflux and 43 times in patients with longstanding and severe symptoms compared to patients without symptoms of reflux.

The diagnosis of GERD is based on the patients’ symptoms and usually requires no further testing. However, patients with atypical symptoms, such as chest pain, cough, and hoarseness, who do not have typical risk factors for GERD (i.e., chronic NSAID users, tobacco and alcohol use), warrant further diagnostic evaluation to confirm the diagnosis. This evaluation may include ambulatory pH (pH indicates the acid level of a substance) monitoring (a pH probe is inserted down the esophagus and remains there for 24 hours), which indicates the frequency of gastric acid reflux and its correlation to specific activities such as eating and exercise.

The next step may be the evaluation of esophageal monitoring, which measures the pressure (manometry is the measure of pressure) of the LES.

Finally, the clinician may decide to refer the patient to a gastroenterologist to perform a barium (a type

of dye use, which will be enhanced on an x-ray) swallow or upper gastrointestinal (GI) endoscopy. Endoscopy is one of the most common procedures done by gastroenterologists, which entails inserting a scope (camera) down the esophagus to the LES and stomach. This procedure is done under local anesthesia with minor complications; many times a biopsy will also be taken of the tissue from the esophagus or stomach to evaluate for cancer or irritation commonly referred to as esophagitis or gastritis.

The barium swallow is a procedure where a patient swallows barium and then x-rays of the abdomen are taken during the ingestion and swallowing of the barium; this will help determine whether there is any narrowing in the esophagus or any major ulcers in the stomach.

One of the benefits of the endoscopy, which is a limitation of the barium swallow, is that you can take biopsies (tissue samples of the esophagus and stomach) and better determine a diagnosis. However, the benefit of a barium swallow is that it is less invasive without the risks of anesthesia and esophageal perforation.

The goal in treating GERD in the elderly is threefold: (1) to alleviate the painful symptoms and discomfort with medications and behavior changes, (2) to prevent progression to future complications (i.e., Barrett's esophagus and stricture), and (3) to treat and evaluate complications if they occur.

Some of the behavior changes that can help alleviate and prevent reflux symptoms include encouraging patients not to eat 3 hours before bedtime, elevating the head of the bed, avoiding tobacco, caffeine, and alcohol, and finally replacing (if possible) chronic medicines to ones that are less likely to relieve the LES.

The medical regimens used to treat GERD include antacids, such as Maalox or Mylanta, motility agents (these are helpful in patients with diabetes who may have GERD secondary to gastroparesis—paralysis of the stomach) such as metoclopramide, erythromycin, and established agents called histamine blockers (H₂) such as famotidine and ranitidine (cimetidine should be avoided because of side effects).

The latest drugs for GERD are the protein pump inhibitors (PPI) such as pantoprazole, omeprazole, lansoprazole, and rabeprazole. These have the greatest ability to inhibit gastric acid secretion and relieve patients of their heartburn symptoms. In a meta-analysis (a review of multiple clinical trials on a specific treatment regimen), the rates of healing with a PPI compared to H₂ blockers was 84% versus 52% and the relief of heartburn symptoms was 77% versus 48%. However, PPIs have

more side effects than the H₂ blockers, which include headaches, diarrhea, and abdominal pain.

If behavioral interventions and medications do not resolve GERD, many gastroenterologists would refer the patient to a surgeon for a fundoplication (where the top part of the stomach is wrapped around the lower part of the esophagus, which prevents reflux) procedure. However, in a recent analysis of clinical trials, surgery was found to be not better than medical therapy and in those who had surgical therapy, 10–65% of these patients continued to require medical therapy with PPIs. Longer follow up of patients need to be done to determine whether surgery is needed in patients with refractory GERD.

Related Topics

➤ [Chest pain](#)

Suggested Readings

- Collen MJ, Abdulian JD, Chen YK (1995) Gastroesophageal reflux disease in the elderly: more severe disease that requires aggressive therapy. *Am J Gastroenterol* 90:1053–1057
- Huang X, Zhu HM, Deng CZ et al (1999) Gastroesophageal reflux: the features in elderly patients. *World J Gastroenterol* 5(5):421–423
- Raiha IJ, Impivaara O, Seppala M et al (1992) Prevalence and characteristics of symptomatic gastroesophageal reflux disease in the elderly. *J Am Geriatric Soc* 40:1209–1211

Suggested Resources

- Ip S, Bonis P, Tatsioni A et al Agency for Healthcare Research and Quality. Comparative effectiveness of management strategies for gastroesophageal reflux (GERD) disease. Comparative effectiveness review No 1. Agency for Healthcare Research and Quality, December 2005. www.effectivehealthcare.ahrq.gov/reports/final.cfm

Gender

Sarah Smith

Historically, gender and sex have been used interchangeably, reflecting the belief that masculinity and femininity are determined by anatomy. From this

perspective, masculine gender expression follows from male chromosomal and genital sex, and feminine gender from female sex. Increasingly, however, this link between biology and behavior has been challenged as social theorists and scientists have demonstrated the analytic utility of differentiating gender from sex. Emphasizing gender as social and sex as biological illuminates the historical and cultural specificity of gender expression, distinct from chromosomal and genital sex.

The separation of gender and sex can be traced back to early feminist critiques of biological determinism. Feminists argue that belief in “biology as destiny” naturalizes male dominance and rationalizes strict gender roles. Women are expected to be nurturing, attractive, emotional, weak, and subordinate to men; whereas, men are the strong, rational, objective, and financial providers. Deviations from these gender norms can result in a variety of social and economic sanctions including stigma, alienation from family and friends, lost work, and lower self-esteem. Furthermore, masculinity confers a higher value in patriarchal societies, as many of the masculine traits are more “positive” attributes. The distinction between gender and sex has gradually become accepted in social theory, psychology, and science; however, the exact relationship between gender and sex, as well as the traits that form gender, remain contested.

Historically, feminine men and masculine women have been pathologized in scientific discourses; however, there is now a growing awareness that sex/gender incongruity is not necessarily unhealthy. For example, in the field of psychology, individuals with a recognized gender identity disorder may be advised by psychologists to live as the desired gender, perhaps even undergo sex reassignment surgery (SRS) to match one’s sex and gender. Others may not experience dissonance between their gender expression and body and choose not to seek SRS.

Social scientists examining gender roles have illuminated the cultural and historical specificity of gender. The meaning and value of feminine and masculine traits appear to change over time and space, supporting the notion that sex and gender are truly distinct and autonomous categories. Does femininity and masculinity appear to be mutually exclusive categories: an individual may be high in both masculine and feminine characteristics, and the expression of each may be context-dependent. Some researchers, however, continue to argue that gender comprises varying degrees of biology, psychology, and culture.

More recently, feminist and queer theorists have questioned the supposed biological fixity of sex, noting how like gender, sex is socially constructed. These theorists and researchers argue that the dichotomy of male/female fails to capture the actual diversity of biological sex. Thus, sex, like gender, is falsely constructed, obscuring individual variation and cultural meanings.

From an aging perspective, the distinction between gender and sex is useful because it highlights shifts in gender expression and expectations over the life span. One’s biological sex may remain constant, but gender can be experienced as shifting and contingent on one’s ability to conform to gender roles and stereotypes. Appearance, behavior, and role change during the aging process, thereby affecting the experience of gender.

Declining hormone production affects the gendered appearance of both men and women. Femininity is associated with soft, smooth, spotless skin; thus, wrinkles, age spots, and loss of skin elasticity—normal results of aging—distance older women from feminine ideals. Feminine beauty is intimately tied to youthfulness. Cosmetic surgery, botox injections, and antiaging cosmetics are all geared to retaining feminine beauty standards into old age. Similarly, the loss of muscle mass and declining virility impacts men’s experience of masculinity. The growing market and use of prescription drugs for erectile dysfunction is testament to our cultural concern with maintaining masculine ideals throughout men’s lifetime.

Men may also struggle with gender as they age because their roles dramatically shift. Retirement can be a particularly stressful phase in the lives of men. No longer the traditional “breadwinner,” men may search for new ways to maintain the masculine ideals of productivity. In the United States, women are still underrepresented in the workforce and continue to earn less money than men in similar positions. Thus, declining productivity and retirement may affect women differently. Older women may not suffer as much from role change, as from worsening financial status. Older women are more likely to be poor than older men.

Because of gender differences throughout the life span, gender may play a complicating role in models of “successful aging,” which emphasize personal autonomy. Men may be more “successful” because a lifetime of masculine gender socialization has held autonomy, independence, and self-concern in high regard. Similarly, gender seems to impact attitudes, knowledge, and expectations around aging.

Unfortunately, the intersection of gender and age is under-researched and undertheorized by social scientists and gerontologists. Nevertheless, there is an emerging body of interdisciplinary work in the field of aging that has begun to move gender from a demographic category to a complex, structuring feature to the experience of aging.

Related Topics

[Femininity](#), [Feminism](#), [Intersexuality](#), [Masculinity](#), [Queer](#), [Transgenderism](#), [Transsexuality](#)

Suggested Readings

- Chodorow N (2004) *Femininities, masculinities, sexualities: Freud and beyond*. University of Kentucky Press, Lexington, KY
- Fausto-Sterling A (2000) *Sexing the body: gender politics and the construction of sexuality*. Basic Books, New York
- Kimmel MS (2000) *The gendered society*. Oxford University Press, New York
- Kolb P (2002) *Developmental theories of aging*. Columbia University Press, New York
- Nadien M (2000) *Gender, health, and behavior among aging North Americans*. Pabst Science Publishers, Lengerich, Germany

Gender Role

Sana Loue

Traditionally, one's biological sex, gender role, and social identity have been linked. More recently, however, scholars have argued that sex is a function of biology, while gender is a function of culture. Accordingly, the terms "male" and "female" have been said to refer to sex, while the terms "masculinity" and "femininity" are used to refer to gender. The term "gender role" is used to refer to what an individual says or does to indicate to others and to himself or herself whether one is male, female, transgender, or androgynous.

In many societies, the adoption of a certain manner of dress or behavior is associated with masculinity or femininity, which is often equated with being male or female. As an example, Dick of Dick and Jane embodied the all-American ideal of what a boy should

be: confident, responsible, organized, and resourceful. In contrast, Jane was depicted wearing a different outfit on every page, each outfit appropriately accessorized. Another example is provided by the "sworn virgins" of northern Albania, who assumed the dress and behavior that was societally expected of men. This was often done to avoid marriage to an unwanted suitor or to become eligible to be the head of the family and a legal heir, which were the roles ordinarily reserved for men.

Related Topics

[Femininity](#), [Gender](#), [Masculinity](#), [Transgenderism](#)

Generation Gap

Nancy Mendez

Generation gap is a difference in values and attitudes between one generation and another, especially between young people and their parents. These differences stem from older and younger people not understanding each other because of their differences in experiences, opinions, habits, and behavior.

History has always seen some degree of generational differences. For instance, women in the 1920s shocked their elders by wearing short skirts and bobbed hair. However, the term "generation gap" came into wide use in the United States and Europe during the 1960s. It described the cultural differences between the baby boomers and their parents. During this era, the differences between the two generations were exaggerated in comparison with previous times. There were major differences in many things such as music, fashion, drug use, and politics. Experts suggest that this situation may have been created because of the extraordinary size of the baby boomer generation, which in turn gave them a greater sense of power and influence. The younger generation was willing to rebel against societal norms to a previously unseen degree.

Despite generational divides, there is evidence that the gap is shrinking in many families. Parents and grandparents today are more youthful in appearance and attitude. The older generations now wear jeans

and sneakers. They surf the Internet and listen to their iPods. Athletic parents and grandparents enjoy rollerblading, snowboarding, and rock climbing with their children.

Another theory behind the lessening of the generation gap is the increase in multigenerational households. According to the US Census of 2000, 3.9 million American households consist of three or more generations living together. Housing shortages, high cost of living, and single parents are reasons for the increase in multigenerational households. The result is that more children will get the opportunity to know not only their grandparents, but in some instances their great-grandparents as well. Grandparents provide important emotional support, childcare, and ties to the past as well as acting as go-betweens in the family, particularly when there are disagreements between teenagers and parents. Although teenagers did say they spent more time with friends, studying or working than with their grandparents, many suggested that closeness with them remained even when the amount of time they spent with them declined.

Related Topics

➤ [Baby boomers](#), ➤ [Intergenerational hierarchical boundary](#)

Suggested Readings

- El Nasser H, Grant L (2005, June 9). Diversity tints new kind of generation gap. *USA Today*, pp A4
- Harms W (2000) Survey: generation gap closing. *University of Chicago Chronicle*, 20(4) (online journal)
- McGraw J (2001) Closing the gap: a strategy for bringing parents and teens together. Simon & Schuster, New York

Generativity

Clare A. Gideon

The notion of generativity is rooted in psychosocial personality theory conceived by Erik Erikson (1902–1994), who assumed that individuals must

cope with specific developmental issues as they progress through life. Erikson believed that there are eight distinct psychosocial stages of development, each characterized by a different psychological “crisis,” which must be resolved before advancing to the next stage. A crisis occurs when the social environment makes demands on an individual that can be addressed in an adaptive or maladaptive manner. If the individual is unable to make an adaptive shift in their perspective to address these social demands, they will continue to struggle with this issue later in life. However, if the individual is able to adapt to the new situation, they can develop new strengths and virtues that prepare them for the next, more advanced, developmental stage.

Passage from one developmental stage to the next is not automatic and the individual’s environment can help or hinder progress. For example, social environments may help resolve a conflict by providing social opportunities to support growth. Alternatively, the social environment may be too rigid and can stunt the personal growth of the individual. Erikson believed that the stages must be experienced in a set sequence that is predetermined by nature.

If an individual has successfully adapted to the earlier six stages of development (trust versus mistrust; autonomy versus self doubt; initiative versus guilt; competence versus inferiority; identity versus role confusion; intimacy versus isolation), the individual can reach a psychosocial crisis of generativity versus stagnation, Erikson’s seventh psychosocial stage of development. This stage generally occurs during middle to late adulthood, typically between the ages of 40 and 65, and is prompted by social demands such as marriage, parenthood, and career. The primary focus of this stage is to assist younger generations in developing and leading productive and fulfilling lives. If the crisis is not successfully resolved, the individual may remain more self-centered and self-absorbed, focusing primarily on his or her own needs and not the needs of others. Consequently, later in life when the individual feels that he or she has done nothing to benefit the next generation, leave a lasting legacy, or is not a productive member of society, then they experience stagnation. This can result in lasting depression as older adults view their life as lacking meaning and purpose.

Generativity, however, is the direct opposite of this social and emotional stagnation. Erikson and others, referred to generativity as an individual’s ability to look beyond himself or herself and to care for others as well as have concern for future generations. This care and

concern is directly related to the individual's ability to experience love for others, the virtue or psychological strength developed through resolving the earlier psychosocial crisis of intimacy versus isolation. Intimacy in earlier phases necessitates that love and adoration be reciprocated between two people; however if an individual develops generativity, he or she is able to love in a more mature and selfless fashion, without the need to feel love in return. Theorists have identified a number of generative activities, including teaching, the arts, and social or environmental activities. However, many agree that the most important act of generativity is parenting, as an individual's children are his or her living legacy. By caring for and facilitating positive attributes in children, an individual may indirectly guide and care for future generations.

Research investigating generativity has been limited by the challenge and variability in operationally defining the theoretical concept of generativity. Erikson himself did not explicitly define generativity in operational terms. As a result, many researchers have turned to investigating adult psychosocial development by studying developmental changes in the context of potentially generative activities, such as work and parenting. However, some empirical scales have been developed and are being employed to investigate generativity in a variety of contexts, including the relationship between spirituality, religiosity, and generativity as well as the assessment of generativity in different populations and longitudinally before and after national tragedies or across the life span. As this area of empirical research is still relatively young, much of it is still exploratory in nature.

The theoretical concept of generativity has a number of important implications. For example, generative concepts have been considered when developing interventions with adults in middle to late adulthood who may be struggling with concerns regarding meaning and purpose of life. A number of psychotherapeutic approaches have been designed to assist individuals by making normative phase of life transitions, such as the adaptation to the crisis of generativity versus stagnation, including life review and reminiscence therapies.

Related Topics

[Adult development](#), [Altruism and Volunteerism](#),
[Depression](#), [Generation gap](#), [Intergenerational hierarchical boundary](#), [Isolation](#), [Wisdom](#)

Suggested Readings

- de St. Aubin E, McAdams DP, Kim TC (2004) *The generative society: caring for future generation*, 1st ed. American Psychological Association, Washington, DC
- Erikson EH, Erikson JM (1981) On generativity and identity. *Harvard Educational Review* 51:249–269
- McAdams DP, de St. Aubin E (1998) *Generativity and adult development: how and why we care for the next generation*. American Psychological Association, Washington, DC
- Vaillant G, Milofsky E (1980) Natural history of male psychological health: IX Empirical evidence for Erikson's model of the life cycle. *Am J Psychiatry* 137:1348–1359

Geriatric Medicine

Rebecca Schlachet

Geriatric medicine is a branch of medicine that focuses on the prevention, diagnosis, and treatment of health-care problems of the older population, specifically above 65. Social and economic conditions of this population are also a focus of geriatric medicine as they impact the health care received by the patient. Personnel involved in this field include physicians, nurses, social workers, and case managers. Physicians who care for the aged population are called geriatricians. There is a certification process for geriatricians in the fields of internal medicine, family medicine, and psychiatry that involves specialized training and board certification in geriatric medicine. Goals of those involved in this field include improving function, health, and well-being of the older patient.

The geriatric population is large and expanding. In 2003, there were 35.9 million Americans above 65. Americans aged 45–64 increased to 39% during the current decade; therefore, these Americans will reach above 65 in the next 2 decades. It is estimated that one in eight Americans are older. Life expectancy for those reaching 65 is an additional 18.2 years. It is estimated that by 2030 the older population will be more than double, reaching 71.5 million. In addition, the number of Americans of age 85 and older is expected to increase from 4.7 million in 2003 to 9.6 million in 2030.

Those practicing geriatric medicine must take into account the demographic data relating to the 65 years

and older population in designing appropriate care. In 2003, minorities accounted for 17.6% of older persons (8.2% African American, 2.8% Asians or Pacific Islander, 5.7% Hispanic, less than 1% American Indian or Native Alaskan, and 0.5% being of two or more races). It is projected that by 2030, minority groups will represent 26.4% of the older population. Older women outlive men, which is reflected in the 21 million older women versus 14.9 million older men living in 2003. Seventy-one percent of older men versus 41% of older women, are married; 43% of older women were widows in 2003. In regard to habitation, it is estimated that 31% of noninstitutionalized older people live alone and half of women above 75 live alone. Income of this population differs according to sex: the median income for males in 2003 was \$20,363 and for females \$11,845. Also, for one-third of Americans above 65, Social security benefits constitute 90% of their income. In 2003, 10.2% of older Americans met the poverty level and 6.7% were classified as near poor.

In caring for this unique population, the geriatrician must tailor the patient assessment to look for conditions that are common in the elderly population and may impact the patient's function. Often common problems will go unnoticed and unreported if not looked for because the patient may not recognize the problem, may be embarrassed to report the problem, or may think it is part of the normal aging process. Therefore, in addition to a standard medical history and physical exam, the geriatric assessment screens for visual impairment, hearing impairment, dental problems, malnutrition and weight loss, urinary incontinence, balance difficulty, ability to perform daily activities, gait impairment, falls, and medications; it is common for older patients to be on multiple medications that can cause side effects or interact with one another. In this age group, the prevalence of Alzheimer's disease, other dementias, and cognitive impairment rises considerably; therefore cognitive assessment is commonly performed.

The psychosocial aspect of the geriatric assessment includes an assessment of the patient's social support, economic status, safety of living environment, spirituality, and access to personal and medical services. The physician will also screen for the presence of psychiatric conditions, especially depression that can cause significant morbidity. Discussion and preparation of advanced directives and durable power of attorney for health care are important in the event the

patient becomes unable to communicate his or her wishes.

Considering the geriatric assessment above, it is apparent that geriatricians take care of older people, not just their diseases. Therefore, those who practice geriatric medicine recognize and address the interdependent nature of medical, social, and mental health issues in this patient population. An example of this is addressing the patients living arrangement as this may impact how well the patient's medical condition is cared for, patient satisfaction with their living situation, safety, and access to support services. Common living situations include single homes, nursing homes, or community-based long-term care. If the patient is living independently he or she may need more help in accessing support services than a patient living in an atmosphere that provides support, such as a nursing home. Depending on the living situation, the physician will communicate with and give direction to others who are involved in the care of the patient such as nurses, family members, or social workers.

It is also important to recognize that the geriatrician manages chronic diseases, which increase in frequency with age. Chronic diseases commonly found in this population include heart disease, arthritis, hearing impairment, hypertension, diabetes, and chronic obstructive pulmonary disease. These diseases do not have cures and must be monitored and managed with the best available treatments. The patient is usually seen at regular intervals to assess their status and see that the treatment plan is optimized; this approach will help maximize quality of life and minimize the damaging effects of chronic disease on the body. It is important to recognize that palliative care becomes more common in this age group as the incidence of life-limiting illnesses increases. The illness may be chronic or acute; however, in either case there often is no curative treatment or the patient may choose not to undergo treatment. If this is the case, the geriatrician will help the patient maintain function and feel comfortable throughout this final stage of life.

The American Geriatrics Society Core Writing Group of the Task Force of the Future of Geriatric Medicine lists five goals that they feel are essential to improving the health, functioning, and well-being of older persons. These are:

1. To ensure that every older person receives high-quality, patient-centered health care
2. To expand the geriatrics knowledge base

3. To increase the number of health-care professionals who employ the principles of geriatric medicine in caring for older persons
4. To recruit physicians and other health-care professionals into careers in geriatric medicine
5. To unite professional and lay groups in the effort to influence public policy to continually improve the health and health care of seniors.

In addition to having available, well-trained, and knowledgeable caregivers for these patients, they also need to have the means to afford health care and medications.

Related Topics

- ▶ Death, ▶ Durable power of attorney, ▶ Ethics,
- ▶ Legal aspects of aging, ▶ Medicaid, ▶ Medicare,
- ▶ Nursing home, ▶ Social support, ▶ Spirituality

Suggested Readings

American Geriatrics Society Core Writing Group of the Task Force on the Future of Geriatric medicine (2005) Caring for older Americans: the future of geriatric medicine. *J Am Geriatr Soc* 53:S245–S256

Duthie EH, Katz PR (1998) Practice of geriatrics, 3rd ed. Saunders, Philadelphia, PA

William RH et al (eds) (2003) Principles of geriatric medicine and gerontology, 5th ed. McGraw-Hill, New York

Suggested Resources

Administration on Aging, Department of Health and Human Services. A profile of older Americans, 2005. revised 5/20/05. <http://www.aoa.dhhs.gov/prof/Statistics/profile/profiles.asp>

Geriatric Psychiatry

Amy M. Kilbourne

Geriatric psychiatry is the study of diagnosis and treatment of mental disorders that occur in older adults, including anxiety, dementia, depression, late-life

addiction disorder, late-life bipolar disorder, and schizophrenia. The field of geriatric psychiatry has grown in recent years because of the increasing demand for specialized treatment for the aging US population. On the basis of the US Census 2000, the proportion of the population above 65 will increase from 12.4% in 2000 to 20% by 2030. In addition, it was realized that psychiatric assessments and treatment strategies needed to be tailored for older adults because psychiatric symptoms were often confused with “medical” symptoms, psychiatric drugs may metabolize differently in older compared to younger populations, and because older adults access multiple services (e.g., medical and long-term care) which complicate treatment strategies for this group.

The field of geriatric psychiatry also focuses on the unique physical, emotional, and social needs of older adults. Older adults with a variety of concerns may seek mental health care for stress and bereavement issues, depression, memory problems, sleeping problems, or psychological problems arising from physical illnesses such as Parkinson’s disease or chronic pain. Geriatric psychiatry also involves working with family members. Moreover, there is a growing need to take into consideration declining health or disability experienced by older adults. Hence, geriatric psychiatrists take a comprehensive approach to diagnosis and treatment, including listening and responding to the concerns of older adults, engaging families, and collaborating with other health care professionals to develop effective approaches to treatment.

One of the most prominent professional organizations dedicated to geriatric psychiatric is the American Association for Geriatric Psychiatry (AAGP). AAGP is dedicated to promoting the mental health and well-being of older people and improving the care of those with late-life mental disorders, and its mission is to enhance the knowledge base and standard of practice in geriatric psychiatry through education and research, and to advocate for meeting the mental health needs of older Americans. Despite the increasing number of older adults in the United States, the AAGP is concerned about a potential shortfall of trained geriatric psychiatrists and other health care professionals with training in geriatrics.

In addition, the Veterans Affairs (VA) health care system has been a national leader in geriatric psychiatry, through training opportunities and treatment initiatives for the last 40 years, in part because the VA population is, on average, older than the general US

population (e.g., 40% of the veteran population is aged 65 or above versus 13% of the general population). To address the needs of their older patient population, the VA has recently invested in long-term care and geriatrics research and education.

Related Topics

- ▶ Depression, ▶ Gerontology, ▶ Grief and grieving,
- ▶ Mental illness, ▶ Veterans, ▶ Veterans administration

Suggested Resources

American Association for Geriatric Psychiatry. <http://www.aagponline.org/>

Bartels SJ (2003) Evidence-based geriatric psychiatry for the general psychiatrist. *Psychiatric Times* 10(12). Available at: <http://www.psychiatristimes.com/p031159.html>

Gerontology

Marina Damis

The subject of aging has been an area of growing scientific and social interest in both domestic and international circles. The phenomenon of global aging, as a result of aging baby boomers, improvements in medical and mental health care, diet, and standards of living has now become a well-recognized and accepted event in the developed world. Today, life expectancy has increased worldwide to 66 years. As birth rates have continued to drop, by 2050, the number of elderly aged 65–84 is projected to increase three-fold, with the older population outnumbering children for the first time in history. At present, 24 of our world's "oldest" countries leading this seismic shift, are centered in Europe, with the United States following closely behind, ranking 28th in the order. Within the next decade, 13 of every 100 Americans will be above 65 and more than one in every 100 will be above 85, reaching an estimated 20% of the world's population by 2030.

Gerontology is defined as the field of scientific and medical disciplines concerned with all aspects of the normal aging process. It is concerned with the changes

that take place between the period of maturity and death. It explores and describes the effects of biological, psychological, and socioeconomic factors on the process of normal aging. The subspecialties of geriatric medicine and geriatric psychiatry are concerned with the diagnosis, prevention, and treatment of both physical and mental illnesses once assumed to be an inevitable aspect of the aging process.

Studies in the field of aging have moved to a new turning point with the arrival of the twenty-first century. Many age-associated decrements that were previously greeted with nihilism were now being examined as potentially modifiable factors. By the early 1970s, there was still little academic or scientific curiosity surrounding the issues of aging. But, by the 1980s and 1990s, studies on normal health and aging that were empowered by newer concepts of health prevention and maintenance, finally entered the domain of mainstream research. New discoveries and evolving hypothesis such as the role of acetylcholine deficiency in the pathophysiology of Alzheimer's dementia, helped launch renewed interest and heightened awareness of the changes in later life, representative of normal aging as opposed to true illness.

Recent years have seen an increased attention and appreciation for the role that disorders of both cognition and emotion play in generating disability and decreasing quality of life. Cognitive decline is a significant health problem among older adults with rates of mild cognitive impairment estimated at approximately 22%, with the prevalence of dementia at 8% above 65, doubling in every 5 years. Cognitive impairment has been associated with higher risks of morbidity and mortality as well as early predictions of new onset of limitation in activities of daily living. One in four adults has a significant mental disorder. Comorbidity or the coexistence of two or more comorbid conditions at least one of which is a psychiatric illness has now become the norm among older persons with mental disorders. Older adults are at an increased risk compared to younger adults for receiving inadequate care. Underdiagnosis and undertreatment of medical and emotional illnesses in the elderly has the potential to increase disability, decrease productivity, and interfere with either independent or communal-based living.

We have moved away from an earlier view of aging associated with senility and loss of creativity, and have become increasingly awake of what is possible with advancing age including increased physical and mental health. Although there have been many studies of

cognition with aging, there persist an inadequate understanding of the interactions between the different aspects of physical, psychological, and emotional health and function. Increasing research and advances in the understanding and treatment of dementias and other disabling mental illnesses such as schizophrenia, mood, and anxiety disorders have been effective in generating public attention as well as scientific interest on the aging brain. The goal would not just be to extend life, but with ongoing advances in medicine and science to allow our older adult population the well-deserved opportunity to remain active and independent for as long as possible in order to live life in a way that is both beneficial and personally meaningful in their advanced years.

Related Topics

[Ageism](#), [Alzheimer's disease](#), [Centenarians](#),
[Dementia](#), [Geriatric psychiatry](#), [Morbidity](#),
[Mortality](#)

Suggested Resources

AARP global aging program. www.aarp.org/research/international/events

Geriatric Mental Health Foundation. www.gmhfonline.org

Geriatrics and Aging. www.geriatricsandaging.com

Giant Cell Arteritis

Lori B. Siegel

Giant cell arteritis (GCA) is the term used to explain the vasculitis or inflammation that predominantly involves the larger blood vessels, primarily the large neck artery (carotid) and its branches. This condition primarily affects individuals aged 50 or above. The incidence of the disease increases along with age. Women are more likely to be affected than men. The majority of the cases involve people of Scandinavian or Northern European heritage and much less frequently in people from Southern Europe. It is rare in blacks and Hispanics.

GCA may be divided into two clinical presentations: (1) temporal arteritis (TA) and (2) polymyalgia

rheumatica (PMR). Although the clinical presentations are distinct, there is much overlap of one condition with the other, and one may evolve into the other. It must be remembered that the pathologic lesions of both occur in a similar distribution and even though not apparent clinically, biopsy of uninvolved arteries may be positive.

Patients who have TA often present with a headache, which may be dull or throbbing and located on the sides of the head where the temporal arteries are situated. These headaches are severe enough that patients seek medical attention. There may also be a complaint of scalp tenderness when they are brushing or washing the hair, wearing glasses, or lying on a pillow. The most severe symptom is a change in vision. It may be described as a transient curtain drawing closed across the eye or a shade is being pulled down. This is known as amaurosis fugax. Some visual changes also include blurriness or double vision. Some patients have a sudden painless loss of vision. Any visual complaint is regarded as an ophthalmologic emergency and should be treated aggressively. Another symptom in TA is jaw claudication, which is described as pain and stiffness in the jaw while chewing for a long time or working hard to chew something tough or sticky. It may also occur with extensive talking.

The physical examination in TA reveals thickened and tender temporal arteries. In some instances, the pulses are absent. Some patients may have fever.

The diagnosis of TA is based on a blood test that shows a high sedimentation rate and a positive temporal artery biopsy performed by a vascular surgeon. The biopsy of the temporal artery sample should be long enough so that the pathologic multinucleated giant cells can be seen invading the media and internal elastic lamina of the artery. These are often skip lesions and may be missed if the sample is too small. Some people favor bilateral temporal artery biopsies to be sure to make the correct diagnosis. Tissue evidence of the disease is important because the treatment of high-dose corticosteroids is particularly hazardous in this population, especially if not warranted.

Corticosteroid treatment should not be delayed, and will not affect biopsy findings for 72 hours. Because the blindness is irreversible, treatment is important but the biopsy should follow swiftly. The recommended treatment is 60 mg/day of prednisone or its equivalent. Once the sedimentation rate and clinical signs are stable, a very gradual taper of the steroid may ensue. It also may be necessary to introduce another

immunosuppressive, steroid-sparing agent with the taper in order to avoid prolonged steroid use and its many side effects.

PMR is diagnosed in people presenting with proximal muscle aching, stiffness, and subjective weakness. The muscles most commonly involved are the neck, shoulder, and pelvic girdle. The muscle involvement is symmetrical. Some patients have an inflammatory arthritis with this that may look like rheumatoid arthritis. Patients may also have fever, weight loss, and fatigue. Physical examination reveals good muscle strength with some tender muscles on palpation. The creatinine phosphokinase is normal but the elevated sedimentation rate in someone with a normal muscle strength examination clinches the diagnosis. Because of the overlap with TA, it is important to ask about both visual changes and jaw claudication initially, when making the diagnosis, and throughout the course.

The treatment of PMR is moderate doses (20 mg/day) of prednisone or its equivalent. The response to prednisone is rapid, usually within 72 hours. Because of this, some people use this rapid response as confirmation of the diagnosis. If symptoms of TA arise, the dose should be increased to cover TA. In studies looking at the overlap of TA and PMR, asymptomatic PMR patients were found to have TA involvement in 15% of the cases. That is why it is important to always ask the patient about any visual concerns throughout the treatment of PMR. Once the symptoms and sedimentation rate have stabilized, the prednisone should be gradually tapered and an immunosuppressive be added if needed. Although the prognosis is good, recurrences are common.

Related Topics

➤ [Autoimmune disease disorders](#), ➤ [Polymyalgia rheumatica](#), ➤ [Rheumatoid arthritis](#)

Suggested Readings

- Klippel JH (ed) (2001) *Primer on rheumatic diseases*, 12th ed. Arthritis Foundation, Atlanta, GA
- Klippel JH, Dieppe PA (1998) *Rheumatology*, 2nd ed. Mosby, St. Louis, MO
- Klippel JH, Dieppe PA, Ferri FF (2000) *Primary care rheumatology*. Harcourt, London

Glaucoma

Daniel S. Kiernan

Glaucoma is a disease of the eye in which damage to the optic nerve typically occurs from high intraocular (inside the eye) pressure. This causes loss of peripheral and central vision. The most common forms of glaucoma have no symptoms, thus if this disorder is not found on examination or on screenings by the appropriate eye specialists, patients can lose significant vision.

The basic anatomical problem in glaucoma is loss of optic nerve fibers that transmit sight to the eye. The high pressure that forms inside the eye causing this condition is due to impaired outflow of aqueous humor (eye fluid) in the “plumbing system” or trabecular meshwork of the eye as this fluid moves from inside the eye to the small collecting venules (blood vessels) outside the eye. This fluid is then drained through the venous system. Less commonly (10%) the “meshwork” is blocked by the iris, the area around the pupil. This is called angle closure glaucoma.

Risk factors for glaucoma include age (1% of people above 60; 2% of people above 70), ethnicity (higher rate in African Americans), concurrent disease either systemic (diabetes), or specific ocular syndromes. Medications, particularly prednisone, can cause glaucoma.

The diagnosis of glaucoma requires clinical suspicion and thoroughness on the part of the examiner. The optic nerve should be visualized with an ophthalmoscope, a special tool used to look at the parts of the eye. If the examiner sees the optic disc, which should be flat and pale, and notices “cupping” or a yellowish central area, the nerve should be evaluated. Patients with “larger cupping” should be sent to an ophthalmologist. When possible the intraocular pressure, pressure within the eye, should be measured; if it is more than 21, the patient should be referred to a specialist. When people have angle closure glaucoma, they may give a history of seeing haloes around objects and they may complain of eye pain. In all patients above 50, an yearly eye examination is recommended.

The treatment of glaucoma is directed towards lowering the intraocular pressure. This is typically achieved using an eye drop medication. One important point for practitioners to remember in taking histories is that the use of any eye drop medications must be elicited from patients. This is important for a variety of reasons such

as consideration of side effects from such medications. For example, lung and breathing problems, such as asthma, can be caused by topical beta-blocker eye drops used for glaucoma.

If eye drop medications do not work, or if the patient is not faithful in taking them regularly, certain types of lasers may be used to reduce the intraocular pressure. Ultimately, surgery (such as trabeculectomy, to remove the blockage) may be indicated to keep the eye pressure slow and safe.

The treatment of angle closure glaucoma is laser surgery to create a hole in the outer portion or periphery of the iris. This allows the iris to fall back from the trabecular meshwork and allow better flow.

Properly treated the progress of glaucoma is usually arrested or at least slowed considerably.

Related Topics

▶ Blindness, ▶ Cataract, ▶ Eye care, ▶ Vision

Suggested Readings

- Brunette DD (2002) Ophthalmology. In: Marx JA, Hockberger RS, Walls RM (eds) *Rosen's emergency medicine: concepts and clinical practice*, 5th ed. Mosby, St Louis, MO
- Horton JC (2001) Disorders of the eye. In: Braunwald E, Hauser SL, Fauci AS (eds) *Harrison's principles of internal medicine*, 15th ed. McGraw-Hill, New York
- Widell T (1998) Eye, ear, nose, throat, and dental emergencies. In: Plantz H, Adler JN (eds) *National medical series for independent study: emergency medicine*. Williams & Wilkins, Baltimore, MD

Grandchildren

Jenice Contreras

Family structure and support systems greatly influence the development and well-being of children. Relationships between grandchildren and their grandparents can be instrumental. The multigenerational bonds are becoming an intricate part of the nuclear family. Technological and medical advances have greatly increased life expectancy facilitating greater interactions across family generations.

Understanding how children develop socially and emotionally is a great benefit to grandparents as they relate to their grandchildren. Having a comprehensive sense of the needs, experiences, and communication styles of their grandchildren is essential in establishing positive interactions keeping in mind that these variables may change when the child grows.

Grandchildren look to their grandparents for advice and emotional support. Grandparents often serve as mediators between grandchildren and their parents. Grandchildren who establish strong bonds with their grandparents rely on them to be the family storytellers and historians, therefore assisting their grandchildren to develop their identities within the family as well as their cultural and spiritual foundations. This intergenerational bond can be very influential to both parties.

It is estimated that 70% of middle-aged people and 90% of older adults with children are also grandparents. Establishing good relationships with grandchildren can be very beneficial to older adults in that it helps them to remain active, provides assistance in technology (e.g., Internet usage), assists in closing the generation gap, and improves relationships between grandparents and their adult children. The grandchildren benefit through the grandparents' provision of advice and guidance.

Approximately, 75% of Americans above 65 have lived with grandchildren. An increasing number of grandchildren are being raised by their grandparents who are acting as surrogate parents as a result of the children's abandonment by their biological parent(s). The abandonment may be associated with such factors as teen pregnancy, substance use, mental and/or physical health issues, incarceration, domestic violence, and/or homelessness. Grandchildren rely on their grandparents for the acceptance and nurturing that are lacking from the biological parents. Grandchildren may feel resentment and anger because of the abandonment they have experienced from their biological parents. Many factors contribute to grandparents becoming the primary caregivers for their grandchildren.

In addition to the emotional impact of caregiving responsibilities on the grandparents, there is an array of health factors that can be involved. Some of the common health factors include medical conditions the children experience such as asthma, birth defects, developmental delays, learning disabilities, and mental health concerns. Resources and support to grandparents raising children are very limited if they are even

available. Grandparents can become overwhelmed with the responsibility of raising grandchildren but may find it enjoyable at the same time because it reestablishes them as the primary caregivers in the family.

Grandchildren–grandparent relationships can still be rewarding and strong even when the relationship must be maintained over a long distance. Keeping the lines of communications open is important to the entire family. A good long-distance relationship with grandchildren can be maintained through letters, cards, phone calls, and e-mails; the exchange of pictures and drawings, the exchange of interests such as book, poetry, and music, celebration of holidays, and exchange of homemade keepsakes.

Related Topics

[▶ Caregiver burden](#), [▶ Caregiving and caregiver burden](#), [▶ Generation gap](#), [▶ Grandparents as parents](#), [▶ Internet](#)

Suggested Readings

Mills TL, Wakeman MA, Fea CB (2001) Adult grandchildren's perceptions of emotional closeness and consensus with their maternal and paternal grandparents. *J Family Issues* 22(4):427–455

Suggested Resources

Building a relationship with your grandchildren. <http://www.familyfirst.net/famlife/grandkidrelationship.asp>

Gebeke D, Dunlop E, Bjelland E (1994) The influence of grandparents and stepgrandparents on grandchildren. <http://www.ext.nodak.edu/extpubs/yf/famsci/fs548w.htm>

Grandparents as Parents

Nancy Mendez

Grandparents have traditionally stepped in as full-time or part-time parents during times of family crisis. But studies suggest that family crises are growing in the United States; along with the trend, there is also an increase in the number of grandparents acting as surrogate parents. The trend is so pervasive that

grandparents can no longer rule out the possibility that at some point in their lives, they may have to decide whether they will raise their grandchildren. According to the US Census, between 1980 and 1990, there was a 44% increase in the number of grandchildren living in households headed by grandparents. By 2000, more than six million children will be living in households headed by a grandparent. Today more than 1.4 million grandchildren are being raised by their grandparents without the parent's presence.

The rise in grandparents becoming parents is due to several factors such as drug addiction, child abuse, illness, abandonment, high divorce rates, parental incarceration, and teen pregnancy. Another key factor that has contributed to the increase in grandparents as parents is legislation. The Kinship Care Act of 1996 puts grandparents first in line as potential foster care parents and adoptive parents for children who have been removed from their parent's home.

Although grandparents acting as parents come from all backgrounds, individuals from particular ethnic groups and income levels are increasingly becoming parents again: single women, people with low income, and African Americans are disproportionately affected. The African American grandparents raising grandchildren are more than any other racial/ethnic group. The census of 1990 shows that 12% of African American families are raising grandchildren as compared to 6% of Latino and 4% of non-Hispanic white families. Throughout inner cities in the United States, the prevalence of African American grandparents as parents is more pronounced with as many as 50% of the children in households headed by grandparents.

Many grandparents live on fixed incomes. Forty percent of grandparents raising their grandchildren have an yearly income of less than \$20,000. More than 26% of grandparents live below the poverty line. These grandparents are suddenly faced with increased food, medical, housing, and clothing expenses. Grandparents may struggle with the sudden increase in financial responsibility. Although state governments offer financial aid to parents and foster parents through funded projects like the *Aid to Dependent Children Program*, many grandparents face difficulties in accessing these programs when they do not have full legal custody of the child. Social security benefits are also not available to grandchildren unless the child is legally adopted by the grandparent.

Grandparents as parents face several mental health issues. Many grandparents have to deal with their own

resentment towards the grandchild's parents for thrusting the responsibility upon them. Others view the failure of the parent as their own failure and feel responsible and overwhelmed with guilt. Many others still continually stress about the fate of their grandchild if they were to die or become too ill to care for the child. Grandparents must also contend with the effects of past neglect and abuse on their grandchild. Grandchildren coming from dysfunctional families bring pre-existing emotional, behavioral, and physical problems with them. Helping one's grandchild to overcome feelings of abandonment, anger, and abuse are crucial in raising a healthy child.

Another potential concern that grandparents face is whether to sever the legal relationship between parent and child. Grandparents often decide not to formally legalize their parental role in the hopes that their child will someday resume parental responsibilities. It is difficult for grandparents to admit that their child is an unfit parent. But grandparents may be most vulnerable when the courts do not legally acknowledge their parental status. Without legal recognition, grandparents may encounter problems in enrolling a grandchild in school, accessing health-care insurance, childcare, social support programs and financial services. In addition, parents struggling with drug addiction often bounce their child back and forth between homes, creating uncertainty and instability in the child's life. Fortunately, there are options for grandparents seeking legal recognition. The grandparent must decide the extent to which they wish to assume educational, medical, and emotional responsibility for the child. There are four types of legal relationships that provide some measure of legal security.

- *Adoption*: all rights and obligations of the child's parents are terminated
- *Guardianship*: may be either permanent or temporary
- *Certified foster parent*: grandparents will qualify for government financial benefits
- *Power of Attorney*: allows grandparents only to make decisions regarding the grandchildren, but does not transfer legal custody

It is important to remember that individuals who are not legally recognized as the primary caregiver may have difficulty accessing the most basic services and programs.

Although raising grandchildren can be challenging, it can also be incredibly rewarding. Surveys indicate that grandparents feel an increase in energy, laughter,

love, and optimism as a result of raising their grandchildren. Grandparents also point out that grandchildren keep them more active as well as connected to current events and technology. Grandparents must also keep in mind that by becoming parents again they bring a unique combination of wisdom and maturity.

Grandparents raising grandchildren are not alone. Relatives, support groups, web sites, social, and government programs can provide valuable emotional, informational, and financial support. Joining a local grandparent support group or contacting a national organization is a good first step to learn more about the latest information. The *AARP Grandparent Information Center* and *Generations United* can supply grandparents with list of local support groups and programs.

Related Topics

- ▶ [Family relationships](#), ▶ [Grandparents as parents](#), ▶ [Guardianship](#)

Suggested Readings

- Chalfie D (1994) Going it alone: a closer look at grandparents parenting children. Women's Initiative of the Association of Retired Persons, Washington, DC
- Fuller-Thomson E, Minkler M, Driver D (1997) A profile of grandparents raising grandchildren in the United States. *Gerontologist* 37:406–411
- Pinson-Millburn NM, Fabian ES, Schlossberg NK, Pyle M (1996) Grandparents raising grandchildren. *J Couns Dev* 74:548–554
- Takas M (1995) Grandparents raising grandchildren: a guide to finding help and hope. National Foster Parent Association, Crystal Lake, IL
- Thomas L, Sperry L, Yarbrough MS (2000) Grandparents as parents: research findings and policy recommendations. *Child Psychiatry Hum Dev* 31(1):3–22

Gray Panthers

Joanne Olson

The Gray Panthers is a multi-issue, intergenerational organization, which takes progressive views and challenges the status quo. It was founded in August 1970

when Maggie Kuhn, a woman forced into retirement at the age of 65, organized a group of six similarly situated retired individuals to combat the common problems retirees faced—loss of income, contacts, job, and society. The group was originally called the Consultation of Older and Younger Adults for Social Change, but it has officially changed its name in 1972 a short time after being called the Gray Panthers by the news media. They focus on both issues that affect older retired Americans and people of all ages, such as fair housing and equal protection for all.

Within a year the group had 50 members. The organization gained momentum after Maggie Kuhn's speech during the 181st General Assembly of the United Presbyterian Church in Denver. The group's mailing list reached 1,000 by 1973, and 6,000 by 1974. In 1974, the Gray Panthers obtained nonprofit status. Although the membership has increased and decreased during its long tenure, by the time of Maggie Kuhn's death in 1995, the membership had reached 40,000.

As the organization grew, the national office implemented an overall structure consisting of local networks. More than 50 local networks are located in different states, each being led by a "convener." The network is organized and coordinated by a national office. Originally, the national office was located in Philadelphia; the office moved to Washington, DC, in 1900, and is run by the board of directors.

The Gray Panthers' motto is "Age and Youth in Action." They focus on liberal social change, wanting to improve the quality of life for all Americans. The Gray Panthers address difficult issues, which hinder social development and justice. Specifically, they strive to eliminate injustice, discrimination, and oppression through social and humanitarian initiatives. They reach their goals through education programs, petitions, demonstrations, rallies, legislative letter writing, telephone campaigns, testifying before Congress, and public interest lawsuits.

Their techniques have proven successful. In 1972, the Gray Panthers formulated the National Conference on Black Elderly in response to lack of White House attention to African Americans at the White House Conference on Aging. In 1974, they sponsored the health care conference "Health Care as Human Right: What Does it Mean?" In 1975, they established the National Media Watch Task Force, which fostered media sensitivity to ageism and persuaded the National Broadcasters to amend the Television Code

of Ethics to include age discrimination. In 1977, they published *Nursing Homes: A Citizen's Action Guide*, which exposed nursing home abuse. In 1978, they were awarded status of a nongovernmental organization (NGO) by the United Nations (UN) and lobbied Congress to pass the Age Discrimination in Employment Act. In 1982, the Gray Panthers convinced the Food and Drug Administration to regulate the hearing aid industry. They were also successful in federal litigation that resulted in simplified Medicare forms and an improved appeal process. In 1988, the Gray Panthers successfully lobbied for an amendment to the Older American's Act. In 1993, they sponsored the People's Summit for Peace in Costa Rica and presented these ideas to the UN. In 1996, the Gray Panthers co-hosted the Age and Youth in Action Summit, where they discussed welfare. In 1998, the Gray Panthers launched the Jobs and Worker's Rights, Health Care for All, and the Guaranteeing Family Security for All campaigns. In 1999, they published, "It's Your Choice," a manual evaluating the strengths and weaknesses of different Health Maintenance Organizations (HMOs). In 2000, the Gray Panthers brought together more than 550 organizations in the national campaign for U2K, a movement for universal health care. In 2001, they published an educational flyer called "Don't Be Fooled," which addressed the affects of tax cuts for future recipients of Medicare and social security. They also filed and won a lawsuit against the Department of Health and Human Services which forced the department to comply with Medicare rules, launched a pharmaceutical reform campaign (RePhorma) and "Stop Patient Abuse Now" (SPAN).

The Network, their national newspaper, won acclaim from the *New York Times* as "one of the best periodicals in America not found on the newsstand." The newspaper contained analyses of the news events and researched in-depth articles. *The Network* has decreased in size and is now a newsletter with limited coverage. The Gray Panthers' extensive website compensates for *the Network's* size reduction.

The Gray Panthers' website includes their issue statements on such issues as health care, family security, peace and community safety, political and economic justice, education, jobs and worker rights, and the environment. The Gray Panthers advocate universal health care, legalized marijuana, a patient's bill of rights, stem cell research, gap-free coverage under Medicare, a living wage, all existing social security programs, public ownership of utilities, the permanent

cessation of nuclear testing and proliferation, a universal ban of land mines and assault weapons, campaign and voting reforms, the abolition of the electoral college, the protection of wilderness, and the development of alternative and renewable energy sources. The organization opposes the death penalty, the war in Iraq, school vouchers (while advocating increased funding for public schools,) constitutional amendments banning gay marriage, and North American Free Trade Agreement (NAFTA).

A substantial portion of the Gray Panther's records have been archived at the Urban Archives of Temple University, Philadelphia, Pennsylvania. The materials archived include administrative minutes, reports, notes, proposals, memos, correspondence, research papers and speeches, publications, audio-visuals, photographs, memorabilia, plaques, certificates, and awards.

Related Topics

[▶ Access to health care](#), [▶ Ageism](#), [▶ Discrimination](#), [▶ Education](#), [▶ Elder abuse and neglect](#), [▶ Health insurance](#), [▶ Health Maintenance Organizations](#), [▶ Homelessness](#), [▶ Medicare](#), [▶ Older American's Act](#), [▶ Patients' rights](#), [▶ Retirement](#), [▶ Social Security](#), [▶ Stem cell research](#)

Suggested Readings

"Activist, in 70s, says age distinguishes her." *The New York Times*, March 12, 1984, D 15

Hessel DT, Kuhn M (1977) *Maggie Kuhn on aging: a dialogue*. John Knox Press, Westminster, CO

Kuhn M (1991) *No stone unturned: the life and times of Maggie Kuhn*. Ballantine Books, New York

Thomas R (1995) *Maggie Kuhn, 89, the founder of the Gray Panthers, is dead*, *The New York Times*, April 23, Sect 1, p 47

Suggested Resources

Gray Panthers' Home Page. Available at: <http://www.graypanthers.org/>

Sarah Sherman, Gray Panthers Manuscript Collection, Temple University, Urban Archives, Philadelphia, PA. Available at: <http://www.library.temple.edu/collections/urbana/gray-01.htm>

Grief and Grieving

Jody de la Pena Murphy

Grief is a complex process made up of different psychological, physiological, and behavioral reactions to an irrevocable loss. It is an incredibly powerful emotion. Although much of what is said about grief pertains specifically to issues associated with death, the grieving process may be similar to that of other losses as well. Indeed, the loss involved with divorce can lead to persistent negative reactions, akin to those of bereavement. Epidemiological studies suggest that divorce, when compared to widowhood, is more likely to cause depression in the affected population. Accordingly, feeling the loss of one's youth, physical health, cognitive abilities, and perceived roles may engender similar grief responses to those of death. A woman losing her eyesight, a man facing retirement, or an elderly person's loss of independence are factors that can lead to grief. The process of one's own terminal illness may also precipitate a grief reaction.

All people respond to grief differently and there are no set guidelines as to what is normal or accepted grief in any of these instances. An important component of understanding this process involves identifying the potential for individuals to experience grief responses to various everyday life events and appreciating the differences of these reactions. The psychological effects of grief may begin with shock and denial, followed by intense agony and feelings of loss and/or yearning. These may be expressed as somatic symptoms: abdominal or chest pain, nausea, insomnia, dizziness, and physical weakness, accompanied by uncontrollable crying. The frequency and intensity of such feelings are ameliorated as time passes, but may reemerge in response to reminders of the initial loss.

In cases of bereavement, the sense of loss is not limited to the deceased person; the loss of intimacy and companionship, one's sense of security, or familiar roles and visions of one's future are also aspects grieved. Individuals may often experience anger towards God, their physician, their family, or themselves. Feelings of guilt may arise, or patients may be envious of others whom they perceive as more fortunate for having not experienced the loss. Grieving individuals may be easily distracted, have trouble in concentrating and experience

confusion and forgetfulness. In the case of bereavement, individuals may experience multiple sensory hallucinations of the deceased, most often in the form of sensing their presence, but auditory, visual, and olfactory hallucinations may also be present. The cumulative effects of turmoil in the mental, emotional, and cognitive states of persons experiencing grief can be overwhelming.

People experiencing grief describe feelings of helplessness and powerlessness. Even those who previously considered themselves as emotionally strong may feel unable to cope. Intense feelings of loneliness may be felt during the bereavement period, particularly after the first few weeks or months of the loss, when support given by family and friends is lessened. Bereaved individuals often describe a pervasive loneliness, even while in the company of others. It is important to note, however, that not all feelings associated with bereavement are negative. A sense of relief may be felt, particularly if the deceased person suffered from a lengthy illness or was in need of constant caregiving. However, feelings of relief may be accompanied by increased guilt. It is not uncommon for bereaved individuals to simultaneously experience joy, peace, relief, and sorrow.

The amount of time associated with the normal grieving process varies depending upon the individual and type of grief. The emotional and physical complaints generally reduce with time, and have no lasting consequences. However, some grief-stricken individuals are at risk of illness and even death. Most bereaved persons seem depressed for only a few months. It is estimated though, that 10–20% of the widowed population is still sufficiently symptomatic to be considered clinically depressed after 1 year. Given that there are over one million new widows and widowers annually, 10,000–20,000 will meet criteria for depression each year.

The relationship between grief and depression is complicated. One can grieve without being depressed, but a sufficient subjective sense of loss can bring about a depressive episode in some individuals. Although there are many overlapping symptoms, grief can be distinguished from major depression. The main confound is the presence of sadness and social withdrawal in both grief and depression; however, the grieving process allows positive emotions to gradually accommodate the negative ones. Pangs of grief are stimulus

bound, and related to internal and external reminders of the loss. Grief is fluid and changing; it lessens over time as cognitive and behavioral adjustments are made and satisfaction with life is resumed. In contrast, major depression is characterized by low mood and poor social and occupational functioning, which are perceived as persistent and unchanging traits of the individual.

The loss of a spouse is a severe life stress event that has been linked to the onset, exacerbation, and continuation of a variety of other psychiatric disorders. Widows and widowers have been found to be at an increased risk for substance use, including alcohol, tobacco, and over the counter and prescription drugs. The symptoms of anxiety (throat tightness, choking sensation, tension, mental pain, and restlessness) have been described as part of the “normal” grieving process. It has also been shown that ordinary grief shares considerable overlap with symptoms now considered to be core components of posttraumatic stress disorder (PTSD): bursts of somatic and psychic distress, a sense of unreality, numbness, avoidance, preoccupation, guilt, and hostility.

Most grieving individuals adapt to their loss and move on with their lives without requiring any professional intervention. In some circumstances, support groups, individual, or group psychotherapy and pharmacological treatment may be helpful.

Related Topics

[▶ Depression](#), [▶ Divorce](#), [▶ Loneliness](#), [▶ Post-traumatic stress disorder](#), [▶ Psychotherapy](#), [▶ Widowhood](#)

Suggested Readings

- Blankfield A (1983) Grief and alcohol. *Am J Alcohol Abuse* 9:435–446
- Clayton P, Darvish H (1979) Course of depressive symptoms following the stress of bereavement. In: Barrett J (ed) *Stress and mental disorder*. Raven Press, New York
- Schuchter SR, Zisook S (1993) The course of normal grief. In: Strobe MSA, Stroebe W, Hansson RO (eds) *Handbook of bereavement*. Cambridge University Press, Cambridge, UK, pp 23–43
- Zisook S, Schuchter SR (2001) Treatment of the depression of bereavement. *Am Behav Sci* 44:782

Suggested Resources

- Elder Hope. www.elderhope.com/modules/weblinks/viewcat.php?cid=42&sortid=3
- National Grief Support Services. www.griefsupportservices.org/newgrief/board.php
- Osterweis M (1985) Bereavement and the elderly. Aging (Online). http://www.findarticles.com/p/articles/mi_m1000/is_1985_Jan/ai_3577017/pg_3

Guardianship

Janet L. Lowder · Carmen M. Verhosek · Lisa M. Montoni

When persons are unable to fend for themselves, because they are parentless children, or adults who suffer from mental retardation, mental illness, substance abuse, or dementia, those around them may discuss the possibility of guardianship. Unlike voluntary measures short of guardianship, such as setting up a joint bank account (where two people share control of funds), a representative payee (when one person manages another person's government benefits), a conservatorship, a trust, or a power of attorney (voluntary arrangements which can be similar in scope to a guardianship), a true guardianship is rare and serious, and may be established only by a court of law. This court, commonly called the county Probate Court, appoints one person (the guardian) to protect the interests of another (the ward), whether the ward likes it or not, if he or she is found to be incompetent to handle his or her own affairs. It is important to note that guardianship proceedings are a matter of state law and that terminology and procedures may differ from state to state. The prospective ward has the right to challenge the appointment of a guardian, and to have a say in who is appointed their guardian, because important constitutional rights are at stake during a guardianship proceeding.

The Probate Court may appoint one, or both, of two types of guardianship, "guardianship of the person" or "guardianship of estate." A guardian of the person is authorized to only make decisions about the ward's medical care and living arrangements, and is obligated to closely monitor the ward's needs,

standard of living, and welfare. Legal documents called a "durable health care power of attorney" or a "living will" *executed when an individual is competent* may alleviate the need for a guardianship of the person. The second type of guardian, guardian of the estate, makes all financial decisions for the ward. Again, legal documents like a "durable general power of attorney" or "living trust" may keep these financial matters private and out of court.

The prospective ward has the right to challenge the appointment of a guardian, and to have a say in who is appointed guardian. Since important rights are at stake, the process is a matter of public record, and the ward's privacy concerning medical and financial information that is usually confidential is sacrificed for the sake of his or her safety and well-being. If the prospective ward cannot afford an attorney, one may be appointed for him or her by the court.

A parent is known as the "natural guardian" of a child, but someone (not always the natural parent), must be appointed guardian of the estate for a child who is to receive a substantial sum of money (usually around \$10,000 or more), such as an inheritance or personal injury recovery. This is done to insure that the funds are spent on the child, or saved for the child's future.

Some states have laws permitting or forbidding a person from applying for guardianship over a child just because the child may attend school as a resident of a particular school district. Sometimes a court will appoint what is called a "guardian ad litem" for the specific purpose of protecting a minor or incompetent person's rights during the course of a lawsuit. A limited guardian or emergency guardian may be appointed for a one-time purpose, such as to make a critical medical decision, or stop a person who is unable to control his or her spending habits.

The process of application and appointment of a guardian is cumbersome and expensive. Legal paperwork often includes an application, a statement by a physician documenting the medical need for such an extreme measure, a court investigator's report, posting of a bond by the guardian (protecting the ward's funds if the guardian were to misuse or steal the funds), and oaths and affirmations promising the court that the guardian understands all the rights and responsibilities of serving in this position of trust (called a *fiduciary relationship*). The prospective ward, as well as all of the ward's next of kin, are notified of the impending guardianship hearing.

At the hearing, a probate judge or magistrate listens to all those who have gathered, and decides not only whether to establish the guardianship, but also determines whether or not the prospective guardian, or an alternate, can be trusted to act in the ward's best interests. If the prospective ward, for example, an elderly person suffering from Alzheimer's disease, had named his or her preferred guardian in a power of attorney or other document, the court will take that expressed preference into consideration. Sometimes, the court will appoint a relative to serve as "guardian of the person" and a bank to serve as "guardian of the estate," or one individual is appointed to serve both capacities. In many areas of the country, volunteer guardianship programs are available to serve the needs of indigent individuals who do not have a family member to serve as legal guardian of a person.

During the course of a guardianship, the guardian asks the court for permission to spend or invest the ward's funds, makes periodic accountings to the court for funds received and expenses paid, and reports to the court to confirm whether the ward still needs a guardian. A guardian must continually show the court that all decisions on the ward's behalf are in the ward's best interests, not merely convenient for the guardian, and that all funds are being spent on the ward, or his or her dependents. The guardian must use the ward's funds to maintain the ward at a standard of living that is consistent with the size of the ward's estate, and adequately meets the ward's medical and other needs.

If the ward has enough money, the court may allow the guardian to have reasonable compensation from the ward's estate. The guardian does not risk his or her own money by serving as guardian, and as long as reasonable steps are taken to protect the ward and control his or her behaviors, should not be liable for the ward's actions that are out of the guardian's control. However, this is a gray area of the law, and individuals are often cautioned against serving as guardian of person for individuals with a history of antisocial behavior.

Once a particular guardian is appointed (whether a person or institutions like a bank or a nonprofit group), it can be difficult to change guardians or have the entire guardianship terminated. However, once a child reaches the age of adulthood as defined by state law (the age of majority), the guardianship

ends and any funds held in the guardianship estate then belong to him or her outright. In the majority of states, no one may automatically become the guardian of an adult person, regardless of whether they are the parent or spouse of that individual, until formal court proceedings to determine the adult's competency are completed. If a ward who had been declared incompetent regains his or her ability to take care of himself or herself and manage his or her money, he or she may seek to terminate the guardianship. Only the court has the authority to grant or terminate guardianships.

If the court learns about a guardian's abuse of the ward or the ward's funds, the court may remove and replace the guardian. The Roman satiric poet Juvenal once wrote: "*Sed quis custodiet ipsos custodes?* (But who will guard the guardians themselves?)" We rely on our local county probate courts to keep an eye on those who serve as guardians for our society's most vulnerable members.

Related Topics

▶ Capacity, ▶ Conservatorship, ▶ Durable power of attorney, ▶ Elder abuse and neglect, ▶ Financial abuse

Suggested Readings

- American Bar Association (1988) Life services planning: support services and alternatives to guardianship. American Bar Association, Chicago
- Averill LH Jr (2000) Averill's uniform probate code in a nutshell, 5th ed. Thomson West, St. Paul, MN
- Robertson ED Jr (1991) Personal autonomy and substituted judgment: legal issues in medical decisions for incompetent patients. Diocesan Press, Washington, DC
- Shmidt WC Jr (1995) Guardianship: court of last resort for the elderly and disabled. Carolina Academic Press, Durham, NC

Suggested Resources

- Kansas Elder Law Network, 2005 (December 28, 2005). www.keln.org
- National Guardianship Association, 2005, Tucson, Arizona (December 28, 2005). <http://www.guardianship.org>

Hair Care

JannatFay Clark

Hair, its color, length, thickness, and style, is an important part of almost everyone's personal identity throughout the life span. Hair can be defined as cylindrical, often pigmented filaments growing from the epidermis. Proactive hair care, good nutrition, and grooming, can make a significant difference in enhancing hair health.

Aging

As people age, the texture and quality of hair changes. Hair shafts begin to weather as they emerge from the scalp. Hair strands become smaller and hair that was once thick and coarse becomes thin and fine. Additional factors contributing to the weathering process include chemical treatments such as bleaching, coloring, perming, straightening, blow-drying, or brushing hair when it is wet. These processes can cause hair cuticles to raise and soften, leaving hair more vulnerable to abrasion from combing, brushing, and curling. Graying of hair is genetically determined. By 40, approximately 40% of all people have some gray scalp hair. Body and facial hair also turn gray, but usually later than scalp hair.

Hair Loss

Many hair follicles in women and men stop producing new hairs within the mid to late stages of the life cycle. Approximately 25% of men experience signs of baldness by 30 and two thirds are bald or exhibit balding patterns by 60. Most women experience female-pattern-baldness as they age. This pattern occurs when hair becomes less dense all over, making the scalp more visible. Other disorders such as *Thi pili annulati*, a congenital hair shaft disorder in which air-filled spaces occur at regular intervals within the shafts, can increase hair fragility among both men and women.

Negative psychological effects of balding have been studied primarily in men. In the United States balding amongst men has been associated with lower self-esteem, perception of physical unattractiveness, anxiety, emotional distress, depression, greater self-consciousness, and psychological maladjustment. Dissatisfaction with appearance, preoccupation with hair loss, worry about

others reactions, and fear of social tension as a result of hair loss have also been reported.

With regard to nutrition and hair loss, both iron and essential amino acid L-Lysine appear to promote hair loss in individuals who are deficient in these two elements. Outside of this, in individuals who are otherwise healthy, nutrition appears to play a very minor role in hair health. One exception to this includes individuals who selectively avoid eating certain foods. This process can lead to impairment of both skin and hair quality.

Some hair care recommendations for persons challenged by hair loss include use of topically applied minoxidil, oral finasteride, and hair transplant treatments. Minoxidil stimulates hair growth, although its mechanism of action on hair follicles is not well understood. In both males and females a rapid increase in hair growth has been clinically observed which becomes readily apparent at 6 weeks peaking between 12 and 16 weeks. Treatment success with minoxidil is determined by age. The older the patient, the less efficacy this treatment appears to have. Finasteride has been shown to be effective in promoting hair growth in men but its results in treating women are controversial. For more advanced forms of patterned baldness, hair transplantation, also known as hair restoration surgery, seems to be the only option with promising results. In Europe, there is treatment being done in which the scalp is surgically detached, rotated front to back and then reattached. This allows the scalp area with the most hair to be placed in the front where most people prefer it. Modern techniques involve inserting hair in a variety of patterns, which creates the illusion that the person has more hair than they actually do.

Hair Health and Appearance

Hair coloring creates an alternative for those individuals who do not prefer gray hair. For some, gray hair is not complementary to skin tone. Graying hair can also create challenges in the area of career success, as persons may be perceived as being older than they actually are. Temporary hair color, which lasts approximately 1 week, can be applied with minimal damage to hair shafts. It does not penetrate the hair cuticle and is less harsh on the scalp. Semipermanent hair dyes lasting for 6–10 shampoos are the second least damaging choice. These products cannot be used to lighten hair since they do not contain bleach. Permanent dyes

are not recommended, since they tend to do significant damage to the hair shaft over repeated use. If hair is less than 10% gray, other options include plucking out gray hairs, applying blond highlights to some of the hair as a way of minimizing gray areas, coloring half of the hair by wrapping it with a lighter shade to produce a natural look, and lastly coloring all of the hair approximately two shades lighter than the person's natural hair color to promote a more natural look.

Additional recommendations for improved hair and scalp health, and appearance are as follows. Frequent shampooing is recommended for aging persons especially if they have greasy hair. This will usually make the hair fluffier and gives it a thicker appearance. Intensive hair conditioning treatments are recommended to counteract damage resulting from the hair weathering process. Conditioning products of this type contain large molecules that collect on the edges of damaged cuticle scales. This helps to give hair a smoother appearance. If hair is dry, these products promote softer hair texture, a glossy look, and a greater degree of manageability. Long hairstyles tend to add weight to hair which drags it down making hair appear to be thinner. Permanent waves, although they have a drying effect on hair, make hair look and feel thicker while imparting more body. Finally, getting a layered hair cut can give women the illusion of having long hair even if hair on the top of the head is quite short.

Related Topics

▶ Alopecia, ▶ Anti-aging remedies, ▶ Hair replacement, ▶ Nutrition, ▶ Preventive care

Suggested Readings

- Grimalt R (2005) Psychological aspects of hair disease. *J Cosmet Dermatol* 4:142–147
- Rushton DH (2002) Nutritional factors and hair loss. *Clin Experiment Cosmetol* 27:396–404
- Trueb R (2005) Aging of hair. *J Cosmet Dermatol* 4:60–72

Suggested Resources

- ADAM, Aging Changes in Hair and Nails. <http://www.adam.com/democontent/hie/ency/article/004005.htm>
- Hair Loss Nutrition. <http://www.myhairlossadvisor.com/hair-loss-nutrition.html>

Hair Replacement

Robert Haber

Hair loss affects no fewer than 67 million men and 30 million women in the United States, and almost \$1 billion are spent each year on surgical and nonsurgical treatments. Hair replacement refers to the surgical procedure in which viable hair follicles from the back of the head are taken, or harvested, and replanted in the balding areas of the scalp. As the hair is removed from the same person, it is called an autograft. Modern techniques and instrumentation produce results that are cosmetically exquisite, and hair transplantation is one of the most popular cosmetic procedures performed worldwide. Men and women of all ages can be candidates for this procedure, and older patients are often more desirable to do this procedure because of their more mature expectations. Haber's oldest patient was 84 years old, and the upper age limit for this procedure is now determined only by health and motivation.

A careful consultation is crucial prior to surgery, because many people may have unmet expectations and this would result in a source of dissatisfaction. The surgeon must fully understand the goals of the patient, and must stress the progressive nature of hair loss. The patient must be educated as to the importance of framing the face, and the goal of a natural appearance. Finally, it must be stressed that this is a permanent procedure, so that he or she can understand the proposed design of the transplanted hairline.

A detailed knowledge of scalp anatomy is needed to understand hairline design. The intent is to create a cosmetically acceptable hairline that will continue to look appropriate as the patient ages and experiences ongoing hair loss. The hairline must be placed high enough so that enough transplanted hairs, or grafts, exist to create adequate density posterior to this area. The shape of the hairline is irregular, with mounds and projections that mimic the original hairline. The hairline is designed so that it connects with parts of the scalp, the parietal and temporal zones, in an esthetic manner. Each subzone of the scalp has specific required design parameters that must be understood. For women, the hairline is designed at its original location, but it must be stressed that surgery cannot be expected to recreate original density throughout the scalp.

The result of years of gradual refinements, follicular unit transplantation involves isolating the smallest naturally occurring groupings of hair follicles, and transplanting them intact from their original to their new location. The integrity of nature's original design is maintained, and allows the creation of a natural appearance in the recipient zone. This technique first involves the harvesting of an ellipse of hair-bearing skin from the donor scalp and the tension-free closure of the defect, producing a fine linear scar. The ellipse is then slivered using microscopes into small segments containing a single row of follicular units. Each sliver is then meticulously dissected, again under the microscope, into the follicular units, each typically containing from one to four hairs. During these steps, the grafts are kept moist and chilled to maintain viability.

The recipient scalp is anesthetized, and bleeding control is achieved by injecting large volumes of fluid (tumesce). Recipient sites are then created, either in advance of the planting step, or using a technique involving the nearly simultaneous creation and planting of a site. The recipient sites are carefully sized to accommodate the follicular units, and are created with a variety of instruments including modified hypodermic needles and custom cut microblades.

The follicular units are delicately planted using microsurgical forceps, again always maintaining a moist, chilled environment for the grafts. Transplant session sizes can vary from a few 100 grafts to 3,000 or more, and grafts may be placed at densities varying from 15 to 50 follicular units per cm², depending on the region of the scalp, hair and scalp characteristics, and skill and experience of the surgical team.

Although the scalp is the most common region of the body transplanted, other sites with hair loss can be treated as well, including the eyebrows, eyelashes, beard, mustache, and pubic areas.

Healing takes place generally within 1 week. The transplanted hairs are shed within 2–3 weeks, while the follicles heal and reestablish a blood supply. New hairs can be expected to appear within 2–3 months.

In an attempt to minimize visible donor scars, the technique of follicular unit extraction was developed that utilizes tiny punches to isolate and extract individual follicular units from the donor zone. Theoretical advantages include scars that are less visible and a faster recovery time, as well as the ability to harvest from regions ill-suited to the standard technique of excising a strip of skin. Disadvantages include a greater transection rate of harvested grafts, and a much slower

process, resulting in greater expense to the patient. These disadvantages may be solved with newer instrumentation and technique improvements.

Related Topics

▶ Body image, ▶ Hair care

Suggested Readings

Haber RS, Stough D (2006) Hair transplantation. Elsevier, New York
 Stough D, Haber RS (1996) Hair replacement: surgical and medical. Mosby Year Book Publishing Company, St. Louis, MO
 Unger W, Shapiro R (2004) Hair transplantation. Marcel Dekker, New York

Suggested Resources

International Society of Hair Restoration Surgery Website. www.ishrs.org

Ham and Eggs Movement

Nancy Mendez

The California Retirement Life Payments Association, or its more popular name the Ham and Eggs Movement, is one of the several pension movements that galvanized the elderly and pushed them into the mainstream of American politics. The elderly became a new, and in some states, powerful constituency.

By the 1930s elderly Americans who found themselves increasingly vulnerable began demanding pension plans. Four significant changes took place during the early decades of the twentieth century that sparked the pension movements:

- The Industrial Revolution
- The urbanization of the United States
- The disappearance of the “extended” family
- An increase in life expectancy

The industrial revolution transformed the majority of people from self-employed agricultural workers into

wage earners working for large industrial companies. No longer was survival based solely on one's labor. In an agricultural society anyone willing to work could usually provide at least a bare subsistence. But when survival is primarily based on wages, economic security can be affected by factors outside of one's control, such as recessions, layoffs, and failed businesses.

Along with the shift from an agricultural to an industrial society, Americans moved from farms and rural communities to large cities in search of the industrial jobs. In 1890, only 28% of the population lived in cities; by 1930 it increased to 56%. In fact, by 1920, for the first time in the US history, more people lived in cities than farms.

The urbanization of American society also led to the disappearance of the extended family and the rise of the nuclear family. Today, for many Americans "family" consists of parents and children, but for much of our history, family included grandparents and other relatives. The advantage of the extended family was that when a family member became too old or sick to work other family members would continue to support them. The extended family often provided economic security. When the younger family members began moving to the cities in search of jobs many of the parents and grandparents were left behind.

Lastly, in the early decades of the twentieth century, Americans greatly improved sanitation, access to health care, and the development of effective health programs. These improvements led to increased life expectancy. In the United States, between 1870 and 1930 there was a 600% increase of individuals aged 65 and older. This was the most rapid increase in life spans in recorded history. The result was that America became older, industrialized, and more urban, with fewer people living in extended families. The traditional strategies for economic security for the elderly were becoming impractical.

The California pension plan movement grew out of this backdrop. During this same period, we saw a massive migration of the elderly into California. Many Americans relocated to Southern California because of its warm climate. Between 1920 and 1930 the number of people aged 65 and older in Southern California increased by 100%.

Traditionally, the elderly lived on fixed incomes derived from savings, investments, and pension funds. As depression deepened these reserves were threatened. By 1933, over 12 million Americans were

unemployed. Savings, investments, and pension funds disappeared. Thousands of elderly people became destitute.

Robert Noble was a popular radio personality who began pushing the idea of a pension program funded by the government. He believed that each unemployed Californian above 50 should receive \$25 each Monday. The pension would be financed out of a new state currency called scrip. Mr Noble gained much support in the mid-1930s and organized the Retirement Life Payments Association (RLPA). Leadership shifted to two brothers Lawrence and Willis Allen. The Allen brothers asked for \$30.00 each Thursday for each unemployed Californian above 50.

Critics were the first to call the RLPA pension movement the "Ham and Eggs act," mocking elderly people eating ham and eggs every Thursday morning. However, the movement leaders picked up on the phrase and turned it into a slogan "Californians deserve ham and eggs!"

The Ham and Eggs initiative was ultimately put on the 1938 ballot as Proposition 25 and was defeated by a narrow margin 1,143,670 to 1,398,999. Critics questioned its economic feasibility and the movement's leadership was shown to be corrupt. But many of the candidates that supported the RLPA including the candidate for governor all won their elections.

Even though the Ham and Eggs Movement ultimately failed, the movement created a block of voters that had not existed before. The elderly now had a political voice. Soon politicians recognized the power of this new voting block and began to pass crucial legislation that served to protect the elderly.

Related Topics

▶ [Employment](#), ▶ [Extended family](#)

Suggested Readings

- Mitchell D (2000) *Pension, politics, and the elderly: historic social movements and their lessons for our aging society*. Sharpe, New York
- Putnam JK (1970) *Old age politics in California: from Richardson to Reagan*. Stanford University Press, Stanford, CA
- Quadagno J (1988) *The transformation of old age security: class and politics in the American Welfare State*. University of Chicago Press, Chicago, IL

Harm Reduction

Linda S. Lloyd

Harm reduction principles have most frequently been applied to programs addressing substance use and abuse, including alcohol, prescription drugs, and illicit drugs, and safer sex. It is a pragmatic approach to addressing risky behaviors by encouraging the individual to reduce the harm caused by their behavior. Harm reduction incorporates a spectrum of strategies tailored to each individual since there is no single approach that will meet the needs of all individuals or all communities. According to the BC Partners for Mental Health and Addictions of British Columbia, Canada, harm reduction is defined as “a public health philosophy that supports policies and practices,” and establishes the quality of individual and community life and well-being, not necessarily cessation of the risky behavior, as the criteria for successful interventions and policies. Supporters of harm reduction state that success should be measured by changes in the rate of death, disease, crime, and suffering, and not by changes in rate of the behavior (e.g., percentage of people reporting binge drinking).

Harm reduction emphasizes the individual’s input into the therapeutic process to ensure (1) that the client sets goals that are relevant to his or her social and environmental contexts and (2) that there is motivation to work toward reducing the harm caused by the behavior. For harm reduction to be successful, barriers that inhibit individuals from seeking assistance must also be addressed—such as stigma, lack of access to services, lack of health insurance, and fear of disclosure of the behavior—and not just the behavior.

Reducing Alcohol-Related Harm

Most of what has been published on harm reduction focuses on substance use, with little to be found on harm reduction needs of older adults. In fact, the vast majority of information on harm reduction for older adults comes from Canada, where harm reduction is the underlying philosophy for addiction services and Canada’s national Drug Strategy. Most references to harm reduction and older adults deal with alcohol use. Aging in Canada, a comprehensive website funded by Health Canada and the National Population Health

Fund, focuses on the reduction of alcohol-related harm among seniors. It includes harm reduction information on a variety of topics that may lead to increased alcohol use, such as isolation, elder abuse, chronic pain, and gambling. In addition, some of the harms that older adults may face as a result of an alcohol problem include depression, interaction of alcohol with common medications, safety (e.g., falls, falling asleep while smoking, leaving the stove on), poor nutrition and poor health, financial problems, elder abuse, vulnerability to crime as a result of being under the influence in a public setting, and unprotected sex.

While some harms are the direct result of drinking alcohol, others are the unintended consequences of the attempts to control the person’s drinking, such as family members or health-care professionals demanding that the person stop drinking. These demands can lead to increased isolation and reduced access to services as the older adult reduces their contact with those who require a cessation of all drinking.

Reducing Gambling-Related Harm

There is limited information on compulsive gambling among seniors. The increase in opportunities for multiple forms of gambling (i.e., online gambling, increasing numbers of casinos) has created benefits for some, however, there is an ever increasing group of problem gamblers. The Responsible Gambling Council in Ontario, Canada estimates that 4% of the population in the province of Ontario has moderate to severe gambling problems while the National Center for Responsible Gaming in the United States estimates that 1% of the United States and Canadian populations are problem gamblers. While some studies have found that older adults, 60 years and older, are the least likely to have gambling-related problems, an estimated that 2.1% are moderate to severe gamblers. Factors that are believed to put older adults at greater risk for gambling-related problems include loneliness, limited financial resources, increased leisure time after retirement, and declining health.

The most notable difference between Canadian treatment and information resources and their US counterparts is that harm reduction is the underlying philosophy for the Canadian resources (e.g., the Centretown Community Health Center in Ottawa, Ontario, Canada describes its “problem gambling program for people 55+” as being for people who want

to stop or reduce their gambling, and publishes a pamphlet with warning signs of problem gambling and tips for responsible gambling), while treatment resources in the United States offer gambling recovery programs based on the abstinence model.

Related Topics

- ▶ [Addiction](#), ▶ [Alcohol use](#), ▶ [Crime](#), ▶ [Loneliness](#),
- ▶ [Substance use](#)

Suggested Resources

Aging in Canada (2004) Alcohol and seniors. Harm reduction and gambling sections. Vancouver, British Columbia, Canada (revised June 26, 2004 and June 15, 2005, respectively). <http://www.agingincanada.ca>

Harvard Medical School, Division on Addictions, Institute for Research on Pathological Gambling and Related Disorders, The Brief Addiction Science Information Source (BASIS), January 2005. <http://www.basionline.org/index.htm>

Responsible Gambling Council (2001) Measuring gambling and problem gambling in Ontario. Toronto, Ontario, Canada, 2004. <http://www.rgco.org/olderadults>

Headache

Marc D. Winkelman

Headache is common; 75% of people have a headache each year. However, it is one of the few afflictions whose prevalence decreases with advancing age: 80% of people will have a headache at least once a year during the third decade of life, while this falls to 60% in people above 55, and only 30% in people above 75. Headache disorders can be divided into two types: primary and secondary. Secondary headaches account for only 10% of cases among young people but this rises to 36% in older people, and these are associated with an underlying and often serious disease while primary are not. Therefore, headache is more often a symptom of serious disease in the elderly.

Migraine, although not the most common type of primary headache, is the one most likely to prompt people to consult their doctor. Its prevalence peaks at

the age of 40; only 2–5% of people above 70 are still affected, and only 2% of cases begin after 65. Migraine consists of two parts: a transient neurological symptom, called the aura; and a headache. The aura usually precedes the headache but may also occur during or afterwards. The most common auras are abnormalities of vision, sensation, or language. An aura may occur alone, or two or three different ones may appear in succession. Visual auras are usually small and unobtrusive at first but enlarge and spread slowly across the visual field. Likewise, sensory auras start in one part of the body, usually the fingers or lips, and spread slowly to other parts. Auras last 15–20 minutes and then disappear. Visual auras consist of an area of visual loss surrounded by a flickering light or of zigzag lines in the form of a horseshoe. Sensory auras consist of numbness or tingling and “pins and needles.” A language aura impairs the ability to speak or understand speech. The pain of migraine may be located on both sides or only one side of the head, has a pulsating quality, is moderate to severe in intensity, and is made worse by routine physical activity, such as climbing stairs.

The headache is often associated with nausea, vomiting, and sensitivity to light and sound. Untreated, it lasts several hours to a few days. Sometimes a headache occurs without an aura, and sometimes an aura occurs without a headache. In the elderly, a transient neurological symptom is often a warning of an impending stroke; therefore, the diagnosis of migraine aura without headache cannot be made without excluding cerebral vascular disease.

The most effective medication for the acute or abortive treatment of migraine headache is a family of drugs called “triptans,” including sumatriptan (Imitrex), zolmitriptan (Zomig), and several others, and dihydroergotamine, which is available as a nasal spray (Migranal). Alternative but less effective agents include aspirin and acetaminophen or both mixed with caffeine (Excedrin), and nonsteroidal anti-inflammatory drugs (NSAIDs), such as naproxen and ibuprofen. The nausea and vomiting of a migraine attack respond to antiemetic drugs, such as metoclopramide, domperidone, and prochlorperazine, taken as a tablet or suppository.

Using abortive medications more than 2 days a week can lead to medication-overuse headache, a chronic daily headache that abates with a dose of medicine but returns a few hours later, creating a vicious cycle of withdrawal headache. Avoiding this complication of treatment is the rationale for preventive therapy of migraine.

A patient may take a preventive drug everyday in order to reduce the frequency, duration, and severity of migraine attacks. After several months of good control, the drug can be withdrawn. Several classes of drug can be used: beta-blockers, such as propranolol; tricyclic antidepressants (TCA), such as amitriptyline and nortriptyline; calcium-channel blockers, such as verapamil; and antiepileptic agents, such as gabapentin, topiramate, and valproic acid.

Elderly patients cannot safely use some antimigraine medicines, if they have certain associated medical conditions. Triptans and dihydroergotamine are not used in patients with coronary heart disease and uncontrolled hypertension; large quantities of aspirin and nonsteroidal anti-inflammatory drugs can cause peptic ulcer disease and chronic kidney disease; Other medications such as the tricyclics antidepressants are not indicated in certain cardiac conditions and certain forms of glaucoma.

Tension-type headache or “regular headache” is the most common of the primary headaches and typically begins in youth but declines with age and is present in only about 10% of people aged 50 or older. The pain, described as dull, achy, pressure-like, tight, and mild to moderate in severity, is variably located in the forehead, temples, and back or top of the head, often in a band-like distribution. Tension-type headache usually has an episodic, recurrent pattern and each lasts a few hours, but sometimes a single headache goes on for weeks, months, or even years. Medications for abortive treatment include those listed above for migraine (except the triptans and dihydroergotamine) and a single-tablet preparation of aspirin or acetaminophen, caffeine, and butalbital (Fiorinal, Fioricet, and Esgic). Medicines for preventive therapy include antidepressants such as tricyclics and mirtazapine.

Cluster headache is much less common than migraine or tension-type headache. The average age of onset is during the third decade, but it begins after the age of 60 in 10% of patients. It affects men four times more often than women and runs in families. The risk among first-degree relatives is 14 times higher than it is in the general population. Cluster headaches have many characteristic features. Headaches occur from every other day up to eight times a day for months, and then will suddenly stop for months to years, before recurring; hence, the name “cluster.” Sometimes headaches occur at the same time everyday, often in the middle of the night. They are relatively brief, lasting usually less than 2 hours. The pain is

strictly unilateral, and the side is the same in each headache of a cluster. It centers in the eye but may be more widespread and is very severe. Patients typically pace the floor during a headache, in contrast to migraine patients, who lie down. Cluster headaches are often associated with the so-called autonomic signs on the painful side, including drooping of the eyelid and constriction of the pupil (Horner’s syndrome), tearing and redness of the eye, and nasal congestion or discharge. Effective abortive treatments include inhaled oxygen and subcutaneous or intranasal sumatriptan (Imitrex), and preventive treatments include prednisone, verapamil, lithium, valproic acid, and melatonin. Lithium can be dangerous in patients with kidney disease or on diuretic medications, while inhaled oxygen may not be indicated in patients with chronic obstructive pulmonary disease.

Hypnic headache is a rare disorder that occurs only in middle and late life: the average age of onset is 60, and the range is 40–75 years. The headache awakens the patient at the same time every night for years. It is bilateral or unilateral, throbbing in character, moderate in severity, and lasts 30–60 minutes. It responds to preventive treatment with lithium and sometimes indomethacin, a nonsteroidal anti-inflammatory medication.

Headache may be one of the first symptoms of an underlying serious disease. Certain historical features may be regarded as “red flags,” that alert the clinician. A new severe headache of sudden onset may indicate intracranial bleeding, a stroke due to occlusive vascular disease, or meningitis. A headache that grows progressively worse over a period of days to weeks suggests the possibility of increased intracranial pressure or an intracranial mass lesion, such as a tumor, an abscess, or an accumulation of blood between the brain and the inner skull. It may also indicate a metabolic disturbance, such as lung or kidney failure, high-serum calcium, or low-serum sodium. Precipitation of headache by exertion or sexual activity suggests bleeding from an intracranial aneurysm, an anatomic variation called a Chiari malformation, or even coronary heart disease. Any headache beginning after the age of 50 years raises the suspicion of temporal arteritis, an inflammatory disease of cranial arteries that can lead to blindness, if untreated. A background of AIDS or cancer suggests that a new headache may be due to intracranial infection or metastatic tumor.

A new headache can also signal less serious disease. A headache that remains localized to one part of the

head for a long period suggests the possibility of sinusitis or a structural intracranial lesion. Degenerative disease of the cervical spine may cause a headache located on one side of the back of the head, and open-angle glaucoma can cause one centered in the eye. Many medications taken for illnesses common in older people can cause headache as a side effect. A partial list includes alcohol, caffeine, and common antibiotics and blood pressure agents.

There are many different types of headaches that occur in people above 50; it is always important to consult with your primary care physician or neurologist for your best health.

Related Topics

[Pain](#)

Suggested Readings

- Edmeads J, Takahashi A (1993) Headache in the elderly. In: Olesen J, Tfelt-Hansen P, Welch KMA (eds) *The headaches*. Raven Press, New York, pp 809–813
- Silberstein SD, Capobianco DJ, Dodick DW (2003) Migraine in special populations. *Neurology* 60 Suppl 2:S50–S57
- Silberstein SD, Lipton RB, Goadsby PJ (1998) Headache in clinical practice. Isis Medical Media, Oxford 210–212

Health Beliefs

Linda S. Lloyd

Health beliefs motivate a number of health-related behaviors, including how individuals seek health care services (both Western and alternative), how they respond to health promotion and education messages, and compliance with treatment protocols. Health beliefs about the causes of health and illness, whether illnesses and diseases can be prevented, and how to prevent and treat them are formed by an individual's cultural background. One's cultural background results from a combination of factors such as ethnicity, nationality, language, sexual orientation, gender, and religion. According to the American Geriatrics Society,

ethnogeriatrics, the study of the influence of ethnicity and culture on the health and well-being of older adults, is increasingly important as the diverse US population ages.

Health beliefs are passed from one generation to another based upon their experience, customs, and traditions. For example, how food is prepared and taste preferences for foods reflect customs or habits that may no longer be considered healthy, e.g., very salty foods, use of high fat ingredients, meat as the primary source of protein. However, messages from health practitioners to reduce salt use or intake of high fat ingredients may be ignored or rejected if the person does not believe there is a link between diet and disease. In a recent study on hypertension knowledge and beliefs among African American, Hispanic, and White older adults, researchers found that although there were no ethnic differences in knowledge and beliefs about hypertension, there were differences in beliefs regarding how blood pressure could be controlled. For example, African American and Hispanic older adults were more likely to state that blood pressure could be controlled only by medication, and Whites were more likely to report lifestyle changes. These differences have a direct impact on how health promotion messages in general will be received by those populations, and in particular those messages relating to diet and exercise. Other studies have noted that Hispanics are less likely to believe that cancer can be prevented or that an individual can influence the outcome of a cancer diagnosis through their own behavior, and that Chinese elders tend to use traditional medicine for chronic conditions and Western medicine for acute conditions. A fairly recent area of study is the role of religious beliefs in the physical and mental health of older adults. Strong spirituality has been linked to improved physiological functioning, health and well-being, and early findings from a study on religious attitudes and health reveal that a strong belief in God can reduce depression, especially among African Americans.

While the importance of health promotion for older adults is a frequent theme in the literature and web-based resources targeting older adults, there is still only a limited number of studies that have examined the relationship between health beliefs and behavior change among older adults. Some authors report that researchers and public health practitioners perceive older adults as being less interested in and less compliant with health promotion activities, while others

report that older adults' participation in health promotion activities increases when programs draw on cultural elements of the target population. Use of cultural elements in health promotion programming is reflected in a diabetes control program targeting Navajo elders. To increase physical activity among Navajo elders, a morning walk with Navajo community leaders was organized for older adults; having the opportunity to ask questions of community leaders while walking resulted in increased participation in the walking program. Program staff also modified traditional Navajo recipes to make them healthier, however, the participants complained that the healthier food did not taste as good. In response, staff reduced the number of changes to the recipes and focused instead on controlling the size of the portions eaten.

As public health and medical care systems focus more and more on healthy aging, the role of health beliefs on older adults' behavior will need to be better described in order to develop relevant health promotion and prevention programs and to improve provider-patient communication regarding treatment options and compliance.

Related Topics

▶ Diet, ▶ Exercise, ▶ Patient–provider communication

Suggested Readings

- Ell K, Castañeda I (1998) Health care seeking behavior. In: Loue S (ed). *Handbook of immigrant health*. Plenum Press, New York, pp 125–143
- Harms W (2005) Cacioppo directing study on health benefits derived from spiritual beliefs. *University of Chicago Chronicle*, vol 24, no 13 (April 14, 2005). Chicago, Illinois. <http://chronicle.uchicago.edu/050414/cacioppo.shtml>
- Okonofua EC, Cutler NE, Lackland DT, Egan BM (2005) Ethnic differences in older Americans: awareness, knowledge and beliefs about hypertension. *Am J Hypertens* 18(7):972–979

Suggested Resources

- American Geriatric Society. Position statement on ethnogeriatrics, 2003. New York (copyright 2001). http://www.americangeriatrics.org/staging/products/positionpapers/ethno_committee.shtml
- American Society on Aging. Live well, live long health promotion and disease prevention for older adults. *Blueprint for Health Promotion* (2002–2005). <http://www.asaging.org/cdc/index.cfm>

Health Insurance

Siran M. Koroukian

Relative to their health insurance coverage, individuals aged 50 or older constitute a diverse group. Those in the 50–64 age group, who are not yet eligible to enroll in Medicare, generally have health insurance coverage provided by their employer (employer-sponsored health insurance coverage). However, many face restricted employment opportunities, and are therefore uninsured, underinsured, or receive disability benefits. Adults aged 65 or older, the vast majority of whom receive health benefits through Medicare, are in need of supplemental health insurance coverage to help pay for deductibles and coinsurance amounts, as well as for services not covered through Medicare Part A and Part B (e.g., prescription drugs).

Health insurance coverage issues in older adults aged 50–64 include lack of insurance. Nearly 23% of the individuals in this age group who participated in a study from 1992–2000 were uninsured. Of those who were uninsured at the start of the study, one in four were covered through public insurance by the end of the study period—a fact attesting to the important safety net feature of public programs. Because of ineligibility for Medicare, losing health insurance coverage prior to the age of 65 implies greater vulnerability to chronic conditions and their complications, and to declining health.

Poor health and preexisting conditions can result in prohibitively expensive private health insurance premiums for individuals with restricted employment opportunities. As a result, individuals in this age group may choose to remain uninsured until they become eligible to enroll in Medicare at the age of 65. This problem is likely to grow as employers continue to reduce health insurance coverage for their workers. Similarly, raising the Medicare eligibility age—a strategy that has been a part of the debate on restructuring Medicare benefits—implies that retirees above 65 could face similar problems. The adverse outcomes of being uninsured are well documented: a recent study reported that the risk of death in uninsured individuals 50–64 years was 43% higher than that of their insured counterparts.

Employer-sponsored health insurance, the source of health insurance coverage for millions of Americans over the past several decades, has been slowly declining. This is best evidenced through the increase in the

number of adults without health insurance coverage. In fact, most of the increase in the number of uninsured adults—five million new uninsured adults between 2000 and 2003—could be attributed to a decline in employer-sponsored coverage. In 2001, nearly 13 million adult workers were uninsured and 9.5 million were not offered insurance coverage by their employers. When individuals lack health insurance coverage, their medical costs are shifted to other sources. For example, some of the adults losing health insurance coverage are able to enroll as a dependent on another family member's health insurance so their medical costs are covered by other employers. Similarly, depending on their income levels, other adults could qualify for insurance coverage through public sources, such as Medicaid (a public insurance program for low-income individuals) versus Medicare (which is targeted to the aged and disabled), thus shifting their medical costs to the government, and therefore to taxpayers. It was estimated that in 2002, approximately 15% of uninsured, low-income adults aged 45–54 and 8% of those aged 55–64 may have been eligible for public coverage.

There are several factors associated with lack of employer-sponsored health insurance coverage, including employer size and low wages. Only 44% of individuals working in establishments with fewer than 25 employees receive health insurance coverage through their employer. This compares with nearly 75% of employees in companies with 500 workers or more. Similarly, less than half of the employees with an hourly wage of \$10 or less have health insurance coverage through their employer, compared with 80% of those with an hourly wage exceeding \$15. Given these statistics, it is of no surprise that the proportion of workers with employer-sponsored insurance coverage is much higher in affluent than in low-income segments of the population.

With regard to disability, it is estimated that a 20-year-old worker has a 30% chance of becoming disabled before reaching retirement age. The Supplemental Security Income (SSI) and the Social Security Disability Insurance (SSDI) are public programs providing assistance to people with disabilities. SSI pays monthly cash benefits to individuals who are 65 years or older, those who are blind, or those who have a disability and are low income. Only individuals who meet the medical criteria and who are "insured," meaning that the individual has worked long enough and paid Social Security taxes, may qualify for SSDI.

Individuals with short-term and/or with partial disability do not qualify for SSDI. In 2001, more than 6.7 million individuals were receiving SSDI benefits; of those, 5.1 million were disabled workers. Nearly two thirds of disabled workers were 50–64 years; 43% were women, 75% were white, and 18% were African American. With regard to their clinical condition, 27% were diagnosed with mental disorders other than mental retardation, and approximately one in four suffered from musculoskeletal disabilities. Of families with a disabled worker, 18.5% have incomes below the Federal Poverty Level (or less than \$20,000 for a family of four) compared with 9% of families without a disabled worker. SSDI pays monthly cash benefits to those who are unable to work for a year or more because of disability. After a 2-year waiting period, SSDI also makes an individual eligible for Medicare, even if they are below the age of 65.

In adults 65 years or older, approximately 91% of Medicare beneficiaries have supplemental insurance coverage. Of those, 36% have health insurance coverage through an employer or a former employer. Given the current economic climate and the implications of providing health benefits to their current or retired workers, however, employers have become less generous in their coverage and the future of such benefit programs remains uncertain, even for very large employers. In the absence of employer-sponsored health insurance coverage, older adults resort to other sources of supplemental health insurance. Those who can afford the premiums individually purchase supplemental health insurance coverage (Medigap) or enroll in managed care plans (27% and 17%, respectively). The remaining 11% of those without employer-sponsored health insurance coverage obtain supplemental health insurance coverage through public insurance or Medicaid. Given the Medigap premium amounts (\$1,100 annually in 1996), seniors with low incomes and those in minority groups are less likely to have supplemental insurance coverage. Those who might find the premium prohibitively expensive may seek health insurance coverage through public insurance programs, such as dual the Medicare–Medicaid program, although participation of eligible elders in the dual program has remained only at 50%. Lack of knowledge about the programs and administrative barriers have been identified as factors hindering enrollment of low-income elders in Medicaid.

Approximately 9% of Medicare beneficiaries have no supplemental health insurance, and compared to

their counterparts with supplemental health insurance, they are more likely to experience adverse health outcomes. In one study that analyzed outcomes in patients hospitalized for myocardial infarction, elders with Medicare and supplemental health insurance were found to be more likely than their counterparts with Medicare only or Medicare with public insurance to undergo revascularization and had lower rates of in-hospital mortality. In another study on the use of effective cardiovascular drugs among elders with cardiovascular disease by type of health insurance, researchers reported considerably greater use of lipid lowering agents (statins) in patients with health insurance providing drug coverage (Medicaid, Medigap, Medicare HMO, or employer-sponsored plans) than among those with no drug coverage (Medicare-only or self-purchased supplemental insurance). In addition, compared to Medicare beneficiaries with supplemental health insurance, elders with no additional coverage were significantly less likely to have influenza vaccination, cholesterol testing, mammography, or Pap smear.

In conclusion, health insurance is an important predictor of health-care access and outcomes in middle-aged older adults and elders. Given the recent and projected decline of employer-sponsored health insurance coverage, an increase in the number of uninsured and underinsured adults is likely, further burdening the health-care system.

Related Topics

[Access to health care](#), [Disability](#), [Health maintenance organizations](#), [Medicaid](#), [Medicare](#), [Medicare Supplemental Insurance](#), [Social Security](#)

Suggested Readings

- Baker DW, Sudano JJ (2005) Health insurance coverage during the years preceding Medicare eligibility. *Arch Int Med* 165:770–776
- Fang J, Alferman MH (2004) Does supplemental private insurance affect care of Medicare recipients hospitalized for myocardial infarction? *Am J Public Health* 94(5):778–782
- Federman AD, Adams AS, Ross-Degnan D, Soumerai SB, Ayanian JZ (2001) Supplemental insurance and use of effective cardiovascular drugs among elderly Medicare beneficiaries with coronary heart disease. *JAMA* 286(14):1762–1763
- Rice T, Bernstein J (1999) Supplemental Health Insurance for Medicare Beneficiaries, Medicare Brief No. 6. National Academy of Social Insurance, Washington, DC

Suggested Resources

- Beedon L, Ng-Baumhackl M (2003) Social Security Disability Insurance: some facts. AARP Public Policy Institute, Washington, DC. http://assets.aarp.org/rgcenter/econ/fs92_ssdi.pdf
- Davidoff A, Yemane A, Adams E (2005) Health coverage for low-income adults: eligibility and enrollment in Medicaid and state programs, 2002. Kaiser Family Foundation, Kaiser Commission on Medicaid and the Uninsured, Washington, DC. <http://www.kff.org/uninsured/upload/Health-Coverage-for-Low-Income-Adults-Eligibility-and-Enrollment-in-Medicaid-and-State-Programs-2002-Policy-Brief.pdf>
- Loprest P, Uccello C (2006) Uninsured older adults: implications for changing Medicare eligibility, 1997. The Commonwealth Fund, New York. http://www.cmwf.org/Publications/Publications_show.htm?doc_id=221604

Health Maintenance Organizations

Siran M. Koroukian

Health maintenance organizations (HMOs) constitute a type of managed care plan, whereby a group of hospitals, physicians, and other health-care providers agree to render health services to beneficiaries for a predetermined monthly amount, also referred to as capitation rates. Medicare HMOs offer benefits above and beyond those available through the traditional Medicare program. Supplemental benefits such as prescription drugs and dental coverage are usually covered without requiring an additional premium—a feature that has made HMOs highly attractive to many beneficiaries. However, the level of monthly premium charged by Medicare HMOs, as well as the generosity of the supplemental benefits, varies considerably across health plans. In the late 1990s, for example, more than 80% of Medicare HMO enrollees participated in a plan that offered prescription drug benefits under the “basic” plan, but with varied drug coverage limits: 25% had no drug limits, approximately 50% had annual drug limits between \$1,000 and \$2,000, and 11% had drug limits below \$600. On the other hand, nearly 16% provided no drug coverage at all. The amount of co-payment varied as well, with co-payment requirements being higher for brand name drugs than for generic drugs.

For many years, capitation rates to provide Part A and Part B benefits for each Medicare enrollee in an HMO had been set at 95% of the Medicare costs incurred by Medicare beneficiaries residing in that county, and receiving their care through the traditional fee-for-service (FFS) system. There have been issues with this method of setting capitation rates, with some studies reporting that HMOs have been paid more than the average FFS costs in that county, for a national total of approximately \$3 billion. In the future, methods of determining the capitation rates will also account for enrollees' risk profile, an approach that is likely to result in more accurate payments to plans.

Participation in HMOs has fluctuated over the years. As of July 2005, nearly five million Medicare beneficiaries (12%) were enrolled in 247 managed care plans nationwide. This reflects a downward trend from 2000, when 6.3 million (16%) Medicare beneficiaries enrolled in managed care plans. Participation in HMOs has also varied widely by region, from 1% of Medicare beneficiaries in many states, to 20% or greater in Arizona, California, Colorado, Oregon, Pennsylvania, and Rhode Island.

Given the preset capitation rates, HMOs have an incentive to rely considerably on preventive services and chronic disease management, so that various conditions get diagnosed and treated before complications develop. HMOs' emphasis on preventive services has been best evidenced through their benefits package, which included coverage for cancer screening services several years before these services were covered through the traditional FFS system. Studies have demonstrated that HMO enrollees are more likely than their FFS counterparts to be diagnosed at earlier stages of breast, colorectal, skin, and prostate cancer, all of which are amenable to screening. Diagnosis of cancer at an earlier stage, coupled with adequate treatment and follow-up care, is strongly associated with favorable cancer prognosis. Similar examples can be found in studying outcomes for other disease categories.

However, preset capitation rates have also raised concerns. First, critics have argued that to ensure financial solvency under fixed capitation rates, HMOs are inclined to limit beneficiaries' access to and use of health services, raising concerns about quality of care. Second, HMOs would have to be rather selective, encouraging the healthy members of the elderly population to enroll or stay in their plans. This phenomenon, referred to as "cherry picking," would help keep HMO enrollees' expenditures below the capitation rate. The debate on whether and/or the extent to

which HMOs actually "cherry pick" is ongoing, and a definitive conclusion on whether the better quality of care is rendered by HMOs or the FFS system is yet to be drawn. However, given the variability in the range of services offered by HMOs, Medicare beneficiaries are best served by making their decisions on whether and which of the plans best meets their own needs by fully exploring their options.

As mentioned earlier, the availability of supplemental benefits, as well as their proactive stance in providing preventive services, is a desirable feature of HMOs. Through these features, HMOs have helped shape the delivery of health services in the geographical areas that they operate in, affecting not only health care use by their own participants, but also by other Medicare beneficiaries residing in these areas.

Related Topics

[▶ Access to health care](#), [▶ Capitation](#), [▶ Health insurance](#), [▶ Managed care](#), [▶ Medicaid](#), [▶ Medicare](#), [▶ Medicare Supplemental Insurance](#), [▶ Preventive care](#)

Suggested Resources

- American Association of Retired Persons (1995–2005) Managed care rules, rights, and responsibilities. Washington, DC. http://www.aarp.org/health/insurance/managed_care
- The Henry J Kaiser Family Foundation. Medicare Advantage Fact Sheet (Publication no. 2052-08). September 2005. <http://www.kff.org/medicare>
- Langwell K, Topoleski C, Sherman D (1999) Analysis of benefits offered by Medicare HMOs, 1999: complexities and implications. Kaiser Family Foundation, Kaiser Commission on Medicaid and the Uninsured, Washington, DC (August 1999). <http://www.kff.org/medicare>

Health Promotion

Diane W. Braza

The *American Journal of Health Promotion* has defined health promotion as "the art and science of helping people change their lifestyle to move toward a state of optimal health. Optimal health is achieved through a key balance of physical, emotional, spiritual, intellectual,

and social elements. Lifestyle change can be facilitated through a combination of efforts to enhance awareness, change behavior, and create environments that support good health practices.”

The major health problems experienced in developed countries result from acute and chronic diseases related to individual behavior. Smoking is the major cause of lung cancer and chronic obstructive pulmonary disease (COPD). Excessive alcohol use results in accidents, injuries, domestic violence, and an increased risk for sexually transmitted diseases. Lack of exercise and consumption of high saturated fat foods contribute to coronary heart disease. Changing individual behavior results in the prevention of disease or injury, in the prevention of additional complications, and in slowing of the underlying disease process. “Many deaths can be preventable and the quality of life for millions can be enhanced through regular exercise, nutritious eating, avoidance of tobacco and excess alcohol, management of stress, enhancement of social networks and economic conditions, clarification of lifestyle values, and achievement of fulfillment in their intellectual pursuits” (www.healthpromotionjournal.com).

Screening for problematic health behaviors is an important component of a routine medical visit. The United States Preventive Services Task Force (USPSTF) has provided recommendations for counseling during everyday practice encounters. Key screening areas include:

- addictive substance use—tobacco, alcohol, and other drugs;
- nutrition—intake of fat, calcium, fiber, calories, and vitamin supplements;
- physical activity and exercise—strengthening, flexibility, and aerobic exercise;
- relationships and sexual health—risky behaviors for sexually transmitted diseases, domestic violence, and prevention of unwanted pregnancy;
- safety and accident prevention—use of seat belts and cycle helmets, falls, and vehicular accidents;
- stress reduction—sleep, leisure activity, spirituality, coping;
- personal hygiene—dental, skin and eye care, and activities of daily living.

To encourage behavior change, routine counseling in all of the above areas is recommended. Examples for counseling include:

- tobacco cessation as well as the impact of second hand smoke

- alcohol cessation
- healthy dietary intake
- promotion of physical activity.

Specific counseling points in regard to promoting regular physical activity include a reduced risk of dying from heart disease, colon cancer, diabetes, and high blood pressure. In addition, regular physical activity promotes weight control, builds healthy bones, muscles and ligaments, and reduces symptoms of depression and anxiety. According to the Centers for Disease Control and Prevention (CDC), physical activity does not have to be strenuous to be beneficial; people of all ages benefit from moderate physical activity. However, people tend to be less active as they age. By 75, about one in three men and one in two women do not engage in any physical activity. Therefore, remaining active is a challenge. Exercise strategies for older adults optimally include a component of aerobic conditioning, strength training, and flexibility exercises. Individuals with arthritis frequently benefit from water-based aerobics, allowing for cardiovascular conditioning, muscle strengthening, and joint protection.

Good nutrition is vital in maintaining optimal health. But unfortunately, as noted by the CDC, “less than one-third of adults 65 years and older meet the ‘5 A Day’ (eat five servings of fruits and vegetables per day) recommendation. Improved nutritional intake of older adults could extend the productive life span of Americans and reduce the occurrence of heart disease, stroke, some types of cancers, osteoporosis, and diabetes.”

The impact of obesity, tobacco utilization, excessive alcohol consumption, lack of exercise, and stress is far reaching and as comorbidities, have significant adverse effects on other health conditions. For example, according to the CDC, 20.8 million Americans have diabetes (14.6 million are diagnosed and 6.2 million remain undiagnosed). This constitutes 7% of the total population. In individuals aged 60 or older, 21% have diabetes (10.3 million). Diabetes was the sixth leading cause of death listed on death certificates in 2002 and may have been underreported. Heart disease and stroke account for 65% of deaths in diabetics. Tobacco utilization and hyperlipidemia are additional risk factors for heart disease and stroke.

Diabetes is the leading cause of new cases of blindness, in persons aged 20–74, and kidney failure. About 60–70% of diabetics have nervous system involvement such as carpal tunnel syndrome or peripheral neuropathy. More than 60% of nontraumatic limb amputations occur in diabetics. Therefore, through prevention and optimal treatment of diabetes, hypertension,

and hyperlipidemia, as well as tobacco cessation, many of the diabetes-related complications can be reduced. Proper education, diet, exercise, and medical management are critical to the achievement of these goals. The CDC has developed programs targeted to reduce the health and economic consequences of the leading causes of death and disability and ensure a long, productive, healthy life for all people. For example, the National Diabetes Education Program (NDEP) is a partnership between CDC, National Institutes of Health, and more than 200 public and private organizations. They have developed diabetes educational materials for individuals, health-care providers, school personnel, businesses, and managed care companies.

Health promotion and education are at the center of modern federal, state, and local public health practices. Regional health promotion and education units have been pivotal in implementing key aspects of modern public health practice through community mobilization and with community participation, recognizing the capacity, politics, and culture of each community. Individuals must utilize this public health information, apply it to their lives and strive toward achieving optimal health and healthy aging.

Related Topics

[Alcohol use](#),
 [Cardiovascular disease](#),
 [Diabetes](#),
 [Exercise](#),
 [Health beliefs](#)

Suggested Readings

McGinnis JM, Foege WH (1993) Actual causes of death in the United States. *JAMA* 270:2007

Schwartz R (2005) At the cutting edge or the center of the storm? Innovation in public health through health promotion and education in state health departments. *Prev Chronic Dis* [serial online], November 2005. http://www.cdc.gov/pcd/issues/2005/nov/05_0074.htm

US Preventive Services Task Force (1996) Guide to clinical preventive services: Report of the US Preventive Services Task Force, 2nd ed. Williams&Wilkins, Baltimore, MD

Suggested Resources

American Journal of Health Promotion. Cleveland, OH. www.healthpromotionjournal.com

Centers for Disease Control and Prevention. Healthy Aging for Older Adults. Atlanta, GA (12/01/2005). <http://www.cdc.gov/aging>

Heart Disease

Kathleen M. Wolner

Heart disease is very common in the United States and affects approximately 20% of the population. Up to 30% of heart attacks result in sudden death, which is more common in people above 65; heart disease can occur in persons of all ages. Certain risk factors have been established as major contributors to the development of this life altering disorder.

High blood pressure, diabetes, high cholesterol, a family history of premature heart disease, and cigarette smoking are the major factors. Diabetes is a very strong risk factor for heart disease and should be aggressively treated since a person with diabetes who has never had a heart attack is at the same risk of having a heart attack as someone who already has had one. Other risk factors include obesity, a sedentary lifestyle, and a high fat diet. Some of the most important research developments in recent years include the following concepts. The first is that high levels of low-density lipoprotein (LDL) cholesterol and low levels of high-density lipoprotein (HDL) cholesterol contribute to heart disease. Secondly, female hormone replacement therapy is no longer felt to reduce the risk of heart disease. Lastly, antioxidant therapy has not been the treatment it was hoped to be. It has been proven that vitamin E, vitamin C, and beta-carotene are not effective in reducing coronary artery disease. There are also some emerging risk factors being discussed. The first is inflammation, such as in gum disease. One theory is that bacteria in the mouth may cause a low-grade bloodstream infection that affects the arteries by attaching to plaques. This may contribute to the formation of a clot that is what actually causes a heart attack. This is a very recent information and research is still needed to fully understand the mechanisms. However, the message is that it is extremely important to treat and cure gum disease as it may have more far reaching effects than beyond the mouth itself. Another emerging risk factor is the metabolic syndrome, a syndrome of multiple problems. The person must possess obesity of the abdomen, a plasma triglyceride level of greater than 150 mg/dL, an HDL cholesterol of less than 40 mg/dL in men and less than 50 mg/dL in women, and a fasting plasma sugar of 110 mg/dL or greater. The combination of these problems constitutes a major cardiovascular risk and these patients need to be aggressively treated for all of them.

The National Cholesterol Educational Program Adult Treatment Panel III (NCEP ATP III) assigned categories of risk based on LDL levels, the form of cholesterol that is most closely tied with the risk of heart disease. HDL is the protective form of cholesterol that is analogous to the “Pac Man” video game of many years ago. The HDL goes out into the blood vessel system in the body, picks up bad cholesterol, and brings it back to the liver where it is degraded. Triglycerides are another form of fat in the blood. It is important to note that high triglycerides and high LDL often occur together. When this happens, the LDL is the target of therapy. High LDL is the more important risk factor and frequently treatment of the LDL brings down the triglycerides at the same time.

High blood pressure, also known as hypertension, is a very important risk factor for heart disease. Unfortunately, high blood pressure is not well controlled in the majority of Americans receiving treatment. A goal blood pressure for healthy people is less than 120–125 Hg systolic and 80–85 mm Hg diastolic. Weight loss, exercise, reducing alcohol, and reducing sodium are also important. While diabetes increases the chance of heart disease, overweight and obese persons also suffer more from cardiovascular disease. The presence of kidney disease incurs an increased risk of cardiac disease, and patients who have end stage kidney disease have a yearly death rate from coronary artery disease of up to 25%.

Acute Coronary Syndromes

As technology has improved, the mortality from coronary heart disease has decreased. In fact, the death rate has decreased by 50% over the last 30 years. Acute refers to new or recent onset of a problem. Ischemic is the term used to refer to the process taking place during a heart attack. The clot of blood or plaque, or a combination of both, actually obstructs the vessel causing the healthy heart beyond this blockage to suffer the effects of low oxygen, thus leading to pain and possibly a heart attack in which this part of the muscle dies. The term “acute coronary syndrome” is a relatively new term that includes every part of the acute pain syndrome, from unstable angina to heart attacks. It is common for patients with known heart disease to have chest pain when they exert themselves. This pain is usual for that person under a given degree of exertion. However, many people with heart disease have no pain. The time to be concerned is when the formerly stable pattern

of pain with a given amount of exertion occurs with less activity, more severity, or at night. This pattern of chest pain is very important to recognize and seek care immediately in an emergency department setting. New onset of chest pain is another cause for alarm. Some patients having a heart attack have no chest pain but have nausea, jaw pain, or shortness of breath. In addition, women may have different symptoms compared to men, for example, chest pain is less common among women.

A type of treatment commonly used is called reperfusion therapy where medication is given to break the clots in the coronary arteries. It can result in dissolution of the clot and allows blood to reach the heart muscle again. The earlier a person goes to the emergency room, the more likely this treatment can be given. After several hours, this treatment is no longer effective and cannot be given. In the setting of a heart attack, it is common to have some ventricular arrhythmias (disorderly heart beats that are life-threatening) during the first 48 hours after the heart attack. If, however, the arrhythmias persist it is common to do specific testing of the electrical system of the heart. These patients are often considered for placement of an implantable cardioverter-defibrillator. This device can “shock” the heart automatically to get back to the normal heartbeat.

How is coronary artery disease diagnosed? The diagnostic test of choice is based upon the person. If the person has no trouble walking and has chest pain that is infrequent, then the appropriate test is exercise stress testing where he/she walks on a treadmill. It is very common to use a radioactive tracer known as thallium. One hopes to find uptake of the thallium throughout the heart indicating that the vessels are open and the blood has gotten to all parts of the heart. If the person has tightness in a vessel, also known as a stenosis, the scan will be abnormal. Cardiac catheterization may be the next step to determine severity. Other patients may need an immediate heart catheterization. If a person is not able to walk on a treadmill, he/she can be injected with a medication called “persantine,” that mimics the stress of walking by increasing the heart rate. There is some evidence that stress testing is less accurate in women than men. The value of computed tomography (CT) scans and calcium determination in the walls of the coronary arteries is not yet known.

Treatment for a patient with coronary artery disease will also depend upon the person. If the person is stable, it is important to focus on the lifestyle modification components, including a low fat/low cholesterol diet, regular exercise and smoking cessation. Usual

treatment includes low dose aspirin, and a family of drugs called statins that lower the LDL cholesterol. Angiotensin converting enzyme inhibitors (ACEIs) and angiotensin receptor blocking drugs (ARBs) are also standard treatments. These treatments reduce recurrent heart attack. The long-acting nitrates give a prolonged period of dilation of the blood vessels and are generally used during the day with a 12-hour holiday in the night to avoid tolerance to the drug. The short-acting form is classically placed under the tongue every 5 minutes up to three times for chest pain. Beta-blocker therapy reduces the heart rate and therefore reduces the blood pressure. It reduces repeat heart attacks in patients who have already had one. Calcium channel blockers improve the blood flow, too. They are a different type of drug, and are very effective with the common side effect of swelling in the legs.

In the event of blockage of three blood vessels, the mainstay of therapy remains open heart surgery. For patients with only one blocked vessel, one vessel coronary disease, stent placement is common. A stent is a tubular cage that is placed in the heart artery and opens up, thereby holding the vessel open. There are many different types of stents. Most of the stents are coated with different drugs to stop the growth of tissue within the stent and to reduce the stent blockage rate.

Bypass graft surgeries do not last forever and the average vein occludes in about 8 years, but can extend to 12 or more years. Approximately 10–15% of patients may have some mental decline after surgery. A theory is that the act of repairing the vessels possibly dislodges plaque and results in some floating of these pieces of debris up into the brain. Not every patient is well enough to have a bypass graft due to other serious medical illnesses, so other means of helping control that patient's pain can be tried.

Heart Failure

Heart failure is a condition where the heart cannot pump effectively and is unable to push the blood through the body. The prevalence of heart failure is increasing, probably in part related to better treatment of patients with coronary artery disease and the progression of disease in these patients. Early on, the symptoms are very treatable as long as patients are careful about diet and medication compliance. However, as heart failure progresses, it can become very difficult to control. More Medicare dollars are spent for heart failure than any other diagnosis.

There are different types of heart failure. Dilated cardiomyopathy is when the heart is dilated due to disease to the heart muscle. Hypertrophic cardiomyopathy refers to a thickening of the heart muscle that worsens the heart's function. Diseases insert protein into the heart muscle, such as amyloidosis, that can cause a stiffening of the heart and result in heart failure. This is known as restrictive cardiomyopathy because it restricts the relaxation part of the heartbeat. Ischemic cardiomyopathy is the weakness of the heart that results from long-standing low blood flow to the heart muscle. The main cause is coronary artery disease and certain infections that can weaken heart muscle.

There are many other diseases that can damage the heart, including thyroid disease, low adrenal gland function, and some inherited diseases. Serious nutritional problems can result in cardiomyopathy, especially certain vitamin deficiencies. Other serious medical illnesses can result in cardiomyopathy as part of the disease process. Alcohol can cause very significant cardiomyopathy, as can radiation for treatment of cancers. Coronary artery disease and hypertension are the most common causes of heart failure. Anemia can worsen heart failure. Diagnosis of heart failure is generally suspected when the person develops either shortness of breath, swelling of the legs or other symptoms of fluid retention. It is important that these symptoms be investigated as early in their development as possible. If the cause is correctible, the course of that person's life can be changed. Treatment usually consists of diuretics and medications to supplement the squeeze of the heart muscle. Medication and dietary compliance are critical to successful treatment. For best results, patients must take an active role in their management.

Pacemakers

When the heart's natural pacemaker does not provide frequent enough heartbeats, the person may experience palpitations, chest pain, shortness of breath, and feeling tired. Cardiologists have the ability to place temporary pacemakers for short-term needs and permanent pacemakers if necessary. A common situation is caused by a very slow heartbeat. If no correctable cause is found, a pacemaker is placed so that the heartbeat can be maintained at a level that makes the person feel better. There are several types of pacemakers and there are rules that govern when a pacemaker is needed for the patient. Pacemakers are commonly used and very safe.

Primary and Secondary Prevention

Primary prevention is our approach to avoiding heart disease in patients with no heart disease. It means that we aggressively treat all of the risk factors. For patients at intermediate to higher risk of heart disease, a low dose aspirin, usually an 81 mg baby aspirin, is recommended for prevention. Not all persons should take aspirin, as there is an increased risk of bleeding. Secondary prevention is aimed at prevention of further disease in patients who have heart disease. Cigarette smoking is one of the most common preventable causes of heart disease and patients should be encouraged to stop smoking, especially if they are high risk or already have heart disease.

Related Topics

➤ Chest pain, ➤ Cholesterol, ➤ Congestive heart failure, ➤ Coronary artery Heart disease, ➤ Coronary risk factors, ➤ Diabetes, ➤ Smoking

Suggested Resources

American Heart Association, Texas (2005). www.americanheart.org. National Heart, Lung and Blood Institute. Information for patients and the public. National Institutes of Health, Rockville, MD (January 13, 2006). www.nhlbi.nih.gov

UpToDate. Medical information for patients. Waltham, MA (2006). <http://patients.uptodate.com>

US National Library of Medicine (2006). MedLine Plus, health information for the general public. National Institutes of Health, Rockville, MD (January 13, 2006). www.nlm.nih.gov/medlineplus

Heartburn

Jacqueline Spiegel

Despite the name, heartburn has nothing to do with the heart. It is a gastrointestinal condition in which stomach contents or acid leak back, or reflux, into the esophagus. Not all heartburn is equal, and not all individuals suffer to the same degree. Heartburn is sometimes referred to as gastroesophageal reflux disease (GERD). The esophagus is the tube that carries food from the mouth to the stomach. The lower esophageal sphincter (LES) is a ring of muscle at the bottom of the esophagus, which acts as a valve between

the esophagus and the stomach. Reflux of acid occurs when the LES weakens, malfunctions, or is under large amounts of pressure, allowing acid from the stomach to move into the sensitive esophagus. Exposure to refluxed acid can result in damage to the lining of the esophagus. Anyone can get heartburn but it is more common in the elderly. Occasional heartburn is normal but heartburn that occurs more than twice a week is typically considered GERD, and could eventually lead to more serious health problems if not treated.

The main symptoms of heartburn include burning chest pain, sour taste in the mouth, nausea or stomach discomfort, chronic cough, and/or morning hoarseness. A key feature in heartburn is triggers, which may include caffeine, fatty or spicy foods, smoking, alcohol consumption, obesity, or stress. Signs of worsening or advancing disease may include recurrent pneumonia or bronchitis, chronic sinusitis, persistent difficulty with swallowing, bleeding, and/or weight loss. Furthermore, research shows that the amount of damage does not correlate well with the amount of pain; therefore, medical evaluation is indicated if the symptoms are recurrent or not well controlled.

Diagnosis is easily made by history of the symptoms, identifying triggers, and response to treatment. In many cases, a therapeutic trial with a proton pump inhibitor (PPI) for 1 week provides strong support for the diagnosis.

Some patients may go on to develop secondary complications of heartburn due to chronic exposure of the esophagus to acid. These include esophagitis (inflammation of the esophagus), erosive esophagitis (inflammation and ulcerations of the esophagus), Barrett's esophagus, or adenocarcinoma of the esophagus.

Diagnostic studies are indicated in patients with persistent symptoms, complications, or those who do not respond to therapy. The diagnostic approach to heartburn (GERD) includes studies to evaluate the mucosal lining of the esophagus, the presence and the quantity of reflux to define other physiologic or anatomic factors. A barium swallow study requires the patient to swallow a liquid solution made of barium while an x-ray is done may show anatomical abnormalities of the esophagus or sphincter. An upper endoscopy, involves visualization of the esophageal lining using a flexible instrument with a small camera on the end, may reveal the presence of irritation, ulceration, or anatomical changes in the esophagus, again seen with advanced disease. If an abnormality is seen, a portion of the tissue would be biopsied (removed for analysis). Outpatient esophageal pH recording monitors

the frequency, quantity, and location of acid reflux. The pH recordings are helpful only in the evaluation of acid reflux when the role of reflux in the patient's symptoms is unclear and esophagoscopy is negative. Esophageal motility studies like barium swallow are done to record pressure and contractions in the esophagus and the LES. A specific bacteria, *Helicobacter pylori*, has been identified in certain cases of heartburn. Blood or tissue specimen testing may be warranted to further evaluate the presence of this bacteria.

Once diagnosed, the goals of treatment are to provide symptom relief, heal erosive esophagitis, and prevent complications. The management of mild cases includes weight reduction, sleeping with the head of the bed elevated, and elimination of factors that increase abdominal pressure. Patients should not smoke, avoid consuming fatty food, coffee, chocolate, alcohol, mint, orange juice, and use caution with medications that worsen the symptoms. They should also avoid ingesting large quantities of fluids with meals. In mild cases, the above lifestyle changes and over-the-counter agents may be adequate. Medical advice should be obtained whenever indicated. Caution should also be taken when utilizing herbal cures and remedies as these may worsen the condition or mask serious complications. Moderate or severe cases may require prescription medication. The most common and potent medical therapy is with PPIs. Surgical treatment may be required for hiatal hernia, LES dysfunction, stricture, or tumor.

In addition to symptom relief, prevention of Barrett's esophagus, a condition in which there are abnormal cell changes, is key. It is recommended in patients with persistent heartburn to have a one-time esophagoscopy or upper endoscopy at the age of 50 to identify any developing complications. The test would be repeated at intervals recommended by a medical provider.

Related Topics

▶ Endoscopy, ▶ Peptic ulcer disease

Suggested Readings

Delany BC (2005) What is the best initial therapy for patients with uninvestigated heartburn? *Nat Clin Pract Gastroenterol Hepatol* 2(9):394–395

Fennerty MB, Johnson DA (2004) Heartburn severity underestimates erosive esophagitis severity in elderly patients with gastroesophageal reflux disease. *Gastroenterology* 126(3):660–664

Suggested Resources

National Digestive Diseases Information Clearinghouse, National Institutes of Health (NDDIC, NIH). <http://digestive.niddk.nih.gov/ddiseases/pubs/gerd/>

National Heartburn Alliance (NHBA). <http://www.heartburnalliance.org/>

Hemorrhoids

Lecia Apantaku

Hemorrhoids are enlarged or varicose veins in the anal canal. They occur in most adults. They are caused by increased pressure in the veins of the rectal outlet, or the end of the rectum. This could be due to increased pressure in the abdomen, which occurs during pregnancy or in a patient with ascites which is fluid that accumulates in the abdomen with liver disease. Standing or sitting for long periods of time can also be a contributing factor.

Hemorrhoids are treated according to their classifications. They occur in constant positions in the anal canal. These are left lateral, right anterior, and right posterior positions. The dentate line is the area within the rectum where the lining changes from skin-like cells to mucosa cells. Internal hemorrhoids occur above the dentate line and are covered by mucosa lining so they are painless. External hemorrhoids occur below the dentate line. As they are covered by skin, they can be painful. When there is a combination of internal and external hemorrhoids, they are referred to as mixed hemorrhoids. First-degree hemorrhoids do not prolapse, or bulge, beyond the anal area. Second-degree hemorrhoids prolapse (bulge) with bowel movements and reduce (go back inside the rectum) spontaneously. Third-degree hemorrhoids prolapse, or bulge, and can be replaced manually into the anal canal while fourth-degree hemorrhoids cannot be reduced. External hemorrhoids are either absent or present and they are not graded.

Bleeding from hemorrhoids is usually of a small amount. The blood coats the stool and is bright red.

Rarely the bleeding is enough over time to cause anemia. There is no pain associated with the bleeding unless there is ulceration or thrombosis (blood clot).

Bloody bowel movements in the presence of hemorrhoids should be investigated. Colonoscopy should be performed to exclude colorectal cancer as a cause of the bleeding.

First-degree hemorrhoids that are asymptomatic are treated with conservative management. This includes avoiding constipation by altering diet to include more fiber and water and by using stool softeners to decrease straining during bowel movements. Symptomatic first-, second-, and third-degree hemorrhoids are treated with rubber band ligation or infrared coagulation so the hemorrhoid in essence “dies off.” Fourth-degree and mixed hemorrhoids are treated by surgical hemorrhoidectomy or hemorrhoid removal.

Thrombosed or clotted external hemorrhoids are treated with excision if diagnosed within the first 24–48 hours. Conservative treatment with Sitz baths and analgesics are the treatment of choice after 48 hours.

Related Topics

► [Constipation](#)

Suggested Readings

- Fry RD (1997) Benign diseases of the anorectum. In: Zinner MJ, Schwartz SI, Ellis H (eds) *Maingot's abdominal operations*, 10th ed. Appleton & Lange, Norwalk, CT, p 1437
- Kodner IJ, Fry RD, Fleshman JW, Birnbaum EH, Read TE (1999) Colon, rectum, and anus. In: Schwartz SI (ed). *Principles of surgery*, 7th ed. McGraw-Hill, New York, pp 1295–1298
- Mac Rae HM, McLeod, RS (1995) Comparison of hemorrhoidal treatment modalities. A meta-analysis. *Dis Colon Rectum* 38 (7):687–694

Hernias

Gregory Skladzien

Hernias are defects in the wall of a body cavity. Abdominal wall and diaphragmatic hernias are common clinical problems in the general population that become more challenging to treat as the individual ages.

Both congenital (one is born with) and acquired (one gets during life) defects in the abdominal wall are etiologic factors in both inguinal and umbilical hernias. Congenital abnormalities tend to come to light early in a patient's life, whereas, the role of increased intra-abdominal pressure secondary to disease, and tissue stress from occupations are additive over the life span of the individual, making hernias a common problem in later life. In addition, incisional herniation due to delayed or latent failure of wound healing is becoming commonplace with an ever-increasing population of aging patients with malignancy, obesity, and Type II diabetes mellitus.

Incisional hernias result from poor abdominal surgical healing secondary to infection, increased wound tension, and poor scarring. Any or all of these factors may be present when the elderly patient with many medical problems undergoes abdominal surgery.

Diagnosis of a hernia is generally made on physical examination by the detection of a mass, or bulge, that may be visible or palpable on the abdominal wall. The mass is likely to increase in size with Valsalva maneuver a way in which the abdominal pressure is increased as when straining for a bowel movement. Hernias are generally reducible, or able to be pushed back, unless incarcerated, which means they are stuck or twisted. If acutely incarcerated, symptoms and signs of intestinal obstruction with or without strangulation are present if the gastrointestinal tract is mechanically involved. Occasionally, omentum or properitoneal fat may become incarcerated and strangulated yielding a localized abdominal wall mass and tenderness without gastrointestinal involvement. In cases where the diagnosis is in doubt, computerized tomography can identify even small hernias and accurately determine the presence or absence of intestine in the hernia sac as well as detect bowel obstruction.

Advances in laparoscopic surgical technique have altered the approach to the treatment of all categories of abdominal hernias. The advantages of faster recovery times, less postoperative pain and often lower recurrence rate make this modality the treatment of choice for all but the smallest of hernias at present. The only disadvantage to the patient is that they must be able to tolerate a general or regional anesthetic to undergo laparoscopic repair.

The problems posed by hernias relate to the possibility of a hernia to cause intestinal and in some cases urinary bladder obstruction and strangulation. The incidence of this complication remains relatively low

at approximately 3% for inguinal or groin hernias. However, the morbidity and mortality related to that complication becomes unacceptable in the aged patient who is likely to have other medical problems that would complicate recovery from an emergent surgical procedure. It is for this reason that elective repair of any hernia is advisable assuming that the patient does not have a terminal illness, severe cardiac, pulmonary, or coagulation system impairment, and is able to tolerate the necessary anesthetic and the surgical procedure.

It is for these reasons that when a hernia is diagnosed in an elderly, institutionalized, perhaps bedridden patient, a dilemma may occur. The clinician needs to educate the patient/family as to the medical surgical risk of operative versus nonoperative treatment of the hernia. No physician wants to put a high-risk patient through an operation that may not be tolerated, though succumbing to a surgically correctible problem is not desirable outcome either.

Related Topics

➤ [Abdominal pain](#), ➤ [Body composition](#)

Suggested Readings

- Malangoni MA (2004) Hernias. In: Townsend CM (ed). Sabiston textbook of surgery, 17th ed. Saunders, New York
- Wantz GE (2001) Abdominal wall hernias. In: Greenfield LJ (ed). Surgery: scientific principles and practice, 3rd ed. Lippincott-Raven, Philadelphia, PA, Chap 34

Hip Fracture

Patrick Knott

There are approximately 300,000 hip fractures each year in the United States, most of which are related to osteoporosis in the elderly. More than 44 million Americans have osteoporosis and one out of every two women and one out of every four men with it will suffer an osteoporosis-related fracture in their lifetime. The direct expenditures from these types of

fractures are estimated to be \$14 billion per year in the United States alone.

In addition to screening and treating osteoporosis, primary care providers can help prevent hip fractures in other ways. First, patients at higher risk can be identified. The nonmodifiable risk fractures for osteoporosis-related fractures are gender (women are more susceptible), age (fracture risk increases with age), body size (small, thin-boned individuals are at higher risk), ethnicity (Caucasian and Asian women are at highest risk. African American and Hispanic women are at lower but still significant risk), and family history (some risk for osteoporosis is genetically inherited.)

There are also modifiable risk factors that can be addressed in the primary care setting. Menopause (both male and female) lowers hormone levels that protect the skeleton from osteoporosis. Hormone replacement can slow down bone loss. Calcium and vitamin D intake needs to be adequate to maintain normal bone mass. Medication, such as long-term glucocorticoids and some antiseizure medications, can cause bone loss. Weight-bearing exercise is important to maintaining bone mass, and a sedentary lifestyle poses increased risk for fracture. Cigarettes cause an acceleration of bone loss and osteoporosis, as does excessive alcohol intake.

Recent research has shown some very specific risk factors for fracture of the hip. A previous osteoporosis-related fracture puts an individual at 2.31 times the normal risk for a second fracture. Low body weight (<58 kg) carries a risk factor of 2.20 times normal. A maternal history of hip fracture carries a risk factor of 1.68, and a previous fall in the last 12 months, even if it did not result in fracture, carries a risk factor of 1.60.

The treatment of hip fractures depends on the location and type of the fracture present. Fractures just distal to the femoral head (the subcapital region) disrupt the blood supply to the femoral head, which travels proximally through the femoral neck. A disruption in the blood supply greatly increases the risk of nonunion and avascular necrosis. Because of this, the fracture is usually treated by removing the femoral head and replacing it with a prosthetic ball. This procedure is referred to as hemiarthroplasty, because it does not replace anything on the acetabulum of the hip. Fractures of the femoral neck also tend to disrupt the blood supply to the head, and are treated similarly.

Fractures through the proximal shaft of the femur, between the greater and the lesser trochanter

(intertrochanteric region) are not as likely to disrupt the blood supply to the femoral head, and can thus be treated differently. These fractures are “pinned” in place using a large lag screw that is inserted into the femoral neck and a side plate that runs distally down the femoral shaft. This hardware is often “dynamic” and allows the lag screw to slide back into the plate, which in turn allows the fracture to compress together, increasing the healing potential.

Finally, hip fractures below the lesser trochanter (the subtrochanteric region) rarely disrupt the blood supply to the femoral head, but pose other mechanical challenges related to the stress of the body weight at the hip. They are also treated with a side plate and screws, but may not benefit from the compression that is possible with more proximal fractures.

There are significant risks with hip fracture surgery. Operative complications include blood loss, stroke from hypotension, pulmonary emboli as fat is dislodged from the femoral shaft, formation of deep vein thrombosis in the pelvic or extremity veins, and operative infection. Approximately 35% of patients with hip fracture suffer some cardiac event during their treatment. These events include ischemia, arrhythmia, infarction, and sudden death.

Postoperatively, patients can suffer from wound infection, pulmonary emboli from previously formed deep venous thrombosis (DVT), pulmonary atelectasis leading to pneumonia, and pressure sores from prolonged bed rest. Early ambulation and return to a home environment has shown to decrease these complications. Yet, the relative risk of dying (adjusted for age) within the first 6 months after hip fracture is 6.68 times that of controls. The risk is highest in the first 6 months, but is elevated for several years after the fracture. In addition, nearly 1 out of 1,000 patients will fall again and fracture the other hip.

Several studies have measured the effect of protective devices on older patients who are at the risk of falling and sustaining an osteoporosis-related hip fracture. Most notably, plastic “hip protectors” were found to have very poor compliance with older patients who found them uncomfortable to wear, and had no protective benefit of fracture prevention. Modification of activities in the home, such as removing small rugs that can cause tripping, have had better success in reducing falls.

New researches show the relationship between the vitamin D (Calcitriol) gene and the risk of hip fracture. The BB genotype has been found to have a lower bone

mineral density (BMD) and more than a twofold incidence of hip fractures over the bb genotype. The Bb heterozygous type was found to have no increased risk.

BMD testing using dual energy x-ray (DEXA) scans is very accurate and can help predict fracture risk and measure the effectiveness of osteoporosis treatment. The fracture risk hits 11 times normal when the BMD drops to the 5th percentile among age-adjusted patients. Hormone replacement therapy has been shown to improve BMD and reduce fracture risk, but recently it has been found to increase the risk of cardiovascular and breast disease, and is no longer being recommended. In its place, more aggressive treatment of osteoporosis is needed. Compliance and follow-up are very important. A recent study showed that 80% of patients with a new fracture had failed to fill a prescription for their osteoporosis medication in the previous 6 months.

Related Topics

➤ Bone strength, ➤ Hip fracture replacement, ➤ Osteoarthritis, ➤ Osteoporosis

Suggested Resources

The National Institutes of Health, Osteoporosis and Related Bone Diseases National Resource Center. Reports on Osteoporosis, Fracture Risk, Treatment Options, and New Research. www.niams.nih.gov/bone

Hoarding

Maria Lourdes Gonzales · Teresa Piotrowicz

Compulsive hoarding syndrome is one of the symptom dimensions of obsessive–compulsive disorder (OCD). Hoarding and saving behaviors can also occur in non-clinical populations and with other neuropsychiatric disorders such as schizophrenia, dementia, eating disorders, mental retardation, and autism. The causes of compulsive hoarding are not known; however, symptoms show a recessive inheritance pattern. There appears to be biological abnormalities in the central

nervous system (CNS) among individuals with hoarding. Using positron emission tomography (PET) brain imaging, compulsive hoarders have been found to have significantly lower glucose metabolism in specific parts of the brain (e.g., anterior and posterior cingulate gyrus, thalamus, and occipital cortex).

Individuals with compulsive hoarding may exhibit the following characteristics: The individual acquires and fails to discard a large number of possessions that appear useless or of limited value. Clutter prevents the individuals from using living or work spaces for activities for which they were designed. Hoarding behavior causes significant distress or functional impairment.

For individuals with hoarding, living areas may be so cluttered that sleeping in a bed, sitting on chairs, preparing food on a kitchen counter, and using toilets/bathrooms are not possible. The clutter may be a fire hazard and may block the exits. It may extend beyond a person's home to his or her cars, garage, storage lockers, and even storage areas owned by friends and family. Individuals with hoarding may overbuy or impulsively purchase items they feel have emotional or monetary value. They may consider the items extensions of themselves and suffer grief-like loss when discarding things.

Avoidance behaviors are a hallmark of the compulsive hoarding syndrome. Individuals may have difficulty deciding which items to discard, because they are fearful that they will make mistakes in their decision-making. Thus they would rather put the items in a box, rented storage, etc. Hoarders may take a long time to do even small chores, such as bill paying. It may take a significant amount of time to move items from one pile to another but they never discard any item or establish a consistent system or organization. Work performance is often impaired. Hoarders are also frequently embarrassed by their clutter. They may avoid visitors to their homes, sometimes for years; thus, they often have very little family or social support. Finally, hoarders have poor insight, and are often unable to realize that the clutter in their homes is causing health and safety risks.

Hoarding has been described as difficult to treat both pharmacologically and behaviorally as compared to the other symptoms of OCD. However, it has been suggested that a combination of medications and psychotherapy, such as cognitive behavioral therapy (CBT) and exposure and response prevention (ERP), is a beneficial treatment for compulsive hoarding. CBT focuses on changing beliefs, distorted thinking, behaviors,

and organizational skills. ERP focuses on preventing incoming clutter, discarding, organizing, and on relapse prevention. Interventions for hoarding in elderly patients could be ones of a nonpharmacological nature, although medications may be helpful as well. Medications, such as selective serotonin reuptake inhibitor (SSRI) antidepressants (Celexa, Lexapro, Zoloft, and others), may be useful as well. If there is comorbidity with attention deficit hyperactivity disorder (ADHD), other attentional problems, low motivation, or lethargy, then stimulants can be effective. For comorbid bipolar disorder, cyclothymia and impulsivity, mood stabilizers may be a treatment of choice.

Related Topics

- [Anxiety disorder](#), ➤ [Cognitive behavioral therapy](#),
- [Obsessive–compulsive disorder](#), ➤ [Psychotherapy](#)

Suggested Readings

- Feusner J, Saxena S (2005) Unclutter lives and homes by breaking anxiety's grip. *Curr Psychiatry* 4(3):13–24
- Hwang JP, Tsai SJ, Yang CH, Liu KM, Lirng JF (1998) Hoarding behavior in dementia. A preliminary report. *Am J Geriatr Psychiatry* 6:285–289
- Saxena S, Brody AL, Maidment KM, Smith EC, Zohrabi N, Katz E, Baker SK, Baxter Jr LR (2004) Cerebral glucose metabolism in obsessive–compulsive hoarding. *Am J Psychiatry* 161:1038–1048
- Saxena S, Maidment, K (2004) Treatment of compulsive hoarding. *J Clin Psychology*. 60(11):1143–1154

Suggested Resources

<http://ocfoundation.org>

Home Health Care

Elizabeth A. Madigan

Home health care in the United States is one component of a complex system of community-based health care. Home health care is defined as the delivery of

health care services in the home setting, provided by health care professionals. This is in contrast to the care delivered by aides and other paraprofessionals (sometimes referred to as simply home care), or the delivery of drugs, equipment, and supplies (e.g., intravenous drugs, oxygen systems, hospital beds, and wheelchairs). The distinction is that the care is provided by health care professionals, most commonly by registered nurses (RNs) and physical therapists (PTs) who provide care to 75% and 26% of patients, respectively. Other kinds of providers may include occupational therapists, speech and language pathologists, medical social workers, nutritionists and dieticians, and respiratory therapists. The home health care program includes home health aides who work only under the direction and supervision of a RN or rehabilitation therapist.

Most home health care services are provided to older people, with 70% of the patients aged 65 and older, although all age groups may receive services. Most home health care patients enter the system following a hospital stay, often for a recurrence of a chronic disease such as heart failure or emphysema. In addition, patients who have undergone surgery and need rehabilitation may require services, as may patients who require complicated wound care or the administration of intravenous drugs.

Home health care is visit-based, meaning that services are provided during intermittent visits, generally lasting 45 minutes. The visit frequency depends on the patient's health care needs and the abilities of the patient and family to manage the care. For example, a patient who is a new diabetic may require daily visits for 1–2 weeks to learn safe administration of insulin and a diabetic diet. The visit frequency would decrease as the patient's condition becomes more stable. There is a very small component of home health care that is based on hourly care. Hourly care by nurses is difficult to arrange because of nursing shortage in the United States and because such care can be prohibitively expensive, often beginning at \$25 per hour. Few insurers will pay for this type of care, and most patients and families cannot afford to pay for it. Most hourly care is provided by home health aides with approximately 53,000 patients receiving continuous care in 2000.

The largest payer for home health care is the Medicare program (health insurance program for the aged, disabled, and those with end stage renal disease) followed by the Medicaid program (health insurance

program for those with low incomes), and then private insurers, which are most often employer-sponsored insurance coverage programs. Managed care programs of all types also pay for home health care. Patients may also pay for care out of their own funds.

Given the complexity and decentralized community-based care delivery system, home health care agencies work closely with other types of care providers such as home-delivered meal services "Meals on Wheels"; homemaker and chore services to assist with housework, laundry, and home maintenance; and transportation services to assist patients needing to visit their physician or outpatient centers. As part of the home health care system, RNs and rehabilitation therapists work closely with the patients' physician on medications, patient status, and changes in the plan of care. In addition, home health care agencies also have access to other kinds of community-based services such as hospice, respite care for caregivers, and other local programs.

In the United States, there are approximately 7,000 home health care agencies serving more than two million Americans each year. Home health care agencies can be for-profit or nonprofit freestanding organizations that provide only home health care. These agencies, most of which are nonprofit, may be known as "Visiting Nurse Associations" or "Visiting Nurse Services." Hospitals and hospital systems also may have home health care programs associated with the hospital. City and county health departments in some areas also provide home health care services although the number of such agencies is less than 15% nationally.

The "Home Health Compare" link in the Medicare website makes it possible to select from agencies in the local area by evaluating outcomes of patients who have received care from these agencies. The ten outcomes reported for each agency focus on three areas: (1) four items on improvement in functional status such as bathing, transferring, walking, and management of oral medications; (2) three clinical outcomes on improvement in urinary incontinence, pain interfering with activity, and dyspnea; and (3) three on health service utilization outcomes such as unplanned hospitalization, requiring urgent care, and remaining at home following home health care discharge. These outcomes were deemed important to older people and their families. Higher scores indicate better outcomes for the functional status, clinical outcomes, and remaining at home following home health care

discharge, whereas lower scores are desirable for unplanned hospitalization and requiring urgent care.

Home health care services are expected to grow with the aging of the American population, advances in technology (e.g., telemedicine), and with a greater promotion of health care delivery in community and home settings.

Related Topics

▶ Activities of daily living, ▶ Medicaid, ▶ Medicare

Suggested Resources

Centers for Medicare and Medicaid Services (2003) Data Compendium. Available online. http://www.cms.hhs.gov/DataCompendium/01_Overview.asp#TopOfPage

Home Health Compare. www.medicare.gov and select "Compare Home Health Agencies in Your Area"

National Center for Health Statistics (2004). 2000 National Home and Hospice Care Survey. Centers for Disease Control and Prevention. <http://www.cdc.gov/nchs/data/nhhcsd/curhomecare00.pdf>

Home Modification

Brandy L. Johnson

The National Resource Center on Supportive Housing and Home Modification defines home modification as the adaptation to the home environment to increase ease of use, safety, comfort, security, and independence. The architectural features of a house can influence its inhabitant's quality of life and ability to function independently. Modification of an inaccessible or partially inaccessible house makes it easier for individuals to remain independent and in their own homes once they become elderly or in the event of a disabling injury.

In 2000, a survey of those aged 65 and older revealed that 90% of those surveyed preferred to stay in their own home as long as possible. Likewise, most disabled individuals would prefer to live independently. Unfortunately, many homes do not have the

necessary structural features, such as a ramp or accessibility features in the kitchen and bathroom. Home modification provides a solution to this problem.

Modifications fit into two basic categories: major and minor. Major modifications include ramps, roll-in showers, lowered countertops, widening doorways, higher electrical outlets, lower electrical switches, and a sink with the room for the user to roll a wheelchair underneath it. Minor modifications include grab bars, widened doorways, improved lighting, handheld showers, and lever door handles.

The amount of time and planning necessary to make home modifications will largely depend on the modifications that need to be made. Prior to making any modifications, a homeowner may want to have an assessment of the home environment conducted to determine the magnitude and exact modifications that are necessary. Some home modification programs will come out and make such an assessment. The contact information for local home modification programs can often be obtained through the State's Agency of Aging, the State's House Finance Agency or Housing and Community Development Agency, the Department of Public Welfare, the Department of Community Development, a local Senior Center, a local Independent Living Center, or on the Internet.

The cost of home modification can vary. Logically, major modifications will cost more than minor modifications. The cost will also depend on the number of modifications that are needed to make a house accessible. Houses that are one-storied and have an open design will be less costly to modify than a two-storied home with rooms that do not openly flow into one another.

Depending on the nature of the modifications being made, the homeowner may be able to make all of the modifications himself or herself. The ability to make one's own modifications would reduce the costs involved and make the modifications more affordable. If the homeowner were unable to make the modifications himself or herself, the ability to retain the services of an experienced friend or family member would also have the effect of making the modifications more affordable. The homeowner could also hire a contractor or remodeler.

While home modifications are paid for out-of-pocket, there are sources that help make the modifications feasible. Some Area Agencies on Aging use funds from Title III of the Older Americans Act to modify homes. Banks and lenders often offer loans to help

finance home modification projects. Reverse mortgages are also available and allow the homeowner to turn the value of their home into cash. In addition, the Federal Housing Administration administers mortgage insurance programs that can help homeowners secure loans needed to make home modifications. Medicare and Medicaid can be used to pay for medically necessary durable medical equipment that has been prescribed by a physician. Home modifications may also be tax deductible if the modifications meet certain conditions. For instance, part of the expense of installing an elevator or stair climber may be deducted if it increases the resale value of the property and has been prescribed as medically necessary.

While home modification is a solution to the problem homeowners face when they or one of their loved ones becomes disabled or unable to function in the home, it may be simpler and cheaper to incorporate architectural-friendly features into the original design of a home.

Related Topics

- ▶ [Area Agency on Aging](#), ▶ [Medicaid](#), ▶ [Medicare](#),
- ▶ [Quality of life](#)

Suggested Readings

- Bloom S, Greenstein D (1997) Easy things to make things easy: simple do-it-yourself home modifications for older people and others with physical limitations. Brookline Books, Brookline, MA
- Kochera A (2002) Accessibility and visibility features in single-family homes: a review of state and local activity. AARP, AARP Public Policy Institute, Washington, DC
- National Resource Center on Supportive Housing and Home Modification (2003) Home Modification Resource Guide. National Resource Center on Supportive Housing and Home Modification. Los Angeles, CA
- Siebert C (2005) Occupational Therapy Practice Guidelines for Home Modifications. AOTA Press, Bethesda, MD

Suggested Resources

- Department of Housing and Community Development. <http://www.nahro.org/reference/internethousing.cfm>
- Federal Housing Administration. <http://www.hud.gov/ll/code/llplcrit.html>
- National Resource Center on Supportive Housing and Home Modification. <http://www.homemods.org/profile/index.html>

Homelessness

Sally Shepherd

Homelessness is defined as lacking a fixed, regular, and adequate nighttime residence. This definition also includes individuals whose primary nighttime residence is some type of shelter, as well as individuals who spend their nights in private or public places not designed or ordinarily used for sleeping. A broader definition, “relative homelessness”, also includes those who are forced to live in situations that do not meet basic standards of health and safety.

It is particularly difficult to provide accurate statistics on the size of the homeless population in the United States. Evidence suggests that up to 3.5 million individuals may experience homelessness on any given day. Recent studies report an estimated 14–28% of the homeless are aged 50 and above, and that their absolute numbers are increasing with the aging of the baby boomer population. The fundamental demographics of this population indicate a move away from the nuclear family and an increase in individuals living alone. Very few of the older homeless consider their family as part of their support system. Although they may have contact with them, they tend to rely more on service providers for social support. A number of gender differences can be noted: older men tend to become homeless because of job loss, while older women tend to lose their homes because of a family crisis (e.g., marital breakdown or widowhood). Women are more likely to become homeless in their mid-fifties, which is at an older age compared with men. The risk of homelessness affects older adults across diverse cultures and regions: over 60% of older African American and Hispanic renters spend more than 30% of their income on housing, making them extremely vulnerable to losing their homes. Male, single veterans also represent a significant proportion of the homeless population. Rural homelessness is exacerbated by the lack of appropriate shelters and limited access to transportation and agencies that might help solve housing problems. Up to 75% of the serious mentally ill may have been homeless at one point. As homeless older adults, they have higher alcohol abuse and mental illness rates compared to the general older population. Their behavior and financial instability often lead to eviction and perpetuate their homeless status.

On top of the estimated three million Americans who are homeless or marginally homeless, another five million poor people spend over half their incomes on housing. A health crisis, a missed paycheck or an unpaid bill can quickly lead to homelessness. Even seniors whose homes are technically “paid for” are negatively affected by the fact that these structures are often over 30 years old and require upkeep and repairs that may be beyond their means. Nearly 17% of older adults have incomes below 125% of the federal poverty level (FPL); approximately 75% of them are women. Older adults may be eligible for Social Security, Supplemental Security Income (SSI), Social Security Disability Income (SSDI) or Veterans benefits. Seniors may be unaware of the benefits to which they may be entitled, or have difficulty navigating the complex application process. However, these sources of income are often inadequate to cover the cost of housing. On a national average, the cost of renting a one-bedroom apartment is almost equal to or exceeds a senior’s total monthly SSI income.

Severe living conditions naturally result in unmet physical and mental health needs and a shortened life expectancy in this population. As previously mentioned, mental illness and alcohol and substance abuse rates are high. Severe depression-related symptoms are common, but may be dismissed by providers because the client does not meet the full criteria for depression. Acute stress and anxiety are impediments to normal functioning and problem-solving. Respiratory, cardiac, and gastrointestinal problems are also extremely common. Even in a shelter, older adults may not eat or sleep well enough to fight off infections and disease. Homeless older women particularly report problems with finding enough to eat and clothing. Older men have more difficulty finding shelter for the night, a place to wash and to use the bathroom. Injuries as the result of violence (e.g., assault and robbery) or falls are common. When individuals fall ill, they may delay in seeking care and their environment or cognitive impairment may make it very difficult to adhere to a treatment plan. Because many shelters close during the day, older residents may not receive help with self-care. Poor eyesight, limited mobility and problems with memory can place severe limitations on access to health and social services. It may be difficult to obtain and fill medication prescriptions. Some individuals may not be old enough to qualify for Medicare, but their health condition may resemble that of a much older person.

Homelessness is more than a housing problem. The homeless need more than just a living space they can call their home. Safety, independence, access to a social network, and support by family and informal caregivers are essential to successful aging. The recommendations from the 2005 White House Conference on Aging stress the importance of research to determine the true size and needs of the senior homeless population. Our priority must be to provide affordable housing suited to an individual’s level of functioning. There is a need for more trained case managers to assist senior homeless people in accessing health and social services, and services should be designed to provide a continuum of care. Community education and involvement could be used to create an expanded care and support network.

Related Topics

➤ Access to health care, ➤ Alcohol use, ➤ Depression, ➤ Federal poverty level, ➤ Malnutrition, ➤ Mental illness

Suggested Readings

National Resource Center on Homelessness and Mental Illness. Homeless and mental illness among older Americans. May 2004 Substance Abuse and Mental Health Services Administration (SAMHSA), The Center for Mental Health Services. www.nrchmi.samsha.gov/pdfs/bibliographies/olderamericans.pdf

Suggested Resources

Administration on Aging. Eldercare Locator page. US Department of Health and Human Services, Washington, DC. <http://www.eldercare.gov/eldercare/Public/Home.asp>

Administration on Aging. General information. US Department of Health and Human Services, Washington, DC. www.aoa.gov
 Institute for Life Course and Aging. University of Toronto, Toronto, Canada. <http://www.utoronto.ca/lifecourse/research>

Homeopathy

Paul Tiger · Marcello Maviglia

Homeopathy is an over 200-year-old alternative medicine system developed by Samuel Hahnemann

(1755–1843), a German physician who received, and was dissatisfied with, the conventional training of his time. The root of the word homeopathy (*homeo*: same; *path*: illness) suggests the basic principle that illnesses are treated by remedies that produce similar effects to the illness itself, in distinction to allopathy (*allo*: other) or conventional medicine in which therapies produce different or even opposite effects to the illness. The National Institutes of Health (NIH) classifies homeopathy as a form of alternative health system, along with naturopathy, Ayurveda, and traditional Chinese medicine.

Prevalence

Homeopathy has been, and continues to be, a popular form of healing both internationally and in the United States. A 1999 survey suggests that about 3% of US adults above 18 have used homeopathy, although use seems to be much higher abroad especially in Europe. There has been a fivefold increase in the use of homeopathy in the United States between 1997 and 2003, mostly involving the use of over-the-counter homeopathic remedies. Treatments are sought most commonly for asthma, depression, otitis media (middle ear infection), allergic rhinitis, and headache. While older adults might conceivably be more likely to seek out these treatments due to favorable side effects profiles, lower costs, and the lack of effective conventional alternatives, very few studies of homeopathy have focused on elderly populations, and the use of homeopathy seems greater among younger people. The NIH maintains the National Center for Complementary and Alternative Medicine (NCCAM) and a website that provides additional information about the history, prevalence, and specific uses of homeopathy and other forms of alternative medicine.

Principles Homeopathy is governed by several tenets, the first of which, *similia similibus curentur*, Latin for “let like cure like,” is known as the “similia principle.” The similia principle was probably not solely Hahnemann’s discovery. Hippocrates observed that low doses of potentially toxic substances could be used to treat illness. Arguably, vaccination and allergy desensitization are specific instances of this principle applied to preventive immunology. Hahnemann investigated many different herbal remedies, noting their toxicological effects on healthy volunteers—often,

reportedly, himself, family, and friends—in order to match the use of these remedies to the symptoms they produced. Initially diluted to reduce toxicity, later, diluting and vigorously shaking the preparations were believed to enhance the remedy’s potency through a process of “potentization,” a second tenet of homeopathy. A third tenet of homeopathy holds that remedies are most successful when they treat the “totality” of symptoms. Two people with same illness but different predominant symptoms receive different remedies. The remedies change during the course of their illness as symptoms resolve and others appear. Two different people with the same symptoms might also receive different treatments based on individual differences.

Practice Homeopathic practice includes practices designated as “classical,” “clinical,” and sometimes “complex” and “isopathy”. Classical homeopathy involves the most detailed history-taking and infrequent dosing of a single remedy at a time. Homeopathy includes not only an in-depth evaluation of physical symptoms but also an exploration of emotions, mental states, lifestyle, and nutrition. Homeopathic remedies are chosen to treat symptoms rather than illnesses. Homeopathic medicines are currently regulated by the FDA and manufactured under guidelines. Generally, the medications used are safe and do not have side effects, presumably because of the high dilutions, but some adverse effects have been reported.

Challenges Challenges to homeopathy have come from two major areas: (1) the results of clinical research into homeopathic remedies, and (2) concerns about its scientific basis.

Research studies have not clearly shown homeopathic therapies to be more effective than placebo. Within the last 10 years, findings have been mixed. A landmark meta-analysis—a study that combines and analyzes data from many different studies—published in *Lancet* in 1997 seemed to show that the effects of homeopathy overall could not be explained solely by placebo, although with the caveat that no specific therapy proved clearly superior to placebo. In the years that followed, reexamination of much of the same data raised questions about how the studies were conducted and analyzed. In 2005 the *Lancet* published a comparative study of homeopathy versus allopathic treatments, finding “weak evidence for specific effect of homeopathic remedies” and strong evidence for a specific effect of allopathic treatments for the

same conditions. This finding is consistent with the conclusion that homeopathic remedies do not differ from placebo effects.

The principle of potentization has no accepted scientific explanation. Some extremely “potent” dilutions would not be expected to contain a single molecule of the original substance. In 1988, *Nature* published a paper reporting to have detected a biological effect of such a dilution, a result that drew criticism and was not immediately replicable.

Support Research has shown that homeopathic treatments may possibly be effective for hay fever, rheumatoid and osteoarthritis, allergies, and childhood diarrhea. The NIH NCCAM website provides references to positive single clinical trials for homeopathic remedies in allergies, influenza (flu), chemotherapy-induced mucositis, childhood diarrhea, hay fever, and immune function in HIV infection. Recent evidence also supports effectiveness in flu treatment (with *Oscillocochinum*), and treatment for postoperative ileus (bowel obstruction), as well as homeopathic remedies for arthritis-related chronic pain. Some believe that the relationship between the physician and the patient, or some other aspect of treatment delivery, can have important effects on health. Homeopathic approaches may allow the development of a health-promoting bond with the physician, leading to treatment compliance, hopefulness, and increased responsibility for health, and health-promoting behavior.

Homeopathy continues to be a popular form of treatment. Patients are advised to consult their primary physician with questions about the safety and effectiveness of any particular remedy. Physicians are advised to be open-minded and attentive to their patients' wishes to try alternatives. In the United States, lists of trained homeopaths may be obtained from the National Center for Homeopathy in Alexandria, Virginia. Arizona, Connecticut, and Nevada currently have state homeopathic boards. Consumers of health care are clearly drawn to practices that are gentler, holistic, and integrated, and involve the belief that the body has the ability to heal itself.

Related Topics

- ▶ Arthritis, ▶ Back pain, ▶ Chronic pain, ▶ Complementary and alternative health practices, ▶ Headache, ▶ Health beliefs

Suggested Readings

- Brien S, Lachance L, Lewith GT (2004) Are the therapeutic effects of homeopathy attributed to the consultation, the homeopathic remedy, or both? A protocol for a future exploratory feasibility trial in patients with rheumatoid arthritis. *J Alternative and Complementary Med* 10(3):499–502
- Hanyu N, Simile C, Hardy AM (2002) Utilization of complementary and alternative medicine by United States adults. *Medical Care* 40(4):353–358
- Jonas WB, Kaptchuk TJ, Linde K (2003) A critical overview of homeopathy. *Ann Intern Med* 138:393–399
- Linde K, Clausius N, Ramirez G, Melchart D, Eitel F, Hedges L, Jonas W (1997) Are the clinical effects of homeopathy placebo effects? A meta-analysis of placebo-controlled trials. *Lancet* 350:834–843
- Shang A, Huwiler-Müntener D, Nartey L, Jüni P, Dörig S, Sterne JAC, Pewsner D, Egger M (2005) Are the clinical effects of homeopathy placebo effects? Comparative study of placebo-controlled trials of homeopathy and allopathy. *Lancet* 366:726–732

Homicide

Corinne Peek-Asa

Homicide is the most extreme act of violence. Although all homicides involve a death at the hands of another, homicide is in actuality a diverse group of events. Homicides can occur between strangers, acquaintances, and intimate partners, they involve a wide array of physical forces and weapons, and they include many types of motivations and precipitating factors. Although diverse, homicides have some predictable characteristics that can be used to improve efforts to prevent their occurrence.

The elderly tend to be victims of homicide much less frequently than younger people. In 2002, the National Center for Health Statistics, Vital Statistics System identified 812 homicide victims aged 65 and above, at a rate of 2.3 per 100,000 elderly. In contrast, there were 16,785 homicide victims among those below 65, at a rate of 6.65 per 100,000 people less than 65.

Thus, the elderly comprise approximately 4.6% of all homicides.

Overall homicide rates have decreased markedly each year from 1993 through 2003. However, elderly homicide rates decreased only slightly between 1993 and 1998 and have remained stable since 1998. Thus, any factors that have contributed to the overall reduction in homicide rates have not been as effective for elderly homicide victims. Although rare, the elderly can also be homicide offenders. The rate of homicide offending has decreased steadily from 2.1 per 100,000 in 1976 (the year the Federal Bureau of Investigations started tracking) to 0.6 per 100,000 in 2002. For the overall population, men are nearly four times more likely to be homicide victims than women. Homicide rates for the elderly are much more similar by gender, with an average annual rate of 1.61 per 100,000 elderly women and 3.22 per 100,000 elderly men.

Elderly homicide victims are more likely to be killed during a felony than younger victims, particularly during a robbery or burglary. Weapons are common causes of death in these events, and in 2002 more than a third of elderly homicide victims were killed by a firearm. Other common causes of elderly homicide include suffocation, blunt force injuries, and knife wounds. Elderly homicide victims are most likely to die in their own homes.

The social isolation faced by many elderly may make them more attractive targets for criminals. Frailty also reduces their resilience to trauma resulting from an assault. It is likely that some elder homicides committed by a spouse or close family member, such as those that occur as a consequence of elder abuse, are not identified as homicides.

Risk factors for homicide and violent behavior are usually evaluated at the level of the social/community unit and the individual. At the social/community level, one of the fundamental factors in the rate of homicide is social disorganization. Social disorganization is defined as the inability of a community to realize the common values of its members and a lack of social control. Characteristics of communities such as high population density, tolerance for violence, income inequality, racial inequality, poverty, low levels of education, and high unemployment have consistently been linked to high homicide rates. However, the relative strength of these characteristics in predicting homicide rates has varied widely in different studies.

The specific cultural role of elderly members of the community is also an important factor in elder homi-

cide. Cultures that value elders and include them in social functions may play a strong protective role for the elderly. Individual characteristics such as living in poverty, low educational attainment, and unemployment are linked to homicide, but the interrelationship between these as individual or societal characteristics has not been thoroughly examined.

The World Health Organization has supported a science-based public health approach to reduce violence. The steps in such an approach include establishing national plans and policies for violence prevention, facilitating the collection of data to document and respond to the problem, building important partnerships with other sectors, and ensuring an adequate commitment of resources to prevention efforts. Furthermore, the National Research Council has called for increased research to identify the causes and situations that lead to elder homicide.

Related Topics

[Crime](#), [Elder abuse and neglect](#), [Violence](#)

Suggested Readings

- Bonnie R, Wallace R (eds) (2003) *Elder mistreatment: abuse, neglect, and exploitation in an aging America*. National Research Council, Washington, DC
- Fox A, Zawitz MW (2003) *Homicide trends in the United States: 2000 update*. Department of Justice, Bureau of Justice Statistics, NCJ 197471. Washington, DC
- Gottesman R (ed) (1999) *Violence in America: an encyclopedia*. Charles Scribner, New York, NY

Homosexuality

Nancy Mendez

Gays and lesbians have often been called the invisible minority. But according to the National Gay and Lesbian Task Force (NGLTF), one subgroup, older homosexuals are even more marginalized. The NGLTF estimates 3.5 million Americans above 50 self-identify as gay or lesbian. That number will continue to increase in coming decades as the population of gays

and lesbians who have already declared their sexual orientation ages.

Very little research has been done on aging gays and lesbians. Few studies that have been completed focus on dispelling the myths about elderly gays and lesbians. These included beliefs that older gays are lonely, depressed, oversexed, and living a life without the traditional support of family and friends. Older lesbians are often depicted as unattractive, unemotional, and lonely. What this limited research did find is that the aging concerns of lesbians and gays are primarily the same ones concerning most aging adults—loneliness, health care, employment, housing, and long-term care.

However, a recent study published in the April 2003 issue of *The Gerontologist* did find that gay and lesbian seniors are twice as likely (66% versus 33%) as the general population of seniors to be alone. This can be attributed to the fact that more than 75% of gays and lesbians never have children and others are estranged from their families because of their sexual orientation. Thus, living alone can lead to isolation and loneliness. The 2003 study also found that older gays and lesbians often mistrust the health and social service networks as a result of lifelong experiences of marginalization and oppression. Many of today's elderly gays and lesbians are afraid to tell their doctor they are gay or lesbian for fear that their doctor will treat them differently or discriminate against them. This can become a problem because a lack of honesty with one's physician can negatively impact treatment. Although their relationships and sexual problems are generally similar to those of heterosexual persons, homosexual persons may experience additional stress due to a perceived need to hide their sexual orientation. According to the recent study, this problem continues to exist despite changes in attitude in recent years toward gays and lesbians.

Aging gays and lesbians must also confront housing-related issues. Lesbians and gays who enter mainstream care facilities often face discrimination and abuse if they remain open with their sexual identities. Homophobic peers can quickly create a hostile environment for the elderly gay or lesbian. Also, when gay or lesbian life partners enter a retirement facility together, many times they are separated and not allowed to share a room. The issue is worse for transgender elderly. Transgender older adults tend to be entirely off the radar even for professionals who deal with the aging. Discrimination in many social and institutional environments poses a threat to the health and well-being of gay and lesbian seniors. Gay-oriented long-term care facilities are virtually nonexistent. One response to this problem is the

building of gay and lesbian retirement communities. So far, there are only a few of these facilities and they tend to cater to the wealthier gay and lesbian population. Many lesbian, gay, bisexual, or transgender (LGBT) centers have begun to push for affordable safe housing for gay and lesbian elders.

Elderly gays and lesbians are also concerned with financial planning. The most common asset for most elderly people is their employer-based retirement benefits package. However, employers may offer retirement benefits to married employees that are far greater than what is generally offered to someone who is not legally married. Further, spouses of married employees may be able to receive survivor's benefits and accidental death benefits that unmarried partners cannot receive. Other strategies must be pursued if an aging gay or lesbian works for a company that does not offer these added benefits to an unmarried person, and he or she would like their partner to be provided for after their death. A support trust, life insurance, or an annuity is advisable to replace the safety nets of survivor or accidental death benefits. The same avenues could be used as well to replace Social Security retirement benefits. Biological children and the spouse by marriage have access to the Social Security retirement benefits. A same-sex partner would not have such access.

To insure that partners or a nontraditional family member will assume their health care and financial decisions should he or she become incapacitated or an emergency should arise, the elderly gay or lesbian should execute a durable financial power of attorney. This alerts institutions as to which person the elder would like to act on their behalf in financial matters. It is also important for gay and lesbian elders to appoint an agent under a durable health-care power of attorney. This allows the appointed person (agent) to speak for the incapacitated person regarding health care and treatment. This insures that the partner will be in charge of making decisions for their partner. The health-care power of attorney should also state that the agent should be the first person to visit the elder and the doctors, as well as control who is to be permitted to visit. This demonstrates who has priority in the family structure to health care providers, and allows the partner to decide critical issues, even over the objections of biological relatives. Courts will usually honor this and will give the nonmarital partner standing in a legal proceeding.

It is important that a will be created. If a person dies without a will, probate laws will direct that the property be distributed to the biological relatives, and the part-

ner may be left without anything. Thus, an elderly gay or lesbian who dies without a will risks leaving his or her partner or their nontraditional family with nothing.

Finally, elderly gays and lesbians must address age discrimination within the gay and lesbian community. The gay community is very youth-oriented, which may result in the ostracism of elderly gays and lesbians. Services and Advocacy for GLBT elders (SAGE), a national organization, notes that ageism is an issue in the gay community, as well as “ignorance and stereotypes that elderly gays just don’t exist.” Consequently, the gay and lesbian elderly confront a double whammy. They are marginalized in the gay and lesbian community for being old, and in the senior community for being gay. Older gays and lesbians have begun to tackle many of these issues by creating support and social groups at local gay and lesbian centers.

Related Topics

[Domestic partnership](#), [Durable power of attorney](#), [Family relationships](#), [Financial planning](#), [Homosexuals](#), [Housing](#), [Nursing home](#), [Probate](#)

Suggested Readings

- Adelman M (1990) Stigma, gay lifestyles, and adjustment to aging: a study of later-life gay men and lesbians, *J Homosex* 20(3-4):7-32
- Berger RM (1996) *Gay and gray: the older homosexual man*, 2nd ed. Haworth Press, New York
- D’Augelli AR, Patterson CJ (1995) *Lesbian, gay, and bisexual identities over the lifespan*. Oxford University Press, New York

Homosexual

Angela Pattatucci Aragón · Julianne M. Serovich

The term “homosexual” is an amalgam of the Greek prefix “homo” meaning “same” and the Latin root “sex.” Homosexuals then are persons who experience sexual or romantic attraction to persons of the same sex. While it is impossible to know for sure, there are an estimated 3–4 million gays and lesbians above the age of 60 in the United States and these numbers are expected

to double in the next 20 years. Same-sex attraction can be found in all cultures throughout recorded history. Although the focus is typically on sexual behavior, homosexual and heterosexual also pertain to one’s romantic/sexual attractions and fantasies. Homosexual is also a sexual identity; however, people who define themselves as homosexuals typically have rejected the term because it represents a label imposed from a medically oriented, heterosexual perspective. Instead, *gay* is frequently preferred—in contrast to *straight* (describing heterosexuals). Additionally, while *gay* is an umbrella term that refers to both men and women, many homosexual women prefer to call themselves *lesbians*.

Plato’s *Symposium*, written in 387 BC, includes a speech by Aristophanes that offers what is probably the world’s first recorded theory of sexual orientation. Aristophanes proposed that all human beings were originally similar to Siamese twins. After the gods split them apart, each yearned for his or her *lost half*. Those who had been male or female thus sought the opposite sex; those who had been male/male or female/female desired the same sex. Plato’s exceptionally progressive view that positioned homosexuality an equal plane with heterosexuality unfortunately did not persist in history. Instead, gays and lesbians have been the targets of hatred, violence, negative stereotypes, and discrimination.

Repressive state statutes combined with a lack of legal protections creates hostile living and working environments for homosexuals. For example, violence and discrimination against homosexuals are still widespread. Gay men and lesbians can be denied housing and fired from their jobs in over 30 states with little legal recourse. Despite there being millions of gay and lesbian parents in the United States, most are still not allowed to form families through legal, state-sanctioned marriage. Lack of legal recognition of these couples and families can create unique challenges for older adults. One pronounced in the area is financial planning. Financially, homosexuals are denied benefits that others enjoy such as Social Security retirement benefits, inheritance, spousal health benefits, and accidental death benefits. To protect themselves they have detailed wills, durable health-care power of attorney, and durable financial power of attorney documents drafted. Social discrimination frequently results in isolation and loneliness in later adulthood. This can result from family rejection, lack of children, or a lifetime of hiding one’s sexual orientation to avoid losing employment, housing, or a health-care provider. For those who

led a closeted life, the death of a partner or other close friends can be particularly emotionally burdensome.

In response to oppression, gays and lesbians have organized to press for civil rights that are currently denied. Progress has been slow but steady. For example, many states have modified sodomy laws so that they no longer apply to consenting adults. Some cities and a few states have added sexual orientation to their civil rights codes to protect gay men and lesbians from job discrimination. Corporations extend benefit packages to the domestic partners of their lesbian and gay employees. *Civil Unions* for same-sex couples are now available in Vermont and Connecticut and provide all state law benefits of marriage to couples joined in civil union. In addition, California, New Jersey, Maryland, Maine, and the District of Columbia all recognize domestic partnerships, and Massachusetts is the only state with full marriage rights. No longer hidden in the shadows of society, lesbians and gay men appear on television and in movies, and run for political office. High school students across the United States are forming gay-straight alliances and an expansive web of organizations and institutions exist that sustain a rich social, cultural, and civic life for gays and lesbians.

Related Topics

[▶ Gender](#), [▶ Intersexuality](#), [▶ Lesbian](#), [▶ Lesbian ethics](#), [▶ Queer](#), [▶ Transgenderism](#), [▶ Transsexuality](#)

Suggested Readings

- Berger RM (1996) *Gay and gray: the older homosexual man*. Haworth Press, New York
- Chauncy G (1995) *Gay New York: gender, urban culture, and the making of the gay male world, 1890–1940*. Basic Books, New York
- D’Augelli AR, Patterson CJ (1995) *Lesbian, gay, and bisexual identities over the lifespan*. Oxford University Press, New York
- D’Emilio J (1998) *Sexual politics, sexual communities: the making of a homosexual minority in the United States, 1940–1970*, 2nd ed. University of Chicago Press, Chicago, IL
- Kohoe M (1989) *Lesbians over 60 speak for themselves*. Haworth Press, New York

Hormones

James F. Carter

In our information age society it is quite amazing how much confusion and misinformation there is on the Internet and among physicians. Not a week goes by when I do not use the analogy “the Internet is information without knowledge” to many of my patients. There was such a scare in July 2002 when the Women’s Health Initiative (WHI) study appeared in *JAMA* that the average postmenopausal woman in the United States simply stopped taking her hormones. If she did go to her gynecologist, she often received a defensive answer, if at all. If she went to her internist or family practitioner, she was simply told “no.” In April 2004, when the WHI group came out with the good news about the estrogen-only arm, no one in the press and few in the medical circles noticed it. This media circus has been a disservice to women’s health and physicians need to persevere to give patients even-handed information and then let the informed woman make her decisions.

Let us begin by identifying the players in a woman’s transition from the perimenopause (the time when ovulation frequency decreases and the length of time between menses lengthens in the normal situation) to the menopausal state (the time when menses ceases). We only fear what we do not understand, so let us not be afraid of the word “menopause” and by all means let us not use the word “hormones” as a dirty word. Without hormones one would not be able to function. We do not fear a large amount of estrogen in our mid-twenties or thirties, yet we may want to avoid them from our forties onwards just because we hear that they could be harmful. Perhaps your physician even confirmed your fears, although they are not justified by scientific facts.

Everyone seems to know or has heard of estrogen and progesterone (though many physicians have only heard of Provera, which is a progesterone salt called “medroxyprogesterone acetate”). A growing number of women are also being made aware of androgens or their more familiar name, testosterone. Let us now look at the facts.

Estrogen (or the class of hormones we call “estrogen”) affects the whole woman. The end organ receptors include the brain, blood vessels (arteries and veins), eyes, skin, abdominal fat distribution, bones, colon, bladder and vagina, as well as insulin sensitivity.

Before worrying about the risks of this hormone, which circulates in the body from birth and then

rapidly increases at menarche, we should consider some of its benefits. The “controversy” over the cardiovascular effects will be briefly discussed with some recommended reading. First, no one disagrees that as a result of osteoporosis there is an increased risk for fracture of the hip, spine, and wrist. There are more than 300,000 hip fractures per year with a 15% lifetime probability in Caucasian women, and this number is rising. Once the fracture occurs, there is a 5–20% excess mortality (death) in the first year and 25% of women suffering a hip fracture will enter long-term care. The health-care cost in 1995 was \$13.8 billion and is estimated to rise to \$62 billion in 2020. The Osteoporosis Foundation generally recommends a bone density test at age 65, but we might order them on any woman who is postmenopausal, especially if she is a smoker (this decreases the blood flow to the skin, bone, and entire body). Estrogen reduces this risk considerably. Selective estrogen receptor modulators (SERMs) like raloxifene (Evista) slow the rate of osteoporosis but tend to increase hot flashes. Bisphosphonates such as Fosomax and the new Boniva do help but can cause some difficult gastrointestinal problems. Some studies show that estrogen alone and in combination with certain progestones, such as norethindrone (Activella, FemHRT, and CombiPatch), actually increases bone density.

The most common reason for patients resuming estrogen therapy after the WHI scare of July 2002 was their terrible experience of hot flashes. These hot flashes, which occurred at night and woke patients intermittently, created some very irritable patients who were having trouble functioning due to inadequate sleep. They result from vasomotor instability, which estrogen can and does stabilize. Mood disorders and depression may or may not occur from this lack of sleep. Mood disorders can develop due to the aging process, but if the moodiness is from lack of estrogen, this will once again affect patients’ quality of life.

Patients commonly present with vaginal dryness and coital pain. Both the alpha- and beta-receptors of estrogen are in the distal one third of a woman’s vagina including the bladder. The thinning of the vaginal layer causes an increase in dryness, and a susceptibility of infections in the vagina and urinary tract. It may also cause burning and lead to urinary incontinence. There is no other hormone or substitute for the estrogen effect in these areas. Although there are different creams, tablets, as well as transdermal patches and rings that

have a more local effect, this could be a major source of decreased quality of life, as many studies have shown.

Estrogen slows the skin’s aging process by increasing the collagen content and preserving its elastic properties and thickness. This is not just confined to the vaginal area. Some women also notice their fingernails becoming more brittle. Amazingly, this is well known in dermatological circles, but is not generally discussed among internists or even many gynecologists.

Lack of estrogen adversely affects the eyes, with old age macular degeneration made even worse by cigarette smoking. Again, there seems to be little discussion on this topic.

There is an increase in insulin resistance in patients with low estrogen levels, which may increase their risk of becoming diabetic. One of the most common misconceptions is that there is an increase in weight by taking estrogen replacement. Science has clearly shown a generally lower weight in women taking estrogen, with a decrease in central body fat distribution, which itself would engender a relatively healthier body.

One of the most amazing facts that has been confirmed with more than 50 years of data is the 50% decrease in colon cancer in women taking estrogen. Women get colon cancer in equal proportions to men, and have a hormone that continues to protect them after menopause. Although studies show that women’s greatest fear is breast cancer, more die of colon cancer. Some of our patients do not hesitate to get a yearly mammogram but really have to be pushed to get a colonoscopy, which, if negative, only needs to be repeated in 10 years.

Estrogen has shown to have positive effects on cognition and memory along with prevention and/or slowing of Alzheimer’s disease due to the alpha-receptors blocking the hyalin deposits in the amygdala of the brain.

No discussion of estrogens would be complete without mentioning the risks of breast cancer. When the WHI study of July 2002 implied an increased risk of breast cancer in women using Prempro (though it was not statistically significant), the news spread like wildfire. However, when their own study of estrogen was published in April 2004 showing a statistically significant decrease in breast cancer by 23%, there was no media frenzy, but the fact remains. An unpublished follow-up of patients taking estrogen alone shows a 50% decrease in breast cancer. Data by a number of gynecological oncologists have confirmed that women with breast cancer taking estrogen generally live longer than women with breast cancer not taking estrogen. It is amazing that women in their

forties with breast cancer who are ovulating monthly with more estrogen than any pill can give them are refused estrogen therapy once they reach 50 or menopause by their own well-meaning physicians. American and European studies have shown that birth control pills (at least four times the dose of estrogen replacement) have not shown an increase in breast cancer.

Let us finally look at the cardiovascular risks of estrogen. Most studies show that estrogen clearly increases the risk for venous thromboembolism. However, in a general population, one to two per 10,000 will develop clots, while in the group of women on estrogen this would increase to two to three per 10,000, which is not clinically significant. The WHI study observed that venous thromboembolic events plus pulmonary embolism gave an increase from 21 per 10,000 to 28 per 10,000 women, but with “just” venous embolism the number was not statistically different. Although the WHI rated this as a 33% increase, in actual clinical settings it was only slightly increased.

The cardiovascular benefits of estrogen in increasing the good lipoproteins and dilating the blood vessels versus increasing the triglycerides must be considered in the context of genetics. It is also a fact that, in spite of the WHI claim of conducting the only randomized study to demonstrate this, women with hot flashes who were younger were not allowed to participate in the study. In addition, there was more than a 42% dropout rate and at least 40% of the patients were unblinded at the request of their physicians. Therefore, there is much work to be done before we can come to any concrete conclusion.

Progesterone is necessary to prevent the increase of endometrial cancer when women who are postmenopausal and have a uterus are given hormone replacement therapy. The Heart and Estrogen/Progestin Replacement Study (HERS) among others clearly showed that progesterones (especially Provera) offset much of the good of the estrogen effect. However, Prometrium and norethindrone acetate (the progesterone in the older pills and new hormone replacement therapies) do not seem to cause as much mood swing, irritability, and sometimes depression as Provera did. The individual should find a knowledgeable physician who is willing to work with her and individualize her treatment when necessary.

Androgens positively affect the central nervous system by increasing the sense of well-being, cognition and memory, and spatial relationships, as well as increasing sexual desire. Some women find an increase

in acne associated with testosterone as well as some increase in hair growth, though that is again part of the aging process.

Finally, the decision to be treated with hormone replacement therapy should be made on the basis of knowledge. One can, by all means, consult several people, but the patient must beware of the physician who does not allow her to voice her concerns or disagree with the physician. To be treated or not, and whether to take hormones are generally quality-of-life decisions in which the patient should be an equal partner. Decisions should be made based on knowledge of science, the patient’s own goals and symptoms, but not from fear. It is essential to ensure that the physician is comfortable discussing these very personal and important issues, as it is the patient’s quality of life that physicians are trying to improve. The patient should always be comfortable with her decisions and has an absolute right to change her mind later based on symptoms and information.

Related Topics

- ▶ [Bone strength](#), ▶ [Breast cancer](#), ▶ [Colorectal cancer](#),
- ▶ [Diabetes](#), ▶ [Mammogram](#), ▶ [Menopausal health](#),
- ▶ [Perimenopause](#), ▶ [Smoking](#)

Suggested Readings

- Creasman WT, Hoel D, DiSaia PJ (2003) The WHI: now that the dust has settled. *Am J Obstet Gynecol* 189(3):621–626
- Freedman MA (2002) Female sexual dysfunction. *Int J of Fertil Womens Med* 1(47):18–21
- Freedman MA (2002) Quality of life and menopause: the role of estrogen. *J Womens Health (Larchmt)* 11(8):703–718
- Kravitz HM et al (2005) Relationship of day-to-day reproductive hormone levels to sleep in midlife women. *Arch Intern Med* 165(20):2370–2376
- Writing Group for Women’s Health Initiative (2004) The effects of conjugated equine estrogen in postmenopausal women with hysterectomy: Women’s Health Initiative randomized control trial. *JAMA* 291:1701–1712
- Writing Group for Women’s Health Initiative (2002) Risks and benefits of estrogen plus progestin in healthy postmenopausal women: principal results from the Women’s Health Initiative randomized controlled trial. *JAMA* 288:321–333

Hormone Therapy in Menopause

Kathy A. King · Vanessa M. Barnabei

It is well established that hormone therapy (HT) is effective in relieving the vasomotor symptoms of menopause and has been used for many years to assist women through the menopausal transition. However, it is not clear whether HT provides health benefits that outweigh the risk of clinically significant adverse events. It is only recently that HT has been studied as a long-term health treatment or preventive aid for the diseases of postmenopausal women. Clinical practice standards in the past relied on epidemiologic rather than clinical trial data. The widely publicized release of data from two large clinical trials—Women's Health Initiative (WHI) and Heart and Estrogen/Progestin Replacement Study (HERS)—has had a significant impact on health-care professionals and on patients' attitudes and opinions about HT. The ongoing clinical trial data that continue to emerge from the WHI have made counseling about HT more evidence-based, but have also raised many yet unanswered questions.

There are several key elements to effective counseling of women regarding the decision to take HT. These include:

1. Take a thorough health and family history.
2. Educate women about the diseases of postmenopausal women.
3. Discuss indications for HT in general and in patient-specific cases.
4. Discuss risks and benefits of HT in general and in patient-specific cases.
5. Discuss each woman's expectations, concerns, and preferences.
6. Answer all questions objectively.

Providers should listen and validate a woman's concerns and provide accurate data while correcting any misconceptions about HT. When counseling patients, it is important to help them understand not only the relative risk, but also the absolute risk. Relative risk helps investigators identify potential causes for a condition, but absolute risk is more helpful for assessing the impact on a particular individual. For example, WHI reported a 26% increase in breast cancer for women being treated with the hormones estrogen

plus progestin (CEE + MPA) therapy compared to placebo. Some women may mistakenly believe that this means they have a 26% risk of developing breast cancer if they use HT. However, the 26% reflects the difference in absolute risk between the CEE + MPA treatment group and placebo (38 and 30 per 10,000 persons per year, respectively). This increased risk translates to a rate of 8 per 10,000 women per year, or less than 1 additional breast cancer case per 1,000 women per year. It is also helpful to provide women with written information that they can read at leisure, and not pressurize them into making a decision at the time of the visit. It is important to reassure women that the decision to start HT is not a lifelong commitment. A well-informed patient is more likely to be satisfied with her decision, more adherent with her therapy, and less likely to regret her decision. Once a decision has been made for or against HT, the issue should be reviewed on an annual basis because health status, indications for use, and health risks of the woman will change with time.

The most common side effect of HT for women with a uterus is vaginal bleeding. In the first 6 months of therapy approximately half of the women will experience bleeding, although for most women this consists of light bleeding or spotting only. By the end of the first year of using any combined regimen, the majority of women will be amenorrheic (absence of menstrual periods), although approximately 10–12% will still report spotting after 5 years of use. Bleeding after the first year of therapy should be evaluated appropriately, but is benign in the majority of cases. Bleeding is common for all types of HT, regardless of dose, type, and route of administration. Unopposed estrogen therapy (ET) is not indicated for women with a uterus, given unacceptably high rates of bleeding and endometrial hyperplasia. The use of progestogen in combination with estrogen has minimized the risk of endometrial hyperplasia to less than 1% and decreased the risk of endometrial cancer below baseline risk. A recent Cochrane review suggested that while bleeding rates are higher on continuous versus sequential HT regimens, the endometrial hyperplasia (over-production of cells in the uterine tissue) risk is lower. For women using sequential therapy, at least 12 days of progestogen is recommended to minimize hyperplasia risk.

Many women have the misconception that HT contributes to weight gain. The literature suggests that midlife weight gain is more related to age than to menopausal status and occurs in both genders at

this time of life. Clinical trial data show that estrogen may, in fact, slow the normal midlife weight gain as well as limit the deposition of fat to central body sites. This redistribution of fat mass from a gynecoid (typical female) to an android (typical male) pattern results in an increased waist to hip ratio, and is a marker for glucose intolerance and risk for cardiovascular disease.

Established benefits of HT include treatment of vasomotor symptoms, prevention and treatment of urogenital atrophy, prevention of bone loss, and improvement in serum lipoproteins. Approximately 75% of US women experience hot flashes. Estrogen is unrivaled in its ability to treat vasomotor symptoms as well as vulvar and vaginal atrophy, which are the most common indications for initiating HT at midlife. Urogenital atrophy (shrinking of genetal tissue size) is a delayed symptom of menopause. However, many perimenopausal and early menopausal women complain of vaginal dryness and discomfort with sexual activity. Estrogen can be replaced either orally and/or vaginally for resolution of these symptoms. Vaginal administration of estrogen in low doses causes negligible systemic absorption and is safe for most women, including those who have contraindications to systemic ET.

Women achieve peak bone mass by age 30 and gradually lose bone mass throughout the rest of their life. The most rapid loss of bone mass occurs during the perimenopausal transition, with rates reaching 3–5% bone density loss per year, declining to 1–2% per year thereafter. The WHI showed that fracture incidence is decreased at all sites and in all age groups studied, although the benefits might be outweighed by other health risks of HT. Data from the study by the Osteoporotic Fractures Research Group showed that women who initiate HT within 5 years of menopause and continue therapy have the highest bone mineral density and the lowest rates of fracture. Recent data show that gains in bone mass are rapidly reversed once HT stops. This has led to recommendations from the Food and Drug Administration (FDA) and the North American Menopause Society that if HT is prescribed solely for the purpose of osteoporosis prevention, other bone-specific treatments should be considered first.

The beneficial effects of estrogen on cardiovascular health have been based on observational and epidemiologic studies, clinical trials with disease risk factors as endpoints, and animal models. All these data support a role for estrogen in the primary prevention of cardiovascular disease. Some of the proposed

mechanisms of estrogen's beneficial actions include effects on lipoproteins, antioxidant effects, direct endothelial (inner vessel wall) effects, and vasodilatory effects. The Nurses Health Study, an observational study published in 2000, demonstrated a lower rate of major coronary events among current users of HT (expansion of blood vessel), which supported older observational data. The Postmenopausal Estrogen/Progestin Interventions (PEPI) trial, a randomized placebo controlled study of ET and HT on disease risk factors, demonstrated a favorable impact of estrogen, with or without progestogen, on various cardiac disease risk factors such as low-density lipoproteins (LDL) cholesterol and fibrinogen. A review of clinical trials showed a consistent benefit of oral estrogen and nonandrogenic progestins on increasing high-density lipoproteins (HDL) cholesterol and lowering total cholesterol. Oral estrogen has a tendency to raise serum triglycerides, an effect not seen with transdermal (applied to the skin) estrogen. Animal data support a beneficial effect of estrogen on plaque thickness in coronary arteries, which is most pronounced in younger animals with no early disease. Estrogen may contribute to atherosclerosis prevention by its direct endothelial effects on LDL metabolism and nitric oxide production.

Randomized clinical trials have shown no benefit of estrogen for secondary prevention of cardiovascular disease. The HERS and Estrogen Replacement and Atherosclerosis (ERA) Trial assessed the effects of estrogen in women with established cardiovascular disease, showing no benefit. Any benefits of estrogen on the cardiovascular system may be lost once atheroma formation (blood vessel plaque formation) has occurred. Data from the WHI also contradict observational findings, especially for combined therapy. These data show a small increase in cardiovascular disease in the estrogen + progestin group over 5.2 years of use (HR = 1.29, 95% CI 1.02–1.63). The absolute risk was 37 versus 30 cases of myocardial infarction per 10,000 women per year. Events were most likely in the initial 2 years of the study. However, the average age of women in the WHI study was 63; thus one could argue that this was not a primary prevention study. There was no detrimental effect on cardiovascular disease seen in the estrogen-alone arm of the study after 6.8 years of follow-up. For women aged 50–59 the HR was 0.56, although this was not statistically significant. Progestin use may nullify the benefit of estrogen on the cardiovascular system. Current recommendations state that

HT should not be used for the primary or secondary prevention of cardiovascular disease.

Prevention of Alzheimer's dementia could have significant public health implications. Observational and case control studies have suggested that early use of estrogen decreases the risk of developing Alzheimer's disease. The Women's Health Initiative Memory Study (WHIMS), a substudy of 4,500 WHI participants aged 65–79, looked at cognitive function. The results showed that women taking either CEE or CEE + MPA tested slightly worse on cognitive tests versus women on placebo. There was no benefit of HT or ET for the prevention of mild cognitive decline, and in fact late institution of HT may exacerbate mild cognitive decline.

Stroke is a major health issue for women. Cerebrovascular disease is the third leading cause of death in the United States and the leading cause of adult disability. In the WHI trial, the CEE + MPA arm showed an increased rate of ischemic stroke compared to the placebo arm. The absolute risk of ischemic stroke was 29 per 10,000 women per year in the CEE + MPA arm and 21 per 10,000 women per year in the placebo arm. There was no increased risk of hemorrhagic stroke. The increased risk of stroke was seen in all age groups regardless of baseline stroke risk. In the estrogen-only arm there was a slightly increased risk of stroke, equivalent to 12 additional events per 10,000 women per year (44 versus 32 per 10,000 women per year) compared to the placebo arm.

Two other clearly established increased risks of HT are gallbladder disease and venous thromboembolism (VTE). The relative risk for gallbladder disease such as cholelithiasis and cholecystitis is 1.5–2.0 compared to women not taking HT. Oral estrogen increases bile acid secretion and biliary cholesterol saturation—effects that are minimized with the use of transdermal therapy. However, there are no data comparing route of therapy to incidence of gallbladder disease. The relative risk of VTE is 2–3 in HT users versus nonusers. Estrogen has an unfavorable effect on coagulation (blood-clotting) parameters via its first-pass effect through the liver and its effects on activated protein C. The risk of VTE persists with transdermal therapy in some studies but not in others, suggesting that mechanisms other than coagulation changes may influence venous clot formation. Clearly, additional trials are needed to answer this important question.

Of the risks associated with HT, women probably fear breast cancer the most. The data are conflicting

regarding the role of HT in postmenopausal breast cancer incidence. The WHI showed an increase in breast cancer incidence in the CEE + MPA trial after 5 years of use. The CEE-alone data showed no significant decrease in breast cancer incidence. Many studies showed that breast cancer risk reverts to baseline once HT is discontinued. Breast cancer takes about 6–10 years to manifest as a detectable tumor. The WHI trial lasted about 5 years, which suggests that any breast cancer detected during the trial existed prior to the initiation of the trial. Estrogen's effect on the breast may therefore be promotional for existing lesions but not as an initiator of new lesions.

It is challenging for both health-care practitioners and women to sort out all the conflicting information on the risks and benefits of HT. Fortunately, most studies show no overall effect of HT on mortality, especially in younger women. The question unanswered by the WHI study is what the risks and benefits of beginning HT at the time of menopause or for treatment of menopausal symptoms are. In the WHI only one third of women were younger than 60, 16% were within 5 years of their last menstrual period, and only 13% were 50–54 years old. The other limitation was that the WHI study tested only one form of estrogen and progestin. The Kronos Early Estrogen Prevention Study (KEEPS) is currently enrolling women in a 5-year pilot study of 720 women that is designed to explore whether HT can prevent the development of cardiovascular disease in women who begin using it soon after menopause and in lower doses and different formulations than those used in the WHI. The study will compare a 0.45 mg dose of CEE or a skin patch containing estradiol to placebo. It will also use natural progesterone compared to the progestin MPA used in the WHI. KEEPS will focus on menopausal women aged 40–55, who are within 3 years of their last menstrual period.

The current recommendations for estrogen and progestogen use from the North American Menopause Society are summarized as follows:

1. The primary indication for use of systemic HT is the treatment of moderate to severe menopausal symptoms.
2. Local ET should be used for the treatment of vulvovaginal atrophy in the absence of other symptoms.
3. HT should not be instituted for the primary or secondary prevention of cardiovascular disease or stroke.

4. HT can be considered for primary prevention of osteoporosis, but alternatives to HT should be considered.
5. Initiating HT after age 65 for the sole purpose of primary prevention of dementia is not recommended.
6. HT should be used in the lowest doses and for the shortest duration consistent with the indication and the desired effect.
7. Data from the WHI and HERS should not be extrapolated to women who initiate HT to treat premature menopause.
8. Non-oral routes of HT administration may offer advantages and disadvantages, but the long-term risk to benefit ratio is not known.

postmenopausal women: principal results from the Women's Health Initiative randomized control trial. *JAMA* 288:321–333

Writing Group for the Women's Health Initiative Investigators (2003) Effect of estrogen plus progestin on stroke in postmenopausal women: a randomized trial. *JAMA* 289:2673–2684

Suggested Resources

Menopause Guidebook (2003) Helping Women Make Informed Healthcare Decisions Through Perimenopause and Beyond. The North American Menopause Society, Cleveland, OH. <http://www.menopause.org>

Hospice

Siran M. Koroukian · Tionn Fambro

The goal of hospice care is to improve the quality of a patient's final days by offering comfort and dignity. While addressing the symptoms of a disease and controlling pain and discomfort, hospice deals with emotional, social, and spiritual impact of the disease on the patient and his or her family and friends. Hospice care is rendered wherever the need arises—usually in the patient's residence. Most hospice programs are Medicare-certified, employing experienced medical and nursing personnel with state-of-the-art knowledge in palliative care and advanced technologies to relieve the patient from pain and distressing symptoms.

Hospice programs experienced a substantial rate of growth in the past decades, as their number increased from less than 2,500 in 1974 to over 3,600 in 2004, nationwide. Two-thirds of such programs are managed by nonprofit organizations, and the remaining third are for-profit and government-run programs. Similarly, the number of patients served by hospice programs increased from 158,000 in 1985 to over one million in 2004. Of note is the important role of volunteers in hospice care, especially through their companionship and assistance in household chores; in 2004, the contribution of 400,000 volunteers amounted to 10.3% of all hours provided by hospices. In the same year, cancer-related diagnoses accounted for nearly half of all hospice admissions, while end-stage heart or kidney diseases, lung disease, and dementia were among the top noncancer diagnoses for which patients sought hospice care. Nearly two-thirds of hospice patients in 2003 were 75 years or older, 18% were 65–74 years, and 54% were women.

Related Topics

➤ Bone strength, ➤ Breast cancer, ➤ Cardiovascular disease, ➤ Menopausal health, ➤ Menopause

Suggested Readings

- Cauley JA, Robbins J, Chen Z, et al (2003) Effects of estrogen plus progestin on risk of fracture and bone mineral density: the Women's Health Initiative randomized trial. *JAMA* 290:1729–1738
- Hulley S, Grady D, Bush T for the Heart and Estrogen/Progestin Replacement Study (HERS) Research Group (1998) Randomized trial of estrogen plus progestin for secondary prevention of coronary heart disease in postmenopausal women. *JAMA* 280:605–613
- North American Menopause Society. (2004) Position statement. Recommendations for estrogen and progestogen use in peri- and post-menopausal women: October 2004 position statement of the North American Menopause Society. *Menopause* 11:589–600
- PEPI Investigators (1995) Effects of estrogen or estrogen/progestin regimens on heart disease risk factors in postmenopausal women: the Postmenopausal Estrogen/Progestin Interventions (PEPI) trial. *JAMA* 273:199–208
- Shumaker SA, Legault C, Rapp SR (2003) Estrogen plus progestin and the incidence of dementia and mild cognitive impairment in postmenopausal women: the Women's Health Initiative Memory Study: a randomized controlled trial. *JAMA* 289:2651–2662
- Warren MP (2004) A comparative review of the risks and benefits of hormone replacement therapy regimens. *Am J Obstet Gynecol* 190:1141–1167
- Women's Health Initiative Steering Committee (2004) Effects of conjugated equine estrogen in postmenopausal women with hysterectomy. *JAMA* 291:1701–1712
- Writing Group for the Women's Health Initiative Investigators (2002) Risks and benefits of estrogen plus progestin in healthy

The vast majority of hospice patients receive routine home care (96%), and only 3% receive inpatient care. The average length of stay in hospice care was 57 days in 2004, and the median was 22 days. Nearly one-third died within 7 days of being admitted to hospice care, and 9.2% died within 6 months. Bereavement support constitutes an important component of hospice care. On average two family members for each death receive such support.

Despite the existence of hospice for over 30 years and its growth, most patients have little knowledge of hospice care, and, as listed below, many myths exist about hospice that often discourage terminal patients from seeking this assistance.

- Myth: Hospice is where you go when there is “nothing else to be done.”
- Reality: Hospice is the “something more”, comfort-oriented care that can be done for terminally ill patients and their family.
- Myth: Families should be isolated from a dying patient.
- Reality: Hospice staff believes that when family members experience the dying process in a caring environment, it helps counteract the fear of their own mortality and the mortality of their loved one.
- Myth: Hospice care is more expensive.
- Reality: Although this is still under debate, it may be hypothesized that hospice may be less expensive than conventional care because technology-intensive care is used to a lesser extent. Additionally, family, friends, and volunteers provide 90% of the day-to-day patient care at home.
- Myth: You cannot keep your own doctor if you enter hospice.
- Reality: Hospice physicians work closely with your doctor of choice to determine a plan of care.

The following describes the process by which patients are admitted into hospice and hospice care plan is developed. The patients are referred to hospice when life expectancy is approximately 6 months. Hospice staff meets with the patient’s personal physician(s) as well as a hospice physician to discuss the patient history, current physical symptoms, and life expectancy. They also meet with the patient and family to discuss the purpose of hospice as well as available services and expectations, including pain and comfort levels, support systems, financial and insurance resources, medications, and equipment needs. These discussions lead to the development of a care plan for

the patient—a process that ensures that the patient’s and his or her family’s preferences and wishes are taken into account. This plan is reviewed and revised as required by changes in the patient’s condition.

As most hospice users are elders aged 65 and above, they are entitled to Medicare’s hospice benefit program, which provides coverage for all hospice services, and requires very little out-of-pocket expenses. Elders enrolled in managed care programs that do not provide coverage for hospice services can still use hospice services through the Medicare hospice benefit program. Services covered include visits by medical and nursing professionals, skilled nursing services, medical social services, home health aides, short-term inpatient care, nutrition counseling, spiritual counseling, and bereavement support for family members after the patient’s death. The Medicare hospice benefit also provides coverage for drugs to control pain and other symptoms, and inpatient respite care. Although these services are covered at 95%, most hospice programs do not collect the 5% co-payment. Medicare does not provide coverage for personal care, or for 24-hour care.

Important quality indicators for hospice care include the following criteria: the staff should offer clear information about what it will require to care for the patient at home; train family members to care for the patient at home; explain how pain and other symptoms will be treated and provide information about what to expect when their loved-one dies; tell the family in advance the number of visits that the staff will make; respond promptly to urgent issues; ensure that the patient is comfortable, is free of pain and other symptoms; ensure that the wait for pain medication or home supplies/equipment is not too long; treat the patient and family members with respect, and include them in care decisions. Hospice staff should also prepare family members for the patient’s death and help them cope with the changes after the death of their loved-one.

With the expected changes in demographics in the next decades, hospice is likely to grow further and be better accepted as a viable alternative to conventional, technology-intensive care in patients with limited life expectancy. Preparing advance directives and making wishes known to loved ones help shape and bring dignity to the care for the dying.

Related Topics

- [Advance directives](#), ➤ [California Natural Death Act](#),
- [Death](#), ➤ [Death with Dignity Act](#)

Suggested Readings

Naierman N (1999) Debunking the myths of hospice. <http://www.americanhospice.org/articles/debunking.htm>

Naierman N What to expect and demand from a good hospice. <http://www.americanhospice.org/articles/Consumer-Questions.pdf>

National Hospice and Palliative Care Organization (NHPCO). NHPCO's 2004 Facts and Figures. http://www.nhpc.org/files/public/Facts_Figures_for2004data.pdf

Housing

Sarah Parran

Most seniors prefer to stay in their own homes as long as possible, finding comfort in their familiar environment and fearing the change that comes with a move. However, it is not always feasible or safe for aging adults to stay in their homes. There are a number of housing options that seniors and their families may find in their communities. Each setting has its own advantages and disadvantages, depending on the person or couple's care, needs, and financial situation. There are some state-specific variations in funding, but the following is an overview of the most common senior housing options.

Senior apartment buildings are independent living settings that often offer additional services for their residents, such as housekeeping, laundry, transportation, and limited congregate meal service. Most of these apartment buildings are designed to meet the unique needs of seniors and the disabled. Often, the apartments are handicapped-accessible and have safety features such as walk-in showers, built-in shower chairs, and grab bars in the bathrooms. Residents in these buildings have to be functionally independent, or they have to hire home health aides to keep them independent in their apartments. Senior buildings cost the same as other rental units in the area, but may charge extra fees for the additional amenities they offer. In some communities, there are subsidized senior apartments for low-income residents.

Boarding homes are commonly run by an individual caregiver who lives in the home with the tenants and provides meals, housekeeping, and laundry for them. The number of tenants is low, usually less than five people. Group homes can be much larger, housing up to 20 people, with paid staff who work in shifts in the home.

They also provide meals, housekeeping, and laundry services. Many residents pay the entire monthly cost of these homes out of their retirement income. Some low-income seniors have the monthly rent subsidized by the state in order to keep them from moving into more expensive settings like nursing homes. These homes are generally licensed by state agencies and must meet regulatory standards for size, cleanliness, amenities, and caregiver training. The regulations vary from state to state.

Assisted living facilities are proliferating across the country as our population ages and seniors seek more independent care environments than nursing homes. These state-licensed facilities have individual apartments, and also provide meals, housekeeping, laundry, activities, and transportation services. In addition, assisted living facilities have nurses and aides to manage medication administration and personal care.

Some of these facilities have specialized dementia care units with separate staff and programs. Assisted living care is almost always paid for out of the resident's private funds. Some long-term care insurance policies cover a portion of the cost of assisted living, if the policyholder meets certain criteria for functional impairment. In some states, regulators are considering using state Medicaid funds to pay for assisted living care for people at risk of nursing home placement. Some veterans may qualify for Veteran's Administration funds to help offset the cost of assisted living care. The qualifying criteria are very specific, so the veteran or his spouse must apply to determine if the benefit is available to them.

Nursing facilities are state and federally certified and licensed facilities that provide all of the care a severely functionally or cognitively impaired person requires. They are staffed full time by nurses and aides, who provide both skilled nursing and custodial care services for the residents. In addition, there are a variety of other health care professionals providing care, such as physical therapists, occupational therapists, speech therapists, dietitians, social workers, and psychologists.

Some individuals require only nursing facility care for a short period of time after an acute illness and

hospitalization. They may receive rehabilitation or skilled nursing care for a few weeks or months to regain their functional independence. This short-term nursing facility care is usually paid by Medicare or private insurance. If the individual does not regain functional independence and requires ongoing care in the facility, the cost of the care is paid by the individual. Once the resident's funds are depleted, the state pays for their care through Medicaid. In addition, some long-term care insurance policies pay for a portion of long-term nursing home care.

Many parts of the country have continuing care retirement communities (CCRC) that offer independent living apartments, assisted living apartments, and nursing facility care, all on the same campus. When the senior chooses to live in a CCRC, he can move from one level of care to another within the community as his care needs change. These communities can be very expensive, but a few have subsidized apartments and most of the CCRC nursing facilities are Medicaid-certified.

There are many housing options for seniors, and more are being developed every year. As the senior population increases, the demand for even more types of housing and caregiving arrangements will grow. Some experimental caregiving environments hold the promise for even more housing options for seniors in the coming decades.

Related Topics

➤ [Nursing home](#)

Suggested Resources

<http://www.seniorresource.com/house.htm>

Human Papilloma Virus

■ Table 1

Phases of HPV infection

Inoculation
Incubation
Active expression
Host containment
Latency

James F. Carter

Human papilloma virus (HPV) infection may be the most common viral sexually transmitted disease (STD) in this country. As many as 30 million Americans are infected with HPV, and each year an additional one million persons acquire the virus.

More than 80 distinct types of HPV have been identified; at least 20 of them can infect the genital tract. Infection due to HPV type 6 and 11 is usually associated with external genital warts (condylomata acuminata), whereas those due to HPV type 16 and 18 are associated with cervical, vulvar, and anal cancer.

The natural course of HPV infection involves five distinct phases (➤ [Table 1](#)). HPV infection begins with an abrasion or cut of the skin either external or internal that allows viral access. After inoculation, an incubation period begins and lasts from 1 to 8 months. The incubation is followed by a 3–6 months of active viral growth, most marked in the small blood vessels (capillaries). During this time warts develop, but some may be too small to be clinically apparent.

Approximately 3 months after the initial proliferative phase and appearance of lesions (visible or not), the patient's immune system will mount a response to suppress new lesions. This is known as the host containment phase and an intact immune system is at least as important as any available therapies for HPV infection. After about 9 months, a latent phase begins and is characterized either by continued clinical remission or by a continued active disease. If the active disease continues, it may place the patient at risk for new growths that can be cancerous. In some patients, particularly younger women, the infection may resolve.

Genital HPV infection is transmitted by intimate sexual contact. Early age at first intercourse, multiple sexual partners, and intercourse with a person who has external genital warts are risk factors for HPV infection (see ➤ [Table 2](#)). Oral contraceptives and smoking also increase risk.

■ Table 2

Risk factors for genital HPV infection

Early age at first coitus
Coitus with partner who has external genital warts
Multiple coital partners
Oral contraceptive use
Smoking

Clinical examination is a reliable method for establishing a diagnosis of genital warts; however, HPV can cause warts to form in the vagina, on the uterine cervix, and inside the urethra and anus. In many patients, only cervical cytology (Pap smear) can detect the characteristic abnormal cellular changes. This is the most common method of detecting inapparent (sub-clinical) disease. Biopsy should be performed if the diagnosis is in doubt, when the disease worsens despite treatment, in immunocompromised patients, or if the skin or warts are pigmented, hardened, fixed, and ulcerated.

Women with HPV infection and their sexual partners should be examined for other STDs. Tests for syphilis, gonorrhea, HIV, and Chlamydia should be strongly considered. Routine screening for cervical cancer should be performed annually; more frequent Pap tests are not required for the diagnosis of external genital warts, but should be performed if cervical cellular abnormalities called dysplasia is noted on the Pap smear.

The primary goal of treatment is to remove symptomatic warts and halt the dysplastic process, either through active destruction with medication or surgery, or by allowing the patient's immune system to destroy the lesions. It is important for the patient to understand that regardless of whether or not the external warts or dysplasia is removed, the HPV virus remains in the patient. This fact is a source of much consternation and must be understood. Although proper treatment may induce lesion-free periods, no evidence exists that any available therapy can eliminate the infection. As many as 21% of vulvar warts resolve without treatment and up to 70–75% of Pap smears with mild dysplasia in the younger women will resolve in 1 year without treatment. The patient should be educated and involved in her treatment. No single therapy is ideal for all women or all lesions, warts, or abnormal Pap smears. Smoking cessation is also very helpful.

For external lesions if the patient is pregnant, warts may be removed by bichloroacetic acid (BCA), trichloroacetic acid (TCA) cryotherapy, or surgical excision. If the patient is not pregnant, podophyllin, imiquimod (Aldara), or interferon can be considered. Once the lesions have disappeared, therapy may be stopped. Patients with mild dysplasia on a Pap smear may be followed without active therapy; this will spontaneously resolve in approximately 70–75% of patients within a year. If the patient is not comfortable with

observation, cryosurgery may be utilized and if more advanced lesions are present, loop electrosurgical excision procedure (LEEP) or cold knife conization may be utilized on an individual basis depending on where the dysplasia is located. Careful discussion between the patient and physician is essential. Patients should be advised to watch for recurrences particularly during the first 3 months after a procedure.

Although a follow-up evaluation after visible genital warts have cleared is not mandatory, it may be useful for documenting a wart-free state, monitoring treatment compliance and complications, and providing patient education and counseling. The presence of external genital warts is not in itself an indication for more frequent Pap smears or a cervical colposcopy unless the patient has had abnormal Pap smears.

Examination of the sex partners of HPV-infected women is not necessary for the management of their external warts because the role of reinfection in persistent disease is probably minimal. However, such examination is recommended to detect other STDs or previously unrecognized visible warts. Use of condoms can reduce but not eliminate transmission of HPV to uninfected partners. Patients should understand that they may remain infectious even after their visible warts have resolved.

Related Topics

➤ [Acquired immunodeficiency syndrome](#), ➤ [Sexually transmitted diseases](#)

Suggested Readings

Committee on Prevention and Control of Sexually Transmitted Diseases, Institute of Medicine (1997) *The hidden epidemic: confronting sexually transmitted diseases*. National Academy Press, Washington, DC

Suggested Resources

American College of Obstetricians and Gynecologists. <http://www.acog.org>

Centers for Disease Control and Prevention: Guidelines for Treatment of Sexually Transmitted Diseases. <http://www.cdc.gov>

Humor

Dahlia Fuentes

Humor is a broad and multifaceted concept, involving cognitive, emotional, physiological, psychological, behavioral, and social aspects. Humor usually involves wit, mirth, and laughter; these attributes characterize the cognitive, emotional, and reflexive physiological experience. As it relates to aging, humor can be examined in different ways, such as the humor created by the general population and by older people themselves, and also the role that humor plays in people's lives as they grow older. Humor created and enjoyed by older adults themselves, frequently deals with negative aspects and processes of aging. The mood at the time, who is telling the joke, as well as the age and perceived attitude of the joke teller can determine whether or not the joke about aging will be perceived as humorous. Humor is often a medium used by older adults to vent, express, and speak wise, and sometimes hard truths about the negative aspects of aging. When expressed and shared by peers, humor can help the changes, challenges, and unexpected obstacles shared by the peer group.

Humor and laughter plays an important role in health care. Recent research (gelotology is the study of humor and its effects on the body) has shown that laughter, the physiological response to humor, has many health benefits. Health benefits of laughter include a reduction in stress, lower blood pressure, protection of the heart, elevated mood, improved emotional health, boosted immune system, and improved brain functioning. Although some criticize the validity of the empirical evidence supporting these claims, laughter and humor are being incorporated into health-care settings at an increasing rate. Furthermore, the popularity of groups such as the Association for Applied and Therapeutic Humor, suggests that humor and laughter have some worth even if it is only psychosomatic. Humor may help ease pain, show the human side of health-care personnel, and help the patients, families, and health-care providers to cope. It is often described as being the best medicine.

Related Topics

🔗 Emotions, 🔗 Wisdom

Suggested Readings

- Mobbs D, Greicius MD, Abdel-Azim E, Menon V, Reiss AL (2003) Humor modulates the mesolimbic reward centers. *Neuron* 40:1041–1048
- Penson RT, Partridge RA, Rudd P et al (2005) Laughter: the best medicine? *Oncologist* 10:651–660

Suggested Resources

- Association for Applied and Therapeutic Humor. Princeton, NJ (2005). www.aath.org
- International Society for Humor Studies. Oakland, CA. <http://www.hnu.edu/ishs>

Hypertension

Michele D. Voeltz · Nanette K. Wenger

Hypertension, or high blood pressure, affects more than 50 million individuals in the United States and as many as one billion worldwide. Blood pressure increases with increasing age, and elevated blood pressure accounts for significant morbidity and mortality among elderly patients. High blood pressure is associated with increased risk of kidney disease, stroke, myocardial infarction (heart attack), congestive heart failure (CHF) (characterized by poor heart function and inability to appropriately circulate blood to tissues), and cardiovascular (CV) death.

Hypertension can be due to elevations in either systolic or diastolic blood pressure. The first (top) number in the blood pressure reading represents the systolic blood pressure, and the second (bottom) number is the diastolic blood pressure. According to the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure-7 (JNC-7), hypertension is defined as blood pressure greater than 140/90 mm Hg (>130/80 mm Hg for patients with chronic kidney disease and diabetes mellitus) when accurately measured using a standard blood pressure cuff. Hypertension is an important risk factor for cardiovascular disease (CVD) and stroke at all ages, but its effect on elderly patients may be more significant than for their younger counterparts.

Prevalence of Hypertension in Elderly Patients

Overall, the prevalence of hypertension among elderly patients is 60–80%. In the Third National Health and Nutrition Examination Survey (NHANES III), patients 65 years of age comprised only 19% of the total population, but represented 57% of those with uncontrolled hypertension despite treatment and 32% of those who were aware of their hypertension but were untreated. Generally, blood pressure increases with increasing age. Hypertension is more common in African Americans than whites in both genders and at all ages. Among patients below 55, men are more likely to have hypertension than women. In contrast, among patients above 75, women are more likely to have hypertension than men.

Classification, Diagnosis, and Types of Hypertension Values for blood pressure guidelines were recently revised in the JNC-7. Normal blood pressure values are less than 120/80 mm Hg. Prehypertension, a new classification in the JNC-7, is defined as blood pressure level of 120–139/80–89. Stage 1 hypertension is 140–159/90–99. Finally, stage 2 hypertension is a blood pressure level of $\geq 160/\geq 100$. For persons above 55 with normal blood pressure, the lifetime risk of developing hypertension is 90%.

Data from the Framingham Heart Study reveal that systolic blood pressure increases in the ninth decade of life. In contrast, diastolic blood pressure peaks at 50–60 years of age and subsequently declines. This increase in systolic blood pressure and decrease in diastolic blood pressure is caused by age-related increases in the stiffness of the aorta, the body's main blood vessel. Elevation of only the systolic blood pressure is called isolated systolic hypertension (ISH) and accounts for more than 60% of hypertension in the elderly. The JNC-7 reports that in patients above 50, systolic blood pressure is a much more significant risk factor for the development of CVD than diastolic blood pressure.

ISH was evaluated in the Systolic Hypertension in the Elderly Program (SHEP) Trial of 4,736 elderly patients. Despite relatively normal diastolic blood pressure, treatment of ISH reduced the occurrence of stroke and CHF. The study was discontinued after 2 years due to a 31% reduction in CV events, including CHF, heart attack, and sudden death as well as a 34% reduction in stroke in the treated groups. Several other trials of elderly patients with both systolic and diastolic

hypertension revealed reduced CV events and stroke with antihypertensive therapy.

Causes

There are a number of causes of hypertension among elderly patients. The most common present in about 95% of all cases is primary or essential hypertension. Risk factors for the development of primary hypertension include: increasing age, family history of elevated blood pressure, high sodium intake, African American race, excessive alcohol consumption, and obesity. In contrast, secondary hypertension is relatively uncommon in elderly patients. Some causes of secondary hypertension include: kidney disease, sleep apnea, hormonal abnormalities, and renal vascular disease (blockages in the arteries that supply blood to the kidneys).

Complications of Hypertension in the Elderly

Hypertension is a risk factor for the development of serious complications, including CVD, stroke, and kidney disease. The relationship between elevated blood pressure and CVD has been consistently established in a number of large clinical trials. The JNC-7 reports that beginning at 115/75 mm Hg, the risk of CVD doubles with each serial increase in blood pressure of 20/10 mm Hg. Similarly, the risk of heart failure increases with increasing blood pressure. Hypertension is the most common risk factor for stroke and intracranial hemorrhage (bleeding into the brain), which can be decreased with aggressive control of blood pressure. Finally, hypertension is associated with the development of acute and chronic kidney disease. Acute, significant elevation in blood pressure is a life-threatening emergency and can lead to the development of immediate crises including kidney failure, stroke, intracranial hemorrhage, heart attack, dissection of the aorta (tear in the main blood vessel to the body), CHF, and even death.

The benefits of treating hypertension in elderly patients are well documented. According to the JNC-7, adequate treatment of elevated blood pressure with antihypertensive medications leads to a 35–40% reduction in stroke, a 20–25% reduction in heart attack, and a greater than 50% reduction in heart failure. There is some evidence that treatment of hypertension may result

in improved cognitive function (reasoning, thinking, and organization) and a reduction in the incidence of dementia among elderly patients.

Treatment of Hypertension

Initial treatment of high blood pressure in elderly patients involves lifestyle modification. These nondrug therapies may provide significant benefits and should be continued even if medical treatment is initiated. Lifestyle modification can reduce blood pressure and complications of hypertension in elderly patients.

The first step in lifestyle modification involves sodium (salt) restriction. Sodium and blood pressure are intimately linked, and decreasing dietary sodium intake leads to significant decreases in blood pressure in elderly patients. Sodium restriction to not more than 100 meq (2,000 mg)/day may reduce blood pressure by 2–8 mm Hg. In addition to salt restriction, weight loss may improve hypertension in older persons. A relationship has been established between body mass index (BMI) and blood pressure; a 10 kg (22 pounds) reduction in body weight decreases systolic blood pressure by 5–20 mm Hg. Physical activity, smoking cessation, and reduction in alcohol consumption improve blood pressure, and should be recommended to elderly patients with hypertension.

When lifestyle modifications alone are inadequate, initiation of drug therapy with antihypertensive medications is indicated. Elderly patients with hypertension represent a challenging group; because of increased sensitivity to both medications and fluctuations in blood pressure, drug therapy must be carefully initiated and changed in older persons. In general, lower initial medication doses should be used with gradual increases for blood pressure lowering. Elderly patients should be carefully screened for the development of side effects, including symptoms of hypotension (low blood pressure) that is most evident with standing and changes in position. Such symptoms include lightheadedness, dizziness, and fainting which occur about 30 seconds after standing from a seated position.

Diuretics Diuretics are frequently used in elderly patients with hypertension. There are two major categories of diuretic medications used for this purpose—thiazide diuretics, such as hydrochlorothiazide (HCTZ) and chlorthalidone, and loop diuretics, such as furose-

mide. Thiazide diuretics decrease the development of CVD and cerebrovascular disease in hypertensive patients.

The antihypertensive and lipid-lowering treatment to prevent heart attack trial (ALLHAT) evaluated the role of thiazide diuretics for blood pressure lowering. Although this analysis showed a reduction in death and heart attack in patients above 65 treated with all three of the antihypertensive medications studied, chlorthalidone had a lower rate of stroke and CHF compared to the other two medications evaluated. This finding was probably due to the superior blood pressure lowering ability of chlorthalidone.

Based on these results as well as other studies, initial drug therapy for hypertension in elderly patients is usually HCTZ 12.5 mg/day. This dose can be increased up to 25 mg/day. Monitoring of potassium levels in the blood is necessary to minimize potential complications related to diuretic therapy. These medications are generally inexpensive, well-tolerated, and effective in elderly patients.

Angiotensin-Converting Enzyme Inhibitors and Angiotensin Receptor Blockers

Angiotensin-converting enzyme (ACE) inhibitors and angiotensin-receptor blockers (ARBs) act upon the renin-angiotensin system in the kidney. This system is responsible for regulation of blood pressure and sodium output in the urine, and its blockade (using these medications) leads to greater excretion of salt and lower blood pressure. The Heart Outcomes Prevention Evaluation (HOPE) trial revealed that treatment with the ACE inhibitor, ramipril, lowered CV events in high-risk patients. ACE inhibitors slow the progression of kidney disease in diabetic patients and improve outcomes in patients with CHF and heart attack. ARBs are an alternative to ACE inhibitors for patients who are unable to tolerate ACE inhibitors due to side effects. Side effects of ACE inhibitors and ARBs include: cough (ACE inhibitors only), angioedema (facial and oral swelling due to allergy), elevated potassium levels in the blood, and decreased kidney function. These medications are a good alternative to diuretics for elderly patients with diabetes mellitus, some forms of kidney disease, and known CVD.

Calcium Channel Blockers Calcium channel blockers (CCBs) consist of two groups of medications called dihydropyridines, such as felodipine and nifedipine, and nondihydropyridines, such as diltiazem and verapamil. These medications lower blood pressure by blocking calcium channels in the heart and blood

vessels. Nondihydropyridine CCBs act primarily on the heart and decrease heart rate with minimal effect on blood pressure. In contrast, dihydropyridine CCBs dilate blood vessels resulting in decreased blood pressure with little effect on heart rate. A large randomized trial revealed that treatment with dihydropyridine CCBs in elderly patients resulted in a similar reduction in the combined endpoint of stroke, heart attack, and CV mortality when compared to conventional and ACE inhibitor treatment. CCBs should be used with caution in patients with CHF, and are accepted as a second-line therapy for elderly patients with hypertension.

Beta-Blocking Agents Beta-blocking medications act upon blood pressure by the beta-receptors in the heart and blood vessels. Their overall effect is a reduction in blood pressure and heart rate, the magnitude of which varies depending on the selectivity of the beta-blocker. This class of medications is primarily beneficial in patients with known CVD and CHF. Among patients with CVD, beta-blockers lead to decreased rates of heart attack and CV death. Among patients with CHF, these medications improve symptoms and decrease mortality rates. For elderly patients with both CVD or CHF and hypertension, beta-blocking agents are an acceptable choice. For older persons without these conditions, however, the role of beta-blockers remains controversial as diuretics may be more effective in preventing complications related to hypertension.

Other Agents A number of other medications can be used in the treatment of hypertension in the elderly, such as alpha-blockers, aldosterone antagonists, vasodilators, and centrally acting agents. These medications all have a unique profile and may be considered on a patient-to-patient basis. Combination medications, such as diuretic/ACE inhibitors, diuretics/beta-blockers, and CCB/ACE inhibitors may decrease the number of medications and prescription costs for elderly patients.

Related Topics

➤ [Cardiovascular disease](#), ➤ [Diabetes](#), ➤ [Myocardial infarction](#), ➤ [Obesity](#), ➤ [Smoking](#)

Suggested Readings

- Chobanian AV, Bakris GL, Black HR et al (2003) The seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure—the JNC 7 report. *JAMA* 289:2560–2572
- Dahlof B, Lindholm LH, Hansson L et al (1991) Morbidity and mortality in the Swedish Trial of Old Patients with Hypertension (STOP-Hypertension). *Lancet* 338:1281–1285
- Dickerson LM, Gibson MV (2005) Management of hypertension in older persons. *Am Fam Phys* 71:469–476
- HOPE (Heart Outcomes Prevention Evaluation) Study Investigators (2000) Effects of an angiotensin-converting-enzyme inhibitor, ramipril, on cardiovascular events in high-risk patients. *N Engl J Med* 342:145–153
- Kannel WB, Gordon T, Schwartz MJ (1971) Systolic versus diastolic blood pressure and risk of coronary heart disease. The Framingham Study. *Am J Cardiol* 27:335–346
- SHEP Cooperative Research Group (1991) Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension. Final results of the Systolic Hypertension in the Elderly Program (SHEP). *JAMA* 265:3255–3264
- Siragy HM (2003) Major outcomes in high-risk hypertensive patients randomized to angiotensin-converting enzyme inhibitor or calcium channel blocker vs. diuretic: The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT). *Curr Hypertens Rep* 5:293–294
- Staessen JA, Fagard R, Thijs L et al (1997) Randomised double-blind comparison of placebo and active treatment for older patients with isolated systolic hypertension. The Systolic Hypertension in Europe (Syst-Eur) Trial Investigators. *Lancet* 350:757–764

Hypochondriasis

Virginia E. Ayres

Hypochondriasis is one of the many somatoform disorders in which an individual complains of physical symptoms, but the symptoms cannot be fully explained by any medical or other mental disorder. Other somatoform disorders include: somatization disorder, conversion disorder, undifferentiated somatoform disorder, pain disorder, and body dysmorphic disorder. Hypochondriasis affects 1–5% of the general population with higher numbers found at primary care offices (2–7%). It occurs in both women and men of any race or socioeconomic status, although those with lower income and education have slightly increased rates. There is an increased risk in African Americans.

Early adulthood is a common time for the onset of hypochondriasis, but it can occur at any time in the life span. The range of hypochondriasis in the general elderly population is estimated to be around 10%, with higher rates of somatoform disorders (33%) found in medical clinics.

Individuals with hypochondriasis experience anxiety about misinterpreted physical symptoms that they fear or believe indicate the presence of an undiagnosed medical disease. For example, a mark on the skin is interpreted as cancer or a sign of AIDS, or sweating may be interpreted as a heart condition. This anxiety and associated behavior cause significant distress and/or impairment in work, social, or other areas of functioning for at least 6 months or longer. People with this disorder may seek frequent medical attention and diagnostic testing. Although tests may be negative, it is not enough to convince the person with hypochondriasis that nothing is wrong. The person with this disorder may be willing to acknowledge that their fears are exaggerated or there is nothing seriously wrong with them, but in general, fear and anxiety persist. Over time, the person with this disorder may focus almost exclusively on his or her fears of disease, which may limit social conversations and interrupt family and work lives.

It is important to distinguish between hypochondriasis and malingering. Individuals with hypochondriasis are not fabricating symptoms intentionally like those who are malingering. Instead, they experience valid symptoms (usually amplified normal physical sensations) that cause distress, whether or not one is able to find a diagnosable disease.

Studies have not found a genetic basis for hypochondriasis. Generally, this disorder arises in individuals who have had a serious illness or have witnessed a relative with a medical illness. Death of someone close to the patient, or other psychosocial stressors are sometimes related to the onset of this disorder. A number of psychological constructs are used to describe the phenomenology of hypochondriasis. Psychologizing distress in the body, cognitive and perceptual styles that amplify body sensations, temperament, early experiences, and learning can play a part in the development and chronicity of the disorder. Research on differences in the presentation of hypochondriasis between young and older adults is inconclusive; however, there are a few ways to conceptualize the etiology of hypochondriasis in elderly adults. For some, using body complaints as a source of conversation, as a way

to get attention, or for shifting concerns about multiple losses (friends, spouses, and capabilities) away from emotional conflicts to the body may seem to make things more concrete and easier to cope with.

Some elderly adults may have a preoccupation with bodily symptoms as they age, but this can also be a reflection of reality or may indicate the presence of another psychological issue such as depression. Two thirds of patients with hypochondriasis have a co-occurring mental disorder such as anxiety, depression, or other somatoform disorder. In inpatient elderly adults, there appears to be a correlation with hypochondriasis and anxiety, and with depression. One study indicates that older adults with high hypochondriasis had a greater likelihood of having a lifetime diagnosis of dysthymia or major depression. In these instances, treatment of the underlying psychiatric disorder reduces the symptoms or successfully treats the hypochondriasis. Due to its frequent comorbidity, there is some debate among geriatric researchers regarding the definition of hypochondriasis, that is, whether it accurately conveys the sometimes complicated presentation seen in elderly adults. Some have proposed a distinction between primary hypochondriasis (discrete symptoms unclouded by other psychiatric disorders), considered relatively rare, and secondary hypochondriasis (mixed hypochondriacal and other moderate psychological symptoms), the more often seen presentation in clinical settings.

Primary care physicians are frequently the first to see these patients. Patients with hypochondriasis will usually “doctor shop” until they find one who they feel understands their complaints and complies with their demands for medical testing. Physicians are often frustrated with these patients since they make frequent visits and efforts to reassure them go unheard. Surprisingly, these patients will seek explanations for their symptoms but will not follow through with education or advice about prevention of disease. For instance, they may ignore advice to exercise or eat a healthy diet. Patients usually resist referrals to mental health providers, believing that their symptoms are solely physical.

Medical management of patients in the primary care office involves building a trusting doctor–patient relationship and conducting a thorough examination. It is recommended that visits be scheduled regularly with a clear goal whether current symptoms warrant it or not. Frequent visits coupled with attentive listening and examination are useful approaches to therapy.

Tests and consultations are to be limited to those for which there is an obvious indication, not for reassurance sake. Referrals to a psychiatrist should be attempted to examine current psychosocial stressors.

Several strategies are used in the treatment of hypochondriasis, although none are definitive. There is a paucity of research on the pharmacotherapy of primary hypochondriasis. Pharmacotherapy (usually antidepressants such as selective serotonin reuptake inhibitors [SSRIs] and serotonin-norepinephrine reuptake inhibitors [SNRIs]) to address common co-existing mental disorders (panic disorder, obsessive-compulsive disorder, and depression) seems to help improve the symptoms of hypochondriasis. Medication should be started at subtherapeutic doses since patients with hypochondriasis are not likely to tolerate significant side effects. Cognitive behavioral treatment (CBT) has shown some promising results. This therapy is designed to target the dysfunctional beliefs and behaviors that accompany hypochondriasis. In the few studies that have been conducted, results suggest that CBT leads to improvements in symptoms including reduction of fears of illness and somatic complaints.

The long-term prognosis of hypochondriasis is guarded. In some individuals, symptoms completely remit. In others, symptoms sometimes dissipate if a bona fide medical disorder is uncovered which validates the individual's experience. More frequently, symptoms are chronic and of a variable nature. One study showed that two thirds of medical outpatients continued to receive the diagnosis of hypochondriasis after 5 years even though symptoms may have declined and role functioning improved during this period.

Related Topics

- [Anxiety disorders](#), ➤ [Cognitive behavioral therapy](#),
- [Depression](#), ➤ [Mental illness](#)

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders. Text Revision (DSM-IV-TR), 4th ed. Author, Washington, DC
- Barsky AJ (2001) The patient with hypochondriasis. *N Engl J Med* 345:1395–1399

- Barsky AJ, Fama JM, Bailey ED, Ahern DK (1998) A prospective 4-to 5-year study of DSM-III-R hypochondriasis. *Arch Gen Psychiatry* 55:737–744
- Hollifield MA (2005) Somatoform disorders. In: Sadock BJ, Sadock VA (eds) Kaplan and Sadock's comprehensive textbook of psychiatry, 8th ed. Lippincott, Williams & Wilkins, Philadelphia, PA, pp 1800–1828
- Monopoli J (2005) Managing hypochondriasis in the elderly. *J Contemp Psychother* 35(3):285–300
- Starcevic V, Lipsett DR (eds) (2001) Hypochondriasis: modern perspectives on an ancient malady. Oxford University Press, New York

Hysterectomy

Rachel Long

Hysterectomy is the most common nonpregnancy-related operation performed on women in the United States, with one in three women undergoing the procedure by the age of 60. There are several nonobstetric indications for hysterectomy, including leiomyoma (tumors in the uterus), uterine prolapse, or bulging of the uterus down into the vaginal or bladder area, and cancer of the cervix, uterus, or ovary. Several different surgical approaches may be used, each with its own indications, risks, and benefits, and overall the operation has a very low complication rate. Although there is some cause for concern that hysterectomy is overutilized in this country, it is a very effective procedure, consistently demonstrating very high patient outcome and satisfaction ratings.

International hysterectomy rates vary, but historically, the United States has the highest rate, with approximately 600,000 women undergoing hysterectomy annually. Women aged 40–44 have a significantly higher hysterectomy rate than women of other age groups, although hysterectomy rates appear to be increasing for women aged 45–54. During 1994–1999, the highest hysterectomy rate was 16.8 per 1,000 in black women aged 40–44. White women in the same age bracket had a hysterectomy rate of 10.8 per 1,000.

Indications of hysterectomy include uterine leiomyoma, pelvic pain, uterine prolapse, abnormal uterine bleeding, and cancer and precancerous disease. There are other alternatives, both surgical and medical,

for many of these conditions, such as clotting the uterine artery and taking out uterine muscle for uterine fibroids, or use of a pessary, or device that holds the uterus in place, for uterine prolapse. However, hysterectomy remains a definitive treatment and is often preferred by both patients and physicians when compared with other methodologies that must be managed long-term and may eventually fail, requiring hysterectomy after all.

There are two major surgical approaches to performing hysterectomy. One is the abdominal approach, where the abdomen is opened during the operation and the uterus is removed. The other approach is through the vagina and the uterus and cervix are removed through the vaginal vault. The laparoscopically assisted vaginal hysterectomy is a popular, yet controversial, bridge between the two procedures in which there is a scope placed in the abdomen to guide the vaginal removal of the uterus. Abdominal hysterectomy (abdominal approach) is the most common in the United States, and black women are more likely to undergo abdominal hysterectomy than white women. Leiomyoma, uterine tumor, is the most common reason to do an abdominal hysterectomy, while uterine prolapse is the most common reason to do a vaginal hysterectomy.

There is little agreement on absolute reasons for abdominal hysterectomy, but common factors include lack of uterine mobility, a narrow vaginal opening, the presence of a mass next to the uterus, or a uterus larger than that of a 12-week pregnancy size (more than 280 g). The vaginal, abdominal, or laparoscopic uterine excision (VALUE) study demonstrated severe intraoperative and postoperative complication rates for abdominal hysterectomy as 3.6% and 0.9%, respectively. Severe complications include thromboembolism (clot), stroke, bleeding, heart attack, abdominal wall-lining damage, infection, and death. The approach to abdominal hysterectomy may be further divided into total versus subtotal (not including cervix removal or supracervical) hysterectomy. There is a common misconception that removal of the cervix may predispose a woman to prolapse of the vaginal vault and/or fallopian tubes, formation of abnormal scar tissue, or decreased sexual satisfaction, but multiple randomized trials have shown no statistically significant differences between total and subtotal hysterectomy in either surgical complications or clinical outcome. If elective supracervical hysterectomy is to be performed, pre-

operative screening should include Pap smears to confirm absence of cervical cancer.

Vaginal hysterectomy, although underutilized in the United States compared with abdominal hysterectomy, is the gold standard according to current clinical guidelines. The benefits of the vaginal approach are many, including a lower risk of postoperative bowel problems and intra-abdominal scar tissue formation, less postoperative pain, and a faster recovery. It is the preferred procedure for older women, obese women, and women with decreased mobility. Complication rates are similar to those of abdominal hysterectomy, with rates of severe intraoperative and postoperative complications reported as 3.1 and 1.2%, respectively. The most common complications include bowel, bladder, and ureteral injuries, hemorrhage, and infection.

While vaginal hysterectomy is the preferred surgical methodology owing to its lower morbidity, shorter length of hospital stay and lower cost statistics show that most practitioners do not prefer vaginal hysterectomies. Laparoscopically assisted vaginal hysterectomy is gaining popularity as a procedure that offers many of the perceived benefits of abdominal hysterectomy without the associated risks and complications. Specific additional procedures that can be completed laparoscopically include removal of scar tissue, management of uterine tumors that may complicate vaginal hysterectomy, removal of ligaments to manage complicated ovary removal, and evaluation of the pelvic and abdominal cavity before hysterectomy. The eVALuate study compared laparoscopic hysterectomy with abdominal hysterectomy and found that while laparoscopic hysterectomy was associated with a higher rate of minor complications than abdominal hysterectomy, patients have less postoperative pain, a faster recovery, and improved short-term quality of life following a laparoscopic approach.

The surgical approach to women with endometrial cancer, cancer of the uterine lining, is somewhat controversial. Endometrial carcinoma typically occurs in older women who frequently have other medical conditions, including hypertension, coronary artery disease, diabetes mellitus, and obesity, all of which may have a negative effect on the surgical outcome. While abdominal hysterectomy with lymph node removal or sampling remains the surgical standard for most women with endometrial cancers, the majority of endometrial cancers do not have hidden cancerous spread, and high cure rates may be achieved without surgical staging. While patients with more aggressive

cancers may benefit from an abdominal or laparoscopic approach with lymph node removal, women with milder, less aggressive disease, especially those who have other medical problems, may do better with a vaginal hysterectomy.

Removal of both ovaries is often done at the same time as the hysterectomy in more than half of US women, with the greatest proportion (75%) in women aged 45–54. The majority (71%) of ovary removals are performed on women whose indications for hysterectomy are not malignant (e.g., leiomyoma and uterine prolapse). Women who have a hysterectomy with both ovaries removed are 4.4 times more likely to have an abdominal, rather than a vaginal procedure. Although removal of the ovaries to prevent cancer provides a survival benefit in terms of ovarian cancer, recent data suggests that keeping the ovaries in place increases survival in women, reducing the percent of women dying by age 80 due to heart disease from 15% to 7%, and those dying of hip fractures from almost 5% to 3%.

Hysterectomy, regardless of the surgical approach and with or without removal of the ovaries, is considered a very effective means of symptom relief for women with benign conditions. The Maryland Women's Health Study was designed to measure the effects of having a hysterectomy on symptom relief, psychological and sexual function, and patient satisfaction. The study demonstrated that, 24 months after a hysterectomy, 96% of women reported that the symptoms they had before surgery were completely or mostly resolved, and 93.7% reported results that were better or expected. Furthermore, 81.6% of study participants felt that their overall health was better than before the hysterectomy, and 93.1% reported being fully recovered. Further study demonstrated that hysterectomy appears to have few, if any, effects on sexual function: the percentage of women who engaged in sexual activity increased significantly after hysterectomy, and patient complaints such as pain with intercourse, inability to achieve orgasm, low libido, and vaginal dryness decreased.

There does remain some cause for concern that hysterectomy is, at times, recommended inappropriately. Although the prevailing dogma from past decades that the postmenopausal uterus is a “pre-malignant” organ and should be prophylactically removed

has been subverted, there is data to suggest that complete clinical workups, with established diagnostic and therapeutic regimens, are underutilized before proceeding to hysterectomy. In a recent study, 70% of reviewed hysterectomies did not meet the level of care recommended by an expert panel and were judged to have been recommended inappropriately, based on a lack of adequate diagnostic evaluation and a failure to attempt alternative treatments before proceeding to hysterectomy. As with any medical or surgical treatment, the decision to proceed with hysterectomy should be made mutually by the woman and her physician, based upon her age, functional impairment, response to medical therapy, and a thorough risk-benefit analysis.

Related Topics

➤ Menopausal health, ➤ Ovarian cancer, ➤ Uterine fibroids

Suggested Readings

- ACOG Committee on Gynecological Practice (2005) Committee opinion: appropriate use of laparoscopically assisted vaginal hysterectomy. *Obstet Gynecol* 105(4):929–930
- Broder MS, Kanouse DE, Mittman BS, Bernstein SJ (2000) The appropriateness of recommendations for hysterectomy. *Obstet Gynecol* 95(2):199–205
- Keshavarz H, Hillis SD, Kieke BA, Marchbanks PA (2002) Hysterectomy surveillance—United States, 1994–1999. In: CDC surveillance summaries (July 12). *MMWR* 51(SS05):1–8
- Kjerulff KH, Langenberg PW, Rhodes JC, Harvey LA, Guzinski GM, Stolley PD (2000) Effectiveness of hysterectomy. *Obstet Gynecol* 95(3):319–326
- Parker WH, Broder MS, Liu Z, Shoupe D, Farquhar C, Berek JS (2005) Ovarian conservation at the time of hysterectomy for benign disease. *Obstet Gynecol* 106(2):219–226
- Rhodes JC, Kjerulff KH, Langenberg PW, Guzinski GM (1999) Hysterectomy and sexual functioning. *JAMA* 282(20):1934–1941

Suggested Resources

- CDC, Division of Reproductive Health (2005) Women's reproductive health: hysterectomy. <http://www.cdc.gov/reproductivehealth/WomensRH/Hysterectomy.htm>

Identity

Aruna Tummala · Juan Hernandez

Personal identity can be understood as the set of behavioral or personal traits by which an individual is recognizable. Everyone has, at one time or another, struggled with questions of the self such as “Who am I?” or “What am I?” The concept of identity addresses these queries.

Identity has a myriad of definitions. A dictionary might define it as the quality or condition of being the same as something else. From a psychological perspective, identity refers to a sense of one’s continuous being as an entity distinguishable from others, providing the ability to experience oneself as having sameness, continuity, and uniqueness. This definition inherently implies the need for memory to experience continuity.

Issues of identity hold great importance to philosophers and psychologists alike. While philosophical discussions of identity go right back to the origin of the discipline, the last century has seen psychologists studying the concept of identity, how identity develops, and what gives a person his or her sense of identity. In this regard, Erik Erikson’s work is considered seminal. He conceptualized the psychosocial theory of personality development. According to this, personality develops in a series of stages, from infancy till old age/death. Each stage is marked by internal struggle or crisis, the successful resolution of which bestows a particular virtue to the developing personality. His theory describes the impact of social experience across the whole life span.

Ego Identity

One of the main elements of Erikson’s intricate theory is the development of ego identity. Ego identity is the conscious sense of self that we develop through social interaction. According to Erikson, our ego identity is constantly changing due to new experience and information we acquire in our daily interactions with others. He understood identity as an integration of all previous identifications and self-images, in the light of the anticipated future.

According to Erikson, the elderly are in the phase of Integrity vs. Despair. This phase is focused on the act of reflecting back on life. Those who are unsuccessful

during this phase will feel that their life has been wasted and will experience many regrets. These individuals will be left with feelings of bitterness and despair. Those who feel proud of their accomplishments will feel a sense of integrity. Successful completion of this phase means looking back with few regrets and a general feeling of satisfaction. These individuals will attain wisdom, even when confronting death.

Identity in the Elderly

Adults confront many challenges as they age. Changes such as retirement, less income, empty nest syndrome, loss of social support/spouse through illness or death, health complications due to illness, disability, and impending death can be difficult to face. All these changes bring about changes in roles and do affect one’s sense of identity. Retired people have to redefine their identity apart from work; a mother facing an empty nest has to find new purpose in life.

An informal survey by the *Topaz* magazine interviewed elderly people from Europe and Israel about identity and aging. Their responses indicate that most have been able to redefine themselves, although after a period of initial struggle. All of them emphasize the need for networking with support groups and communication with other elderly. This survey is not methodologically sound; most of the respondents were women, and further research is required to verify this assertion.

Identity and Memory

Identity and memory are intricately linked. Memory loss or dementia can affect a person’s sense of identity. An interesting study was conducted in Israel that addresses these questions. Researchers explored four types of role identity (professional, family-role, leisure activities, and personal attributes) in nursing home residents with dementia and found that family-role identity deteriorated the least. Severity of dementia was an important factor affecting sense of identity. It was found that some residents with dementia reported an enhanced sense of identity, which had positive effects on their well-being. This study has important implications for caregivers of dementia patients.

The concept of identity in older adults is a dynamic entity that is affected by various factors. A healthy sense of identity seems to have a positive impact on

a person's general well-being. Further research is required to elucidate these factors, as they may have significant clinical implications for professionals treating the elderly.

Related Topics

- 🔗 [Employment](#), 🔗 [Empty nest syndrome](#), 🔗 [Ethnicity](#), 🔗 [Memory](#)

Suggested Readings

- Cohen-Mansfield J, Golander H, Arnhem G (2000) Self-identity in older persons suffering from dementia: preliminary results. *Soc Sci Med* 51:381–394
- Erikson EH (1950) *Childhood and society*. Norton, New York

Suggested Resources

- Topaz Template Network, "Identity and Getting Older". <http://www.templatetnetwork.org/topaz/14/en/16.html>

Immigrant Health

Sana Loue

It has been estimated that fully 10% of Americans were born outside of the United States. As of the year 2000, approximately 11%, or 3.1 million, of these 28.4 million individuals were aged 65 and older. Almost 40% of these older immigrants were born in Europe and approximately one third were born in Latin American countries. If current immigration patterns continue, it predicted that over the next 20 years, older foreign-born individuals will most likely immigrate to the United States from Latin America and Asia.

Older individuals may enter as permanent residents, as the spouses of US citizens or permanent residents or as the parents or siblings of US citizens. Others may enter temporarily or permanently based on their specific employment skills, while still others seek refuge from persecution in their former countries. Another portion of individuals may enter without legal authorization to do so and comprise the group of immigrants known variously as "illegal" or "undocumented."

Almost two-thirds of the older immigrant population have been in the United States for 30 years or more. Approximately one-third of older immigrants live in Western states, with the remainder living predominately in the Northeast and South. Almost 14% of older immigrants live in poverty, compared with less than 10% of the US-born older population. As a result, a higher proportion of older immigrant-headed households participate in publicly funded assistance programs, such as SSI and Medicaid, than native-born-headed households.

Although three-quarters of older immigrant men are married, fewer than half of all older immigrant women are married. Research indicates that Hispanic and Asian immigrants in older age groups are more likely to reside with family members than are their non-Hispanic White counterparts, such as individuals who immigrate from eastern European countries. Among older immigrants, a larger proportion of women live by themselves, compared to men. Shared living arrangements with family members may be stressful for all involved, due to a decrease in power and prestige that older adults experience in comparison with their status in their countries of origin.

Almost 45% of the older uninsured population of the United States is foreign-born; older noncitizens have been found to have the lowest overall health insurance coverage rate. Of those who are insured, slightly more than one-third have been found to have private health-care coverage and 22% have group insurance coverage.

Reports from nationally representative studies suggest that older immigrants have better health than the US-born elderly population, including lower rates of cancer, lung disease, and diabetes. Older immigrants have also been found to be less obese and to have a higher level of activity than their US-born counterparts. However, immigrants are not a homogeneous population and there may be significant differences in health status across subgroups of immigrants.

These findings may be explainable, at least in large part, by positive selection for health among immigrants. It has become increasingly difficult for individuals with health-related conditions to gain legal entry into the United States, particularly on a permanent basis. The immigration laws, for example, prohibit the admission of individuals with specific forms of mental illness, who use illicit substances, who have certain infectious diseases such as active tuberculosis, and who have chronic illnesses that render it likely that

they would become a “public charge,” meaning that it is likely that they would have to rely on publicly funded care. Additionally, individuals seeking permanent residence on the basis of a family relationship must obtain an affidavit of support from that relative; that relative becomes legally obligated to a level of financial support for the intending immigrant, which may include the cost of medical care. As a result, families have found it increasingly difficult to sponsor the immigration of their older, nonworking relatives.

Related Topics

- ▶ Access to health care, ▶ Medicaid, ▶ Medicare, ▶ Social security

Suggested Readings

He W (2002) The older foreign-born population in the United States: 2000. United States Census Bureau, Washington, DC

Immunizations (Adult)

Kenneth E. Remy

Unlike their pediatric counterparts, adult patients seek far less vaccinations as method for preventative medicine. However, the number of preventive vaccinations required per adult is far fewer than in children; namely hepatitis B series, tetanus booster every 10 years, pneumococcus and influenza vaccination for those that qualify. This chapter describes vaccinations recommended in adulthood greater than age 50 including special populations (▶ *Figures 1* and ▶ *2*).

Tetanus and Diphtheria Immunity to tetanus and diphtheria continues to wane among adults in the United States. In a representative cross-sectional survey of individuals in the United States who were examined between 1988 and 1994, only 47% of adults above 20 had protective immunity to both diseases and only 63% of adults with immunity to tetanus had protective antibody to diphtheria. Adults, including pregnant women with uncertain history of a complete primary vaccination series, should receive a primary series of

tetanus-diphtheria (Td). Adults above 60 are at highest risk for both tetanus and tetanus-related death. A primary series for adults is three doses; administer the first two doses at least 4 weeks apart and the third dose 6–12 months after the second. Administer one dose if the person received the primary series and if the last vaccination was received more than 10 years earlier. There are no contraindications to Td except severe allergic reaction to previous vaccination.

Influenza This is a trivalent inactivated vaccine. Current recommendations for adults include all persons above 65, residents of nursing homes or long-term health facilities, health-care workers, adults living or caring for children with chronic medical conditions including children under 2 years, and those with chronic medical disorders including reactive airway disease, diabetes mellitus, heart disease, chronic kidney disease, individuals with immunosuppression, and women in second or third trimester of pregnancy. Contraindications to vaccination include those with previous allergic reaction to influenza vaccine or those with egg protein allergy. The vaccine is given yearly in the fall 0.5 ml intramuscularly (IM). Live attenuated influenza vaccine may be given intranasally to those under 49 years who meet the following criteria: those working or living with at-risk people, health-care workers (excluding persons in close contact with severely immunosuppressed persons), household contacts and out-of-home caregivers of children less than 2 years, students or other persons in institutional settings, and anyone wishing to reduce the likelihood of becoming ill with influenza.

Hepatitis B A primary hepatitis B series is recommended to all adults especially those on hemodialysis, those with immunosuppressive disease, and health workers. Three doses of the vaccine are given at 0, 1, and 6 months.

Pneumococcal Polysaccharide In the US more people die from pneumococcal infections such as pneumonia than from any other vaccine preventable disease. Prevention is recommended for those with chronic disorders of the respiratory system (diabetes mellitus, chronic hepatic disease including cirrhosis, chronic kidney disease, cardiovascular diseases, functional or anatomic asplenia, immunosuppressive conditions, persons on long-term systemic corticosteroids or chemotherapy, residents of nursing homes or other long-term care facilities. Pneumococcal polysaccharide

Figure 1

Recommended adult immunization schedule, by vaccine and age group — United States, October 2005-September 2006

Vaccine	Age group (yrs)		
	19-49	50-64	≥65
Tetanus, diphtheria (Td) ^{1*}	1-dose booster every 10 years		
Measles, mumps, rubella (MMR) ^{2*}	1 or 2 doses	1 dose	
Varicella ^{3*}	2 doses (0, 4-8 wks)		2 doses (0, 4-8 wks)
Influenza ^{4*}	1 dose annually	1 dose annually	
Pneumococcal (polysaccharide) ^{5,6}	1-2 dose		1 dose
Hepatitis A ^{7*}	2 doses (0, 6-12 mos, or 0, 6-18 mos)		
Hepatitis B ^{8*}	3 doses (0, 1-12, or 4-6 mos)		
Meningococcal ⁸	1 or more doses		

--- Vaccines below broken line are for selected populations

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)
 Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)

Figure 2

Recommended adult immunization schedule, by vaccine and medical and other indications — United States, October 2005-September 2006

Vaccine	Indication						
	Pregnancy	Congenital immunodeficiency, leukemia, ¹⁰ lymphoma, generalized malignancy, therapy with alkylating agents, antimetabolites, cerebrospinal fluid leaks, radiation, or large amounts of corticosteroids	Diabetes, heart disease, chronic pulmonary disease, or chronic liver disease, including chronic alcoholism	Asplenia ¹⁰ (including elective splenectomy and terminal complement component deficiencies)	Kidney failure, end-stage renal disease, or recipients of hemodialysis or clothing factor concentrates	Human immunodeficiency virus (HIV) infection ^{2,10}	Health-care workers
Tetanus, diphtheria(Td) ¹	1 dose booster every 10 years						
Measles, mumps, rubella (MMR) ²	1 or 2 doses						
Varicella ³		2 doses (0, 4-8 wks)					2 doses
Influenza ⁴	1 dose annually		1 dose annually		1 dose annually		
Pneumococcal (polysaccharide) ^{5,6}	1-2 doses		1-2 doses				1-2 doses
Hepatitis A ⁷	2 doses (0, 6-12 mos, or 0, 6-18 mos)						
Hepatitis B ⁸	3 doses (0, 1-2, 4-6 mos)			3 doses (0, 1-2, 4-6 mos)			
Meningococcal ⁹	1 dose		1 dose		1 dose		

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)
 Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)
 Contraindicated

vaccination (PPV) is injected once but may be repeated for high-risk populations.

Varicella Chicken pox vaccination is recommended for all susceptible adults without clinical historical evidence of previous infection of varicella or herpes

zoster, those born outside the United States before 1965, health care workers, and those living with immunosuppressed persons. Contraindications to vaccination include pregnancy, HIV infection, primary immunodeficiency, and cancers affecting bone marrow

or lymphatic system. Two doses are injected 4–8 weeks apart. If measles, mumps, rubella (MMR) vaccination is also needed concurrently, care should be made to space these vaccinations 4 weeks apart.

Measles, Mumps, Rubella Current recommendations for MMR are as follows: Persons born in 1957 or later (including those born outside the US) should receive at least one dose of MMR if there is no serologic proof of immunity or documentation of a dose given on or after the first birthday, persons in high risk groups (such as health care workers, students entering college and other post-high school educational institutions), and international travelers, should receive a total of two doses, and women of childbearing age (premenopausal adult women) who do not have acceptable evidence of rubella immunity or vaccination. MMR vaccination is administered once subcutaneously although a second dose may be required after 4 weeks. Contraindications to MMR include pregnancy or possibility of pregnancy within 4 weeks, history of allergic reaction to vaccine, history of sensitivity to eggs or neomycin, and severe immunosuppression (including HIV, leukemia, lymphoma, long-term immunosuppressive therapy).

Meningococcal Conjugate Vaccine and Polysaccharide Vaccine Current recommendations for protection against *Neisseria meningitidis* include college freshmen living in dormitories, adults with anatomic or functional loss of spleen, or with terminal complement component deficiencies, military recruits, and those persons who travel to or reside in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the “meningitis belt” of Sub-Saharan Africa during the dry season [Dec–June]). Conjugate vaccine is given intramuscularly and is preferred to polysaccharide vaccine, which is given subcutaneously. Contraindications to vaccination include previous allergic reaction to vaccine or previous allergic reaction to diphtheria toxoid vaccine.

Polio Polio vaccination is no longer recommended for adults routinely. Vaccination is currently reserved to those traveling to endemic areas that have never completed a primary series.

Hepatitis A Currently recommendation for hepatitis A vaccination include travelers to endemic areas, persons with chronic liver disease, including persons with hepatitis B and C; illegal drug users; men who have sex with men; and people with clotting-factor disorders.

This vaccination is injected intramuscularly with repeated doses 6–18 months later for extended immunity. If the combination of hepatitis A and hepatitis B vaccine is used, three doses are administered over 6 months. Contraindication to vaccination includes a prior severe allergic reaction to vaccine.

With increasing numbers of unvaccinated adults emerging in the United States the Centers for Disease Control Advisory Committee on Immunization Practices made recommendations in 1997 for ways that practitioners can increase vaccinations among adults. Patients may also help as well by using every medical encounter to review immunization status.

Related Topics

▶ Autoimmune disorders, ▶ Autoimmune theory of aging, ▶ Travel

Suggested Readings

- Gardner P, Shaffner W (1993) Immunization of adults. *N Engl J Med* 328:1252
- McQuillan GM, Kruszon-Moran D, Deforest A et al (2002) Serologic immunity to diphtheria and tetanus in the United States. *Ann Intern Med* 136:660
- Pascual FB, McGinley EL, Zanardi LR et al (2003) Tetanus surveillance—United States, 1998–2000. *MMWR Surveill* 52:1

Suggested Resources

- Centers for Disease Control and Prevention. Healthy People 2010: Objectives for Improving Health. www.cdc.gov Advisory Committee on Immunization Practices
- Vaccinations for Travelers: Up to date information concerning specific travelers and geographic location can be found at www.cdc.gov

Impulsivity

Gunnar L. Larson · Bertrand D. Berger

Impulsivity is behavior exhibited to a degree by all human beings. It can be defined as acting without forethought and is a behavior exhibited by everyone at some time. Impulsivity is not in and of itself an

illness, but it can lead to disruptive behaviors and at times may be linked with mental illness throughout the life span.

An impulsive act can be viewed as either a positive or negative impulse depending on the outcome. For example, “impulsively” hugging your children and telling them they have done a wonderful job will have a very different societal and personal impact than if you unexpectedly strike someone during an argument. Both are impulsive but only one act is generally considered problematic by society. Problematic impulsive behaviors can range from nonverbal aggression (intimidating behaviors), verbal aggression, overt physical aggression, unsafe driving, alcohol abuse, gambling, and suicidal or homicidal acts. The level of impulsivity an individual displays and tolerates varies with our cultural background, age, and sex roles. In general, impulsivity has been shown to be a fairly stable trait over our life span with some *decrease* seen with age. Children and adolescents are more impulsive than adults, and as we age, we tend to become less impulsive and more thoughtful in making choices.

Personality-Related Impulsivity

Our personality traits and resulting level of impulsive behaviors tend to be consistent as we age. Studies of impulsively aggressive patients find decreased levels of 5-hydroxyindoleacetic acid (5-HIAA) (the metabolite of the neurotransmitter serotonin) in those whose diagnosis is associated with an increased lifetime risk of aggression. However, there are a number of factors that can cause us to become more impulsive and disruptive. Some of these factors last a lifetime, while others are temporary conditions (see [▶ Table 1](#)).

Illness-Related Impulsivity

Some people experience illnesses that can affect their level of impulsivity when they are younger (childhood through our forties), such as major psychiatric and neurological conditions. These include attention deficit hyperactivity disorder, personality disorders (antisocial and borderline), bipolar disorder (manic-depression) and substance abuse. These problems can increase our likelihood to act in ways that can harm us and others emotionally or physically. People with illnesses such as schizoid personality disorder, severe anxieties and phobias, and schizophrenia can experience a decrease in their spontaneity and impulsivity to the point where they can have problems making routine decisions. These syndromes usually persist as we enter our older years. The personality and substance abuse disorders tend to quiet somewhat with age, and in many cases, people with these disorders are less impulsive in the later years (aged 60 and older) than they were as younger adults (20–30 years). All of these psychiatric illnesses are usually in place prior to our geriatric years, whether they have been diagnosed or not.

Alzheimer’s Disease and Dementia Distressing impulsive behaviors that are more likely to occur in our later years can be commonly associated with medical issues such as dementias (e.g., Alzheimer’s disease), brain damage (e.g., strokes, systemic illnesses, and trauma) or delirium (usually a temporary brain dysfunction arising from infectious or systemic diseases, and their treatments). People suffering from dementia are likely to display a number of alarming behaviors that were not typical of the person’s lifelong personality style.

Table 1
Factors which influence impulsive and disruptive behaviors

	Young Onset	Old Onset
	Conditions which typically occur prior to older age	Conditions which typically occur in older adults
Chronic	Head injury Mental health disorders Alcohol and drug abuse Congenital disorders Pain	Stroke and other brain disorders Alzheimer’s and other dementias Chronic medical problems Pain
Potentially Reversible	Acute medical problems Medication side effects/delirium Pain	Acute medical problems Medication side effects/delirium Pain

The risk of dementias increases as we age, as does the risk of disruptive and impulsive behaviors such as physical aggression, verbal outburst/tirades, and sexually inappropriate behavior. Aggression is the most common of these impulsive acts. Reviews show that 18–65% of patients with Alzheimer’s disease will become physically aggressive (especially men). Aggression can be successfully treated with medications, although obtaining a positive response that is well tolerated by the patient may require trials of different medications or combinations. Before any treatment with medication begins, a thorough assessment of other factors that might be causing the aggression should be considered such as pain, hunger, or a superimposed delirium.

In dealing with negative impulsive acts, behavioral adaptations by nursing staff and family can have a very positive influence. Sexually inappropriate behavior can occur in 1–2% of patients with dementia and may be more common in dementia secondary to stroke. These sexual behaviors can be addressed with medications and behavioral interventions such as redirection. Some (1–2%) patients can exhibit vocally disruptive behaviors that can unsettle a home or skilled nursing facility environment, putting staff and other residents on edge. These behaviors can include yelling a phrase repeatedly for hours. These patients may yell to the point of physical exhaustion. In this instance, sedation with a short acting benzodiazepine to interrupt the episode can be a reasonable treatment choice.

Delirium can lead to impulsive behaviors, but can be resolved by treating the underlying medical cause. The impulsive behaviors seen after a stroke or brain trauma can be assessed and treated, as they might when seen during a mental illness. This can persist for the remainder of the person’s life and require ongoing treatment.

Increased impulsivity is not a *normal* symptom for a healthy elderly person, and, unless there is underlying illness, impulsivity generally decreases with normal aging. When an elderly person presents with increased impulsivity, it is a symptom that requires a thoughtful and thorough evaluation looking for an underlying cause.

Related Topics

➤ Alzheimer’s disease, ➤ Dementia, ➤ Dementia Advocacy International, ➤ Emotions

Suggested Readings

- Deakin J, Aitken M, Robbins T, Sahakian BJ (2004) Risk taking during decision-making in normal volunteers changes with age. *J Int Neuropsychol Soc* 10:590–598
- Moeller FG, Barratt ES, Dougherty DM, Schmitz JM, Swann AC (2001) Psychiatric aspects of impulsivity. *Am J Psychiatry* 158:1783–1793
- Stein DJ, Hollander E, Liebowitz MR (1993) Neurobiology of impulsivity and impulse control disorders. *J Neuropsychiatry* 5:9–17

Suggested Resources

- Alzheimer’s Disease Education & Referral Center (ADEAR). <http://www.alzheimers.org/>

Individual Retirement Accounts

William Davis

Put simply, individual retirement accounts (IRAs) are complex and always changing. As is typical of things highly regulated by the government, the rules surrounding IRAs can change depending upon who wins in an election cycle. That should not dissuade anyone from researching the topic or owning an IRA. IRAs are designed to help the average person as he or she prepares for and enters retirement. In fact, it is estimated that 45.2 million of US households invested in IRAs as of June 2004. Of the American retirement market at the end of 2004, 27% of a \$12.9 trillion market is represented by IRA assets. This constituted an increase from \$636 billion in assets in 1990 to \$3.5 trillion in assets in 2004, a fivefold increase in 14 years.

There are two different types of IRAs that need to be addressed by the individual, the “traditional IRA” and the Roth IRA. Both have been changed in the past several years due to recent Congressional legislation and it is important for an individual to understand how they function when working with them.

The traditional IRA takes into account the age of the individual in determining almost every facet of its processes, including how long a person can contribute to his or her IRA, when he or she can withdraw funds without penalty and, ultimately, how much money will have been saved in the account.

The first thing to consider with an IRA is how one sets it up. Both traditional and Roth IRAs can be set up with a bank, mutual fund company, life insurance company, stockbroker, or entity approved by the Internal Revenue Service (IRS). The next thing to consider in a traditional IRA is the amount a person can contribute, which is influenced by a number of different factors. At the time of writing, the maximum contribution an individual can make is the lesser of either the person's earned income for the year or \$4,000, or \$4,500 if the person is 50 or older. This rule applies for 2005, 2006, and 2007. In 2008, the maximum contribution will increase to the lesser of either the person's earned income or \$5,000. Beginning in 2009, the maximum contribution will be either the person's gross income or an amount to be adjusted, beginning at \$5,000, annually to compensate for inflation, whichever is less.

There are additional rules that apply to traditional IRAs for married couples. In situations where there is a married couple, the maximum contribution for one of the individuals can be the gross income of both spouses reduced by the other spouse's contributions for the year, and any contributions for the year to a Roth IRA on behalf of the other spouse. On the other hand, the maximum contribution can be the maximum allowable contribution for the individual as stated in the previous paragraph. For example, if Tom is a student, with no pay or taxable compensation, and Mary makes \$50,000, they can each put \$4,000 in their own IRAs for 2005 because Mary meets the requirements on her own and Tom can include Mary's taxable pay for the year when figuring his maximum amount.

One of the better aspects of a traditional IRA is that contributions can be deductible from federal income taxes, though later withdrawals are not tax deductible. In order to determine whether a person's contribution is deductible, the owner must first determine his or her modified adjusted gross income (MAGI). This is found by taking the person's adjusted gross income from his or her federal income tax form and, depending upon which form is used, add to it student loan interest deduction, tuition and fees deduction, foreign-earned income exclusion, foreign housing deduction, any excluded qualified savings bond interest, and any exclusion of employer-provided adoption benefits. Once the MAGI is figured out, it is necessary to determine whether the person is part of a retirement plan at work.

If not covered by a work plan, then any person with a MAGI less than \$150,000 gets a full deduction on the

amount contributed to a traditional IRA, provided that they are filing for federal income taxes as either single; head of household; qualifying widow; married filing jointly with a spouse covered by a plan at work; or married by filing separately, with a spouse not covered by a plan at work. Also, a person can get a partial deduction in two situations: (a) one is not covered by a plan at work, and files jointly with a spouse covered by a plan and whose MAGI is between \$150,000 and \$160,000; or (b) one files separately with a spouse covered by a plan at work and whose MAGI is less than \$10,000. A deduction is denied when a person is not covered by a retirement plan at work in two situations: (a) one files jointly with a spouse who is covered by a plan at work and their MAGI is greater than \$160,000; or (b) one is filing separately with a spouse covered by a plan at work, and their MAGI is greater than \$10,000.

If the person is covered by a plan at work, the person can only get a full deduction when the following criteria apply: (a) he or she is single or head of household and whose MAGI is less than \$45,000; (b) when filing jointly with spouse; or (c) is a qualifying widow(er) and has a MAGI less than \$65,000.

A partial deduction is allowed in the following situations: (a) when a person is single or head of household and has a MAGI between \$45,000 and \$55,000; (b) when filing jointly with spouse; (c) is a qualifying widow(er) and has a MAGI between \$65,000 and \$75,000; or (d) when filing separately with a MAGI less than \$10,000. Finally, a person cannot get a deduction when: (a) he or she is single or head of household with a MAGI greater than \$55,000; (b) files jointly with a spouse; (c) is a qualifying widow(er) with a MAGI greater than \$75,000; or (d) files separately and has a MAGI greater than \$10,000.

A major limitation on a traditional IRA is the restriction on how long a person may contribute. A person may only contribute as late as the year before the IRA owner turns 70½ years. This age limit will likely change in the coming years. Given advances in modern medicine, and the increasing life expectancy, people will be able to work for longer periods of times and will desire to put more of their money into savings for retirement, which will likely be pushed back as well.

Also, the owner of a traditional IRA can only withdraw contributions from the IRA, without incurring a penalty, after the year in which he or she reaches the age of 59½. If a person withdraws any money from his or her IRA before the year in which he or she reaches

59½, he or she incurs a 10% additional tax on the amount withdrawn. There are exceptions to this rule, including, but not limited to being disabled; having an unpaid balance of medical expenses that are more than 7.5% of the individual's adjusted gross income; and being qualified as the beneficiary of a deceased IRA owner. Also of note is that beginning April 1 of the year a person reaches the age 70½, a person must begin withdrawing from his or her IRA. Both of these age limits (59½ and 70½) are likely to change in the coming decades as average life span is expected to rise. The minimum required amount is determined by dividing the IRA account balance at the close of business on December 31 of the previous year by the person's life expectancy available through tables provided by the IRS. Distributions from a traditional IRA can be taxed, depending upon how the money was initially contributed. Only those amounts that represent deductible contributions, including interest on that amount, are taxable. Any nondeductible contributions, including interest, are not taxed upon distribution.

If a person were to inherit a traditional IRA, he or she can do one of three things. First, treat it as his or her own, giving the person the same power over the IRA as he or she would, had the person possessed it for years. Second, the person can roll the IRA into an IRA that he or she already possesses. Third, the person can treat himself or herself as the beneficiary, thereby reaping the benefits of the IRA immediately in a lump sum based on the longer of the following: the beneficiary's life expectancy or the decedent's life expectancy.

Unlike a traditional IRA, a Roth IRA can be contributed to for the entire life of the owner. The amount someone can contribute to a Roth IRA is exactly the same as a traditional IRA, except for three circumstances: (1) a married person filing jointly with his or her spouse, or is a qualifying widow(er) whose adjusted gross income (AGI) is less than \$150,000; (2) a married person filing separately, has lived with spouse at any time during the year, and has an AGI of \$0; and (3) the person is single, head of household, or filing separately from spouse with whom the person did not live with during the year and has an AGI less than \$95,000. Any other filing status and AGI combination than the ones listed are either reduced or prohibited. This is determined by subtracting from the person's AGI the amount stated above for each filing status. The person must then divide that number by \$10,000 if he or she falls within one of the first two categories or \$15,000 if in the last category. The person must then

multiply that number by the maximum contribution limit and subtract that number from the maximum contribution number to get his or her maximum contribution. Also, no contributions to the Roth IRA are tax deductible.

Finally, with distributions, there is no requirement that a person must distribute money from a Roth IRA. The only exception is when the owner dies, after which the money must be distributed within 5 years to the designated beneficiary. If the beneficiary is a spouse, the spouse has the same rights to decide what to do with the Roth IRA as he or she would have under a traditional IRA.

In conclusion, IRAs are meant to help the average citizen. Although they are complex, they are an aid to the citizen entering retirement as gracefully as possible, and designed to address individuals' future needs.

Related Topics

- ▶ [Early retirement](#), ▶ [Pension](#), ▶ [Retirement](#),
▶ [Survivor benefits](#)

Suggested Readings

- Downing N (1998) *Maximizing your IRA*. Dearborn Financial Publishing, Chicago, IL
- Pancheri MP, Flynn DH (1984) *The IRA handbook: a complete guide*. New Century, Piscataway, NJ

Suggested Resources

- Internal Revenue Service, *IRA Online Resource Guide*, 2005, Washington, DC (November 15, 2005). <http://www.irs.gov/retirement/article/0,,id=137320,00.html>

Informal Caregiving

Anamaria Tejada

Informal care has been defined as the care that is provided to chronically ill elders by a relative or a friend at the elder's home, in contrast to the care provided by an institution or a professional, which is considered formal care.

Providing care for the elderly has become a significant social issue in the last 30 years. At the beginning of the last century there were approximately three million people above 65 in the United States. Now there are more than 10 million older adults in need of care living in the community. Factors such as the increased life expectancy and the expected growth of the older adult population, especially with the baby-boom generation turning 60, will increase the need for formal and informal care. At the same time, there is a steady decrease in the public resources available to provide this care. Almost 80% of older adults who require long-term care due to chronic disabilities receive informal care at home from family members. The reliance on informal care providers is a new phenomenon that saves significant health-care public funds.

Older adults require care due to a variety of health conditions, in many cases dementia. Substantial care is often required well before they develop an advanced level of disability.

Area of residence is one of the factors that affects the way that informal care is provided. Older adults and their families who live in metropolitan areas have more access to, and better services than, older adults living in rural areas. Elders in rural areas are at higher risk of being institutionalized at younger ages and in better health than those living in urban areas. In addition, caregivers for rural elders have only informal sources of support; so they have less assistance and higher levels of burden and stress than caregivers in urban areas.

Gender is the most salient factor regarding informal care. It is overwhelmingly a women's issue. The majority of elderly people in need of care are women, and the majority of relatives providing care, approximately 75% of all caregivers, are women. Women tend to outlive their husbands; a large number of women above 85 are unmarried and their children are away; this puts them at a very high risk of needing some form of care services. Women in general are more likely than men to be institutionalized or to be cared for by an adult child rather than their spouses. Women usually have fewer options for caregiving services.

When an older adult is in need of care, the spouse is most likely to be the primary caregiver, followed by adult children and then other family members. It is more common to find wives caring for husbands than the reverse; daughters are three times more likely than sons to take the responsibility for their parents' care.

Many aging caregivers will be required to provide care simultaneously to both a frail spouse and an increasingly disabled parent; many women in this situation will spend more years caring for their elderly relatives than for their children. These competing demands have a detrimental impact on women's lives, especially for those who are trying to balance work and caregiving roles. When men participate in caregiving, they are more likely to be care managers than to provide direct care. They also tend to hire care providers instead of providing hands-on care themselves. Men and women also have different attitudes about caregiving; women see their role as caregivers as a natural extension of their regular family responsibilities, whereas men perceive it as an extra task beyond their usual roles.

In addition to gender, there are multiple factors that influence the attitudes, values, practices, and beliefs regarding informal caregiving. These include racial or ethnic affiliation and socioeconomic status.

Whites have better health than most other racial or ethnic groups in America. This is congruent with the fact that this particular group continues to have higher socioeconomic levels and the best access to health care services. Minority elders are more likely than their white counterparts to experience chronic disabilities, but less likely than white elders to be institutionalized. To complicate matters, there is the assumption that minority elders are generally taken care of by their families, but this is not always the case. Many of them have limited access to services and no family assistance and therefore need to fend for themselves.

Black elders tend to have larger informal social supports than older whites, so they tend to avoid using formal care services and have a strong preference for family care or rely on their extended kinship. Some of the reasons not to use formal services are based on cultural values, while in most cases it is the lack of financial resources to afford the cost of long-term care. Financially disadvantaged black elders rely almost exclusively on informal care as a matter of necessity more than of preference. Middle-class black elders are similar to white elders in their use of formal care services. Blacks care for their relatives out of a sense of moral obligation but there is also joy, love, and privilege in caregiving, despite its difficulties. The social support provided by family and neighbors, and faith in God, often serve as buffers against the stress involved in caregiving. Black families are less likely to institutionalize their elders than their white counterparts and tend

to be dissatisfied with formal care services when received.

Compared to blacks, the percentage of older Hispanics is relatively low, but Hispanic elders are often in poorer physical and mental health and have lower education and socioeconomic levels. They are also less likely to receive benefits like Social Security and retirement pensions. Hispanic elders tend to avoid using formal care services, in part for financial reasons and also because of language barriers. Like blacks, Hispanics have a strong orientation toward the extended family and the elderly are highly respected and viewed as wise and knowledgeable. Almost 90% of Hispanic women believe that adult children, especially daughters, are the ones responsible for the care of elderly parents. Daughters are also prone to guilt and often feel they are not doing enough for their parents. Ironically, many Hispanic elders would rather suffer in silence than to request their children's help. They do not want to burden them and are prone to a sense of fatalism that prevents them from taking steps to maintain their health and independence.

Native Americans also place high value on informal caregiving, but those who live away from reservations tend to use more formal resources than do other minorities. At the reservations, there are reciprocal caregiving practices where grandmothers, daughters, and grandchildren help each other. This is in part the result of the family problems many American Indians face due to high rates of unemployment and alcoholism among their men.

Asians and Pacific Islanders expect to receive help from their children and the children expect to provide it. In the Asian families' value system, the needs of the family have priority over the needs of the individual.

Family caregiving is a challenging and stressful experience for the caregiver and can have a negative impact on the caregiver's social, emotional, physical, and financial health. Caring for frail or disabled adults can trigger a variety of negative emotions including frustration, anger, guilt, anxiety, constant worries, and fear. As the health of elders deteriorates and their needs increase, caregivers feel that they are sacrificing themselves and losing their freedom. They also lose the companionship and reciprocity that they used to have in the relationship with the elder, and might feel inadequate to provide the necessary care. As a result they may develop somatic complaints and worry about their own health and financial situation.

The financial situation has an important effect on the caregiving process. Low-income caregivers are less able to cope with stress and report higher levels of powerlessness, loneliness, and isolation than those with more financial resources.

The strain or burnout that the caregiving role imposes on the caregiver can lead to elder abuse and neglect. The risk of abuse increases when caregivers are not prepared for the caregiving role and they are struggling with emotional problems, substance abuse, or poor health. Other risk factors are financial dependence on the care recipient and being subjected to constant criticism. Elder abuse and neglect are more related to the caregiver traits than to the traits of the elder. However, caregivers experience higher levels of stress when they are caring for a person who has serious cognitive impairments, abnormal behaviors, and difficulty with activities of daily living (ADL). Spouses and sons are more likely to abuse than daughters; while older men are more likely to be abuse victims, the abuse of older women tends to be more severe.

Due to the multiple challenges of caregiving, at some point even families who wish to care for their elders will be unable to do so. Families caring for their elders are in great need of assistance, education, and information. Caregivers need practical assistance like help running errands, shopping, and cooking. They need information on safety issues and medication. They need to learn how to deal with dementia-related behaviors so they do not feel inadequate when confronting these problems. They also need to get out more often and to have in-home respite care, especially if it is by a nurse, whose presence is highly valued and gives support and peace of mind. There is a need for balance between formal and informal caregiving and for more accessible services for low-income and minority families. These families are likely to be more burdened with caregiving responsibilities with fewer resources to provide appropriate care to their elders. These services need to be tailored to their particular individual needs.

Finally, it is helpful to offer psychoeducational support groups so that families can become more prepared for their caregiving role. It also offers caregivers the opportunity to share their caregiving experience and exchange tips and information. Caregivers have been found to welcome assistance and support from peers more than they do from professionals. In the strenuous process of informal caregiving, hope may be the most important factor.

Related Topics

[▶ Caregiver burden](#), [▶ Caregiving and caregiver burden](#), [▶ Domestic partnership](#), [▶ Elder abuse and neglect](#), [▶ Family relationships](#), [▶ Isolation](#), [▶ Loneliness](#), [▶ Loss](#), [▶ Marriage](#)

Suggested Readings

- Beach SR, Schulz R, Williamson GM, Miller LS, Weiner MF, Lance CE (2005) Risk factors for potentially harmful informal caregiver behavior. *J Am Geriatr Soc* 53:255–261
- Bullock K, Crawford SL, Tennstedt SL (2003) Employment and caregiving: exploration of African American caregivers. *Soc Work* 48:150–162
- Dwyer JW, Folts WE (1994) Caregiving in social context. *Educational Gerontology* 20:615–631
- Jolicoeur PM, Madden T (2002) The good daughters: acculturation and caregiving among Mexican-American women. *J Aging Studies* 16:107–120
- Mangum WP, Garcia JL (1994) Racial/ethnic variations in informal caregiving. *Educational Gerontology* 20:715–731
- Stoltz P, Udén G, Willman A (2004) Support for family carers who care for an elderly person at home: a systematic literature review. *Scand J Caring Sci* 18:111–119
- Williams A, Forbes D, Mitchell J, Corbett B (2003) The influence of income on the experience of informal caregiving: policy implications. *Health Care Women Int* 24:280–291

Informed Consent

Anne R. Simpson

Informed consent is the term used to describe the process by which clinicians support informed and genuine decision-making by patients (or research volunteers) regarding their health care. The process of obtaining “informed consent” is an act that unites principles of ethics, law, and medicine in an effort to heighten education and to support the patient’s right to self-determination. It promotes the patient—or their designated decision-maker—to the position of a shared decision-maker with the medical practitioner.

Historically, decisions regarding medical treatment have been made according to what was believed, by the physician, to be in the best interest of the patient. At a time when there were fewer medical treatment choices, this seemed to be an acceptable practice. With rapidly emerging medical technology and the implication for

a variety of associated treatment outcomes, there is a greater need for one to take an active role in their own health care decisions. The process of informed consent is an important way of assuring that this occurs.

Informed consent reflects a judicial mandate which is based on the notion of respect for individual autonomy, also known as self-determination. To paraphrase Justice Cardozo, in the landmark *Schloendorff* decision (1914), each adult of sound mind has the right to determine what should or should not be done to their own body. Under usual circumstances, when a medical intervention is proposed, the health care provider, usually the physician, will discuss the procedure, risks, and expected outcomes with the patient. In addition, they will have the patient or decision-maker sign a form granting permission to perform the treatment. This had been recognized as the standard means for obtaining consent.

Medical treatments can be complex and can require a fair amount of insight in order to make a truly informed decision. In the past, many people acceded to the recommendations of the health care provider without a clear understanding of the risks, benefits, and treatment options available. Even today, patients may feel intimidated or overwhelmed when faced with complex medical issues. The process of informed consent can help “bridge the gap” to support patients so that they may make knowledgeable, voluntary, and authentic decisions. For physicians, informed consent serves as a provocative tool geared to stimulate a discussion that will result in an informed health care decision.

Decisional Capacity

The decisional capacity of the patient is an important consideration in obtaining informed consent. People who are seriously or chronically ill, who are exhausted or in pain, or are overwhelmed or frightened may not always be fully able to understand the complex information involved in a decision, and they may not be able to appreciate the full implications of the various decisions that need to be made. Consequently, clinicians look for indications of the patient’s (or the surrogate decision-maker’s) ability, or inability, to make the decisions he or she is faced with.

There are four elements to decisional capacity: the ability to communicate a choice; the ability to understand the information involved (see below) in the health care situation and decision to be made; the ability to “reason through” the information and

the health care situation; and, finally, the ability to appreciate the implications of the decision in the context of the patient's life. Clinicians thus must look for the patient's capacity to comprehend the clinical situation including the treatment and treatment options, deliberate the information reasonably and in accordance with the values of the patient, and communicate the choice, as well as express the rationale for the choice.

In caring for elders, it is possible that the patient may have compromised decisional capability and sometimes, his or her surrogate decision-maker may lack the capacity to comprehend and make appropriate decisions as well. In those situations it is necessary to institute a plan which safeguards both individuals, and request a guardian for both individuals.

It is very important to note that having some cognitive deficits, such as mild memory loss or difficulty with attention, does not mean that a patient cannot make decisions. Ill individuals should not be excluded from the decision-making process. One may still retain the capacity to make certain decisions; the greater the complexity of the decision to be made, the greater the need for higher cognitive functions. Decisions with minimal risks, such as a blood draw or a flu shot, can be made by a patient with moderate cognitive deficits. To assess comprehension of the decision to be made, patients are asked to paraphrase the discussion, and describe their views of the impact of the disease, and the proposed intervention. Once it is clear that the key decision-maker has the capacity to make the necessary decision, the process should continue.

Information Requirements for Informed Consent

The information that must be conveyed and understood in an informed consent dialogue is listed in [Table 1](#). It is important to note that the decision-maker (patient or surrogate) must be given the information in a language, and with terminology that they understand. The decision-maker must be able to take the information, apply appropriate deliberations, and paraphrase it according to his or her understanding of what has been said. Pictures are a useful tool when attempting to describe a disease process; they can simplify the explanatory process. The information must be presented in a manner that is clear, and free of bias and coercion. The decision-maker must be queried to assess their understanding of what they have been told.

Table 1

Informational elements of informed consent

1. A clear understanding of the disease process
2. The anticipated prognosis
3. The recommended treatment
4. The benefit and the risks of the recommended treatment
5. Reasonable alternative treatments
6. The benefits and the risks of the alternative treatments
7. The effect of no treatment

The service of an interpreter should be enlisted whenever language is a barrier. Making use of a family member as an interpreter is not an appropriate measure. The issues may be sensitive, and family members carry their own set of values which may be different from the values of the patient. An inherent risk associated with the use of untrained interpreters is the potential for misinformation. The person providing the interpretation may misunderstand what is being said or they may tell the patient only what they believe to be appropriate.

Understanding the Disease Process In undertaking any health care decision, it is vital to first understand the nature of the health condition and to evaluate the expected outcome for this disease. For the clinician, giving a prognosis, when the anticipated outcome is unfavorable, is a difficult task; however, the decision-maker deserves to have as much information as possible to help formulate a suitable plan. The prognosis needs to be as clearly defined as possible; if the anticipated outcome is death that should be stated.

Recommended Treatment In general, the lay public is not equipped to make medical treatment decisions without assistance from the physician. It is imperative for the physician to discuss, with the decision-maker, why a particular treatment is being proposed, what is the expected benefit of that treatment, as well as the associated risks and side effects. The decision-maker should be clearly informed of the risk, in particular if there is a risk for permanent disability or death.

Reasonable Alternative Treatments The physician should discuss with the decision-maker all reasonable treatment alternatives. This does not imply that the provider should offer treatment options with which they are unfamiliar. When appropriate, referrals can be made to practitioners, who may have greater knowledge of some of the treatment options. This

affords the decision-maker an opportunity to weigh the available options. Information on risks and benefits should accompany the description of alternative treatment options.

The patient and decision-maker retain the option to forgo all treatment recommendations; however, the physician should clarify the decision, and the goals for continued care. In addition, the likely outcome without treatment must be clearly stated.

Informed consent, as described, is far more complex than enlisting a signature for a standardized form. It is a thoughtful and thought-provoking process. Ideally, the process should begin prior to the occurrence of a problem. As stated above, the person who is to make the decision must demonstrate the ability to deliberate on the issues in question. The patient may lack the capacity and a surrogate decision-maker may act on his or her behalf. A health care decision-maker who knows and will respect the values of the person in their charge is a key element in good decision making.

Voluntarism

Autonomy and self-determination are key features of the consent process. Voluntary/autonomous acts are those acts which are made by one's own free will, without undue influence. Voluntarism is an essential part of true informed consent: it is the professional responsibility of the health care provider to assist by making sure the patient or surrogate decision-maker understands clearly the limits and consequences of the therapeutic intervention, and then actively and authentically makes this choice.

When one gives consent for treatment, one retains the right to have a change of mind and to stop the course of treatment. This is also true for treatment such as ventilators and feeding tubes which delay the natural dying process and sustain life through artificial means. The values of the patient and their quality of life considerations are paramount when making decisions of this type.

Surrogate Decision-Makers

As health care consumers, each of us should have a few individuals who have been informed of our values as they relate to health and lifestyle, and who

have consented to act on our behalf as a surrogate decision-maker. One should openly discuss their feelings about medicine and medical interventions with their decision-makers and with others who may play an important role in the issues. Using more than one decision-maker at a time can be complicated; therefore, it has been suggested that decision-makers be listed in hierarchical order so in the event the first listed is unavailable or unable to serve, the next person on the list will be called. This process attempts to insure the availability of a decision-maker at all times.

It is important too that the decision-maker understand the significance of their role; they should understand that, if called to serve, they should make decisions in accordance with the values and wishes of the patient. In other words, they should make the decision as if they were the voice of the patient, mindful of what the patient would want under the circumstances.

Before asking someone to take on the monumental responsibility of health care decision-maker, one should first reflect on personal values. It is important to clarify what is important now, and what will be important if one becomes mentally or physically incapacitated. In your own life, think about whom you entrust with the responsibility of honoring your values and wishes, and then make a plan to educate that person regarding appropriate decisions for you.

Related Topics

➤ [Advance directives](#), ➤ [Clinical trials](#), ➤ [Doctor-patient relationship](#), ➤ [Ethics](#), ➤ [Euthanasia](#), ➤ [Quality of life](#)

Suggested Readings

- Beauchamp TL, Childress JF (2001) Principles of biomedical ethics. Oxford University Press, New York
- Devettere RJ (2000) Practical decision making in health care ethics: cases and concepts. Georgetown University Press, Washington, DC
- Furrow BR, Greaney TL, Johnson SH, Stoltzfus Jost T, Schwartz RL (2000) Health law. Hornbook Series, West Group
- Jonson AR, Siegler M, Winslade WJ (2002) Clinical ethics: a practical approach to ethical decisions in clinical medicine. McGraw-Hill Medical, New York
- Lo B (2005) Resolving ethical dilemmas: a guide for clinicians. Lippincott Williams & Wilkins, Philadelphia

Schneiderman LJ, Jecker NS (1995) *Wrong medicine: doctors, patients, and futile treatment*. Johns Hopkins University Press, Baltimore, MD

Inheritance

Janet L. Lowder · Sandra J. Buzney

Older persons face many critical issues when a partner dies, including how to manage financial assets inherited from the deceased spouse. Due to their greater longevity, women above 65 are almost three times more likely to be widowed than men. If a spouse has not been involved in the couple's financial planning and is not aware of the marital assets or marital liabilities, in addition to dealing with his or her loss, the surviving spouse may face new financial realities very quickly. The surviving spouse may be presented with many special considerations and concerns even if he or she was left well-provided for. However, if the surviving spouse was left with limited funds and/or debt, he or she may be faced with creditors and the need to make a change in lifestyle, including entering or returning to the workforce.

Inheritance laws, which can be quite complex, are governed by state law. If an individual dies without leaving a will, that individual is said to have died "intestate." Each state has its own set of laws that direct how the property of the deceased is divided among his or her surviving spouse, children, and relatives if the deceased dies intestate. These state laws are called "intestate succession laws," "intestacy laws," or "statutes of descent and distribution."

States may be characterized as either "community property" states or "noncommunity property" states, with most states operating as "noncommunity property" states. In community property states, each spouse has a claim for ownership of one half of the property acquired during the marriage. However, in noncommunity property states, the surviving spouse does not automatically have a claim to the marital assets. A surviving spouse who feels that the decedent spouse's estate plan treated her unfairly has the ability in most states to elect to take under the laws of intestate succession rather than under the will. This means that the surviving spouse will receive the share of the estate that she would have received if the decedent had died without leaving a will.

Individuals living in nontraditional relationships should be aware that estate planning is particularly important to protect their interests because, otherwise, in all but a very few localities, they have no legal rights upon the death of their loved one under most state inheritance laws. The surviving partner will have no legal claim upon the decedent's assets unless (1) those assets were titled jointly (both names appear on the title document) or have transfer on death, payable on death, or beneficiary designations naming the surviving partner, or (2) the decedent has executed estate planning documents (e.g., a will and/or trust) naming his or her partner as a beneficiary. Many involved in deeply committed relationships suddenly find themselves literally forced to leave a shared home and treasured belongings when a partner's death occurs.

Sometimes, inheritance is unexpected. Many parents do not share their financial status with their children. Many others have not prepared an estate plan. Even with a well-written will, questions will need to be answered. Should the assets of the estate be disbursed right away? Should the family house be sold? What happens when one heir wants to sell while the other wants to wait for various reasons? Should one give gifts or lend funds to friends or relatives? Should one buy a new house? A car? Should one use inherited funds to take his or her dream vacation?

An inheritance or life insurance proceeds may be the single largest sum of money that one receives in his or her lifetime. It may be significant enough to cause a reevaluation of one's goals in life and one's standard of living. Questions concerning career, retirement, providing for children's education and welfare, and making charitable donations are all factors to be considered. The death of a loved one is also a stressful period. The receipt of inherited funds may occur at a time when the heir is also grieving his or her loss and is in a state of emotional turmoil. There may be guilt, for example, that money has been received at the expense of the loved one's death. At this vulnerable time, making important financial decisions can be a struggle; sorrow may be crippling and may impede one's judgment.

As mentioned earlier, even being well-provided for by an inheritance can be accompanied by various issues and challenges. Many people think that money will solve their problems, but that may not be a realistic belief. For the surviving spouse who has not been involved in the family's money management, being faced with the new responsibility of financial management can be stressful and place him or her at risk of

exploitation. The surviving spouse may not have a relationship with reliable professionals who can help soundly manage money or plan for the future. He or she is likely to be faced with advice from many different sources and recommendations or requests from individuals who are looking to benefit from his or her lack of experience. The surviving spouse may also find it difficult to decide between purchasing some extras that he or she may have always wanted, planning for the future, and providing financial assistance to children or other family members.

Financial advisors all agree on one basic rule when an inheritance is received: Do nothing for a while, do not make any decisions immediately. It is important to deal with the emotional issues of inheritance before tackling the financial ones. A good rule of thumb is to wait 6 months to a year before making lifestyle changes. During this interim period, inherited funds should not be spent frivolously. If the inheritance is in cash, it might be held in short-term certificates of deposit, money market accounts, or other low-risk investments while a financial investment strategy is developed and relationships with professional advisors are established.

Appropriate advisors may include a lawyer, an accountant, a financial planner, and or a money manager. The criteria used to select advisors should include honesty, integrity, experience, professional competence, and the appropriate credentials. References should be requested and all potential advisors should be interviewed. Quality of service should be more important than cost. It may be necessary to talk to several individuals before finding the right fit with a qualified advisor. An attorney can assist with probating the will and/or making distributions from a trust. Once immediate matters related to the decedent's estate are resolved, the surviving spouse or heir should consider his or her own estate planning needs. Even if estate planning documents have been executed, one's estate plan should be reviewed if there has been a significant change in family circumstances or financial status.

An inheritance is best used when applied to build on existing strengths. As noted above, one should develop an individual financial and estate plan. By taking a look at one's entire financial situation and consulting with an estate planning lawyer and financial planner, an individual may utilize the inherited money and or assets to his or her best advantage. One should ask these basic questions:

- Does income exceed expenses?
- If so, is at least 10% of his or her salary going towards savings?
- Is there money set aside for emergencies?
- Is there adequate insurance to protect dependents?

Once these questions have been answered, the decision of whether to invest the inheritance may be made. A major objective should be protecting oneself, and preserving and conserving for the future. Individuals should develop a plan for retirement. If an employer offers a retirement plan, and even better, matches employee contributions, an inheritance may enable an employee to establish an account or increase the contributions from his or her salary. If an employer-sponsored account is not available, or in addition to such an account, one might want to open an individual retirement account (IRA). For funds that are to remain readily accessible, one should compare the return on money market accounts to savings accounts and short-term certificates of deposit. Investments in mutual funds and stocks can be compounded by reinvesting the dividends. When investments are divided into a variety of categories, financial risks are varied and the opportunity for profit increased.

Improved financial planning can help an individual achieve lifetime goals and maximize the benefits of receiving an inheritance. Individuals should exercise caution and think of long-term needs. Money can provide security, comfort and convenience. Like many things in life, however, the best plan will balance immediate needs and desires with preserving assets for the future.

Related Topics

🔗 [Financial planning](#), 🔗 [Probate](#)

Suggested Readings

- Barney C, Collins V (2002) *Best intentions: ensuring your estate plan delivers both wealth and wisdom*. Dearborn Trade Publishing, Chicago, IL
- Lowder JL, Rossman DS (2004) *Inheritance*. In: Loue S, Sajatovic M (eds) *Encyclopedia of women's health*. Kluwer Academic/Plenum Publishers, New York, pp 337–338
- Plotnick CK, Leimberg JD (1998) *How to settle an estate: a manual for executors and trustees*. Penguin Putnam, New York
- Rottenburg D (2000) *The inheritor's handbook: a definitive guide for beneficiaries*. Fireside Publishers/Simon & Schuster, New York

Suggested Resources

Older Women's League (OWL), 2005, Washington, DC (November 28, 2005). <http://www.owl-national.org/reports.htm>

Insomnia

Jyoti Aneja · Ashish Aneja

Insomnia is a term that is often used to indicate any and all stages and types of sleep loss. It is defined as the difficulty in initiating and/or maintaining sleep and includes perception or complaint of inadequate or poor-quality sleep. People with insomnia have one or more of the following: difficulty falling asleep, waking up frequently during the night with difficulty returning to sleep, waking up too early in the morning, and/or unrefreshing sleep.

Insomnia may cause problems during the day such as tiredness, a lack of energy, difficulty concentrating, and irritability. About 60 million Americans each year suffer from insomnia, which can lead to serious sleep deficits and problems. Insomnia tends to increase with age and affects about 40% of women and 30% of men.

Insomnia can be classified as acute (short term/transient), intermittent (on and off), and chronic (constant). Insomnia lasting from a single night to a few weeks is referred to as acute or transient. If episodes of transient insomnia occur from time to time, it is said to be intermittent. Insomnia is not defined by the number of hours of sleep a person gets or how long it takes to fall asleep because all individuals vary normally in their need for, and their satisfaction with, sleep.

Transient insomnia, which is self-limited and less of a clinical concern can be due to a variety of factors including significant life stressors (job loss or change, death of a loved one, moving), environmental noise, extreme temperatures, sleep/wake schedule problems such as those due to jet lag, or medication side effects.

Chronic insomnia occurs when a person has insomnia at least 3 nights a week for 1 month or longer. It is more complex and often results from a combination of factors, including underlying physical or mental disorders. One of the most common causes of chronic insomnia is depression. Other underlying causes include arthritis, kidney disease, heart failure, asthma, sleep apnea, narcolepsy, restless legs syn-

drome, Parkinson's disease, severe respiratory diseases such as emphysema, and hyperthyroidism. However, chronic insomnia may also be due to behavioral factors, including the misuse of caffeine, alcohol, or other substances. These behaviors may prolong existing insomnia, and they can be responsible for causing the sleeping problem in the first place. Stopping these behaviors may eliminate the insomnia altogether. In addition, sleeping and waking cycles may be disrupted with shift work or other nighttime activity schedules. Chronic stress is often an important reason for prolonged insomnia. Certain conditions like advanced age, female gender, or a history of depression also make individuals more likely to experience insomnia.

Diagnosis and Treatment of Insomnia

Individuals with insomnia are evaluated with the help of a medical history and a sleep history. The sleep history may be obtained from a sleep diary filled out by the patient or by an interview with the patient's bed partner concerning the quantity and quality of the patient's sleep. If there is suspicion that the individual may have a primary sleep disorder such as sleep apnea or narcolepsy, they may be referred to a sleep center for specialized tests.

The treatment of insomnia should begin with simple measures such as avoiding a beverage after 8 p.m. or at least 3 hours before bedtime. A relaxing and warm evening bath (several hours before intended sleep time) or reading a book just before retiring can be helpful. Avoiding caffeinated drinks such as coffee, tea (including green tea), or caffeine-containing soda 5–6 hours before intended sleep time is recommended. Cutting out alcoholic beverages and smoking in the evening is often quite helpful in sleep restoration.

Acute and intermittent insomnia may not require treatment. However, for some people who experience daytime sleepiness and impaired performance because of transient insomnia, the use of short-acting sleeping medications may improve sleep and next-day alertness. These drugs often have significant side effects and should be used only sparingly. The use of over-the-counter sleep medicines is not usually recommended for the treatment of insomnia.

Treatment for chronic insomnia requires diagnosing, treating underlying medical or psychological problems, identifying behaviors that may worsen insomnia, and curtailing them. The long-term use of sleeping

pills for chronic insomnia is also equally controversial. A patient taking any sleeping pill should be under the supervision of a physician to closely evaluate effectiveness and minimize side effects. In general, these drugs are prescribed at the lowest dose and for the shortest duration needed to relieve the sleep-related symptoms. For some of these medicines, the dose must be gradually lowered as the medicine is discontinued because, if stopped abruptly, it can cause insomnia to occur again for a night or two. Trying behavioral techniques to improve sleep, such as relaxation therapy, sleep restriction therapy, and reconditioning is recommended.

Relaxation Therapy There are specific and effective techniques that can reduce or eliminate anxiety and body tension. As a result, the person's mind is able to stop racing, the muscles can relax, and restful sleep can occur. It usually takes much practice to learn these techniques and to achieve effective relaxation.

Sleep Restriction Therapy A sleep restriction program at first allows only a few hours of sleep during the night. Gradually the time is increased until a more normal night's sleep is achieved.

Reconditioning The person is usually advised to go to bed only when sleepy. If unable to fall asleep, the person is told to get up, stay up until sleepy, and then return to bed. Throughout this process, the person should avoid naps, and wake up and go to bed at the same time each day. Eventually the person's body will be conditioned to associate the bed and bedtime with sleep.

Related Topics

🔗 [Sleep disorder](#), 🔗 [Sleep hygiene](#)

Suggested Resources

www.aasmnet.org
www.nhlbi.nih.gov/health/public/sleep/insomnia
www.sleepfoundation.org
www.womenshealth.gov/insomnia

Institutionalization

Brandy L. Johnson

Institutionalization can describe the process of placing individuals in institutions like nursing homes. The term can also be defined as a process in which individuals who live together gradually develop certain unhealthy patterns of behavior and thought, such as the assumption of illness or depression apathy. This change is frequently associated with being placed in an institution.

Placement in Institutions

Nursing Homes According to *Taber's Cyclopedic Medical Dictionary*, a nursing home is an extended care facility for persons who need medical attention of the type and complexity not requiring hospitalization. Nursing homes provide 24-hour nursing supervision, rehabilitation services, activity and social services, a restraint appropriate environment, careful attention to nutrition needs, and measures to prevent complications of decreased mobility. In addition, some nursing homes have specialty units for patients with conditions such as dementia or head injuries. Some nursing homes provide subacute units for patients who are not as medically stable as patients in the typical nursing home setting. Most nursing homes are certified for intermediate care, skilled level of care, or both.

In 1999, it was estimated that there were 18,000 nursing home institutions in the United States. These nursing homes provide approximately 1.9 million beds; in 1999, there were 1,469,525 patients in nursing homes. In fact, anyone above 65 has a 43% chance of spending some time in a nursing home.

The types of services offered by nursing homes vary. To become certified, a nursing home must provide medical care, nursing, and social services. Other services that may be offered include ophthalmologic, otolaryngologic, neurologic, psychiatric, psychological, and other medical specialty services. However, these services are typically provided by consultants.

Society's increased dependence upon nursing homes over the last century has resulted in a need for legislation to protect the rights of nursing home residents. In 1987, the US Congress passed the Nursing Home Reform Act.

Nursing homes that receive Medicare or Medicaid are required to provide services and activities to attain and maintain the highest practicable physical, mental, and psychological well-being of each resident in accordance with a written plan of care that is initially prepared with the participation, to the extent possible, of the resident, the resident's family, or the resident's legal representative.

Under the legislation, a resident has a right to be informed. This means that, among other things, a resident has the right to be told of the available services, the cost for each service, the facility's rules and regulations, advanced notification of changes in rooms or roommates, and the contact information for each state's survey agency or Ombudsman. A resident also has the right to complain. Residents should be able to speak with any person about grievances without fear of reprisal. This includes the right to complain to the state's Ombudsman or survey and certification agency. A third resident right is the right to participate in his or her own care. A resident has a right to receive adequate care, to be informed in changes in his or her condition, to refuse medication or treatment, and to participate in any assessment performed. Individuals who are institutionalized in nursing homes also have the right to make independent choices. Such choices include how to spend their free time, who to utilize as a treating physician, and what to wear.

Residents also have various rights regarding transfers and discharges, such as the right to remain in the nursing home unless a transfer or discharge is necessary for the welfare of the resident, is needed to protect the health and safety of staff or other residents, is appropriate because the resident has improved and no longer needs care, or is required because the resident has failed to pay for a service or item provided at his or her request. Other rights include the right to visits, the right to privacy and confidentiality, the right to be treated with dignity and respect, and the right to be free from abuse, neglect, punishment, involuntary seclusion, and restraint.

Institutionalization in a nursing home can be expensive. It has been estimated that 67% of nursing homes in the United States are operated for profit. The average cost of living in a nursing home for one year is \$55,000. However, in some areas, the cost can exceed \$100,000. Cost also increases when an individual requires care in a skilled nursing facility. There are four basic methods used to finance institutionalization: Medicare, Medicaid, long-term care insurance, and self-financing. Of these methods, the most

commonly used is Medicaid. In 2003, Medicaid paid 46% of the \$111 billion spent on nursing home long-term care. In contrast, Medicare paid 12% of the amount spent on long-term care and private insurance paid 8%.

Alternatives to Traditional Institutionalization

In the past, those who were no longer able to live independently often found themselves placed in a nursing home facility. Today, however, there are numerous alternatives to traditional institutionalization. These alternatives include board and care facilities, assisted living communities, and life-care communities.

Board and care facilities are designed for elderly persons who cannot live independently but who do not need the constant supervision provided in nursing homes. Board and care facilities usually provide a place to live, meals, and minimal assistance with things like personal care and the administration of medication. The number of board and care facilities has been increasing as they offer an economic, federally funded means of accommodating the increasing number of elderly persons who would otherwise be institutionalized in nursing homes.

Another alternative is assisted living. Assisted living facilities permit individuals with deficits in activities of daily living to maintain their independence in personalized settings. The facility either provides or arranges for residents' meals, personal care, health care, and other supportive services. Many assisted living facilities even provide 24 hours of oversight.

Life-care communities also offer an alternative to institutionalization. Life-care communities are organizations that offer individuals a contract that is intended to remain in effect for the resident's lifetime. The contract guarantees shelter and access to certain health-care services. Life-care communities may be contained in a single building or located across many acres. Several have common areas, such as a community building, for organized social events, dining rooms, clubs, and sports facilities. Additional benefits include affiliation with home care services, adult homes, day care programs, local acute care facilities, and nursing homes.

Life-care communities are open to individuals who can live independently, who require assistance, and who require skilled nursing care. There are three basic types of life-care communities: (1) communities that utilize an all-inclusive contract; (2) communities that utilize a

modified contract limiting the amount of long-term care provided before the monthly fee is increased; and (3) communities that utilize a fee-for-service contract with billing for health services as the services are provided. To become a resident of a life-care community, a substantial entrance fee and monthly fees are generally required. Some communities require residents to pay the monthly fee and purchase a separate service or health package.

Behaviors that Result from Institutionalization

After admission to an institution, like a nursing home, it is not uncommon for the admitted individual to undergo a change in behavior. This tends to be especially true for individuals admitted without consultation. The length of time the admitted individual expects to be in the institution also could have an effect on his or her behavior. Extended periods of institutional living can have a social effect on those admitted. Individuals admitted to institutions like nursing homes may, over time, demonstrate apathy and a loss of individuality.

Increased behavior problems have been seen when the admitted individual is separated from a spouse or their social support. Further, behavioral problems could result from a loss of contact with the outside world, enforced idleness, loneliness, enforced authority by staff, the loss of possessions, and the loss of the ability to decide when to perform activities like waking up and getting dressed.

An individual admitted to an institution may isolate himself or herself as a result of factors such as inappropriate behavior by other residents. The presence of ill or disabled individuals in an institution could also have an effect on the behavior of other residents and may also serve as a reminder of an individual's inevitable decline and result in a behavior change.

Many of the above problems, however, could be lessened, if not eradicated, by taking various steps. These include involving the individual in the decision to enter an institution and providing accurate information regarding the length of the institutionalization. Other strategies include improved communication with the staff and the maintenance of social supports inside and outside of the institution.

Related Topics

- ▶ Assisted living, ▶ Housing, ▶ Long-Term care, ▶ Long-term care insurance, ▶ Medicaid, ▶ Medicare, ▶ Skilled nursing facilities

Suggested Readings

- Fiveash B (1998) The experience of nursing home life. *Int J Nurs Prac* 4:166–174
- March C (1997) *The complete care manual for long-term care*. Jossey-Bass, New York
- Matthews J (2004) *Long-term care: how to plan and pay for it*, 5th ed. NOLO, Berkeley, CA
- Morriss R, Rovner B, German P (1994) Changes in behavior before and after nursing home admission. *Int J Geriatr Psychiatry* 9:965–973
- Pratt J (2004) *Long-term care: managing across the continuum*, 2nd ed. Jones & Bartlett, Sudbury, MA

Suggested Resources

- AARP, Policy and Research. <http://www.aarp.org/research>
- Citizens for Long Term Care. <http://citizensforltc.org>
- National Citizens' Coalition for Nursing Home Reform. <http://www.nccnhr.org>
- National Counsel on Aging, Inc. <http://noca.org>

Intergenerational Hierarchy Boundary

John Gillmore

Within families, members take on roles delineated by boundaries that become understood by all members. The resultant family hierarchy spans all living generations and provides an organized system through which needs for the family survival become met. The most important purpose of these boundaries and the resultant structure is to create a system for passing along affection, values, and learning to future generations. The family structure has been in much flux during the past few centuries.

As a comparison to today's family structure, the traditional working family of a few centuries ago treated children as adults at an earlier age because of need

of their labor to survive. Parents had relatively less time to raise children. Grandparents were more respected for their experience and in close contact with, or even cohabiting with, children and grandchildren.

With the luxuries of technology, children have shifted to later entrance into the workforce and to longer delay before recognition as adults. The age at which parents have started having children has increased. The combination of these two trends in some ways means that hierarchically, children are empowered later, and that parental authority may increase from this factor and the fact that parents may be older and more mature. However, this is opposed by other trends. For example, the growing age gap between child and parent could also lead to more difficulties for parents to identify with their children, and possibly less involvement. Additionally, while the rise of technology logically leads to increased time for parental involvement, it is not clear that parents are actually using this time to do more parenting. Finally, the rising divorce rate leads to families where the influence of parents may decrease, the child forced into earlier autonomy.

Many feel parents in our culture have taken over some of the influence grandparents once held. This change has many potential roots. First, the rise of industrialism and technological advances has led to less veneration for traditional ways of doing things, and thus less respect for grandparents as the repositories of experience. Second, these technological advances have also led to increased geographical mobility, as young adults move further away from their families of origin, with resultant decreased influence of other family members. Third, as the divorce rate has risen, many grandparents find themselves in conflicts for involvement with grandchildren after their child's divorce or their own divorce. Fourth, there has been a relatively new phenomenon of age segregation in our society, with older people often living in age-specific housing or communities, which may lead to weaker grandparental involvement with subsequent generations.

Notwithstanding this perceived trend of growing parental and waning grandparental influence, several observations point to continued strong influence of grandparents. For example, as people live longer and healthier, the grandparents are around longer to have influence. As the size of families decreases and grandchildren grow up with fewer siblings, cousins, aunts, and uncles, the significance of the grandparents may increase. Also, with divorces of adult children, many grandparents find themselves resuming authority within

the family and adopting responsibilities to raise grandchildren when their adult children return to live with them.

It should be noted that important differences in the patterns of boundaries and hierarchy exist in different ethnic groups. For example, one commonly recognized pattern is the tendency to a stronger influence of the maternal grandmother in African American families. Extended family members also tend to have more influence in the Hispanic community. In immigrant families where parents or grandparents do not primarily speak English, there may be a barrier to their influence among younger generations.

Families appear to be evolving into a structure which needs even more than in the past the involvement of grandparents and elderly parents of adult children. Their adult children are more often living or raising children alone, and work longer hours. Their grandchildren, in addition to the stresses of having parents raising them alone and working longer hours, are exposed to adult issues at earlier ages. Given these stresses, their adult children and young grandchildren will be in more need of support. Grandparents and elderly parents of adult children will be living longer and healthier and are suited to step into this role.

Related Topics

[▶ Coresidence](#),
 [▶ Extended family](#),
 [▶ Family relationships](#),
 [▶ Generation gap](#),
 [▶ Grandparents as parents](#)

Suggested Readings

- Hargrave TD, Anderson WT (1992) *Finishing well: aging and reparation in the intergenerational family*. Brunner/Mazel Publishers, New York
- Larkin E, Friedlander D, Newman S, Goff R (2004) *Intergenerational relationships: conversations on practice and research across cultures*. Haworth Press, New York
- Lussier G, Deater-Deckard K, Dunn J, Davies L (2002) Support across two generations: children's closeness to grandparents following parental divorce and remarriage. *J Fam Psychol* 16 (3):363–376
- Williams A, Nussbaum JF (2000) *Intergenerational communication across the life span*. Lawrence Erlbaum, Mahwah, NJ

Internet

Dawn Brown

The Internet is an infrastructure that connects computer networks and facilities around the world via electronic communications networks using Transmission Control Protocol/Internet Protocol (TCP/IP). Two of the most popular services of the Internet are the World Wide Web (WWW or the Web) and e-mail. The Web, often mistakenly referred to as the Internet, is a system of documents linked by hyperlinks and Uniform Resource Locators (URLs) or addresses that are transmitted over the Internet. E-mail is electronic mail that is also transmitted over the Internet. Some e-mail services are web-based.

Methods by which to access the Internet are through dial-up service over telephone lines; landline broadband; Wi-Fi, which is a wireless local area network that uses radio frequencies; satellite; and cell phones. These are generally fee-based subscription services, although free Internet access may be found using the computers at the public library and possibly other public facilities such as senior centers and Internet cafés. Connections at airports, hotels, and other public places may or may not require a fee.

According to recent findings from the Pew Internet and American Life Project (October 2005), it is estimated that 68% of American adults use or have used the Internet. Internet use among those aged 50 and over is much more diverse in that 67% of adults aged 50–64 go on-line and only 26% aged 65 and over go on-line. These numbers are ever changing as the older population increases and new technologies are developed. It should also be noted that currently older adults comprise the fastest growing Internet population.

The Internet has proven beneficial to older individuals in a variety of ways. For seniors who live alone or have mobility restrictions the impact has been tremendous. Through the use of e-mail, seniors can keep in touch with family and friends. The Web has facilitated routine tasks such as shopping for groceries, prescriptions, and other necessities to be delivered directly. Financial services such as on-line banking and bill paying have allowed for increased autonomy. Chat rooms, message boards, and other on-line communities provide a portal for information, support, and discussion that would otherwise not be accessible. These types of interactions have

had profound effects on mental health. Studies like the Geriatric Rehabilitation Electronic Education and Training Project (GREET) conducted by McConatha et al. (1994), found that the quality of life had improved for long-term care residents trained to use interactive computer services. Cognitive function was higher as was overall interest in life.

Health information resources have greatly increased with the use of the Internet. Health care providers and caregivers are able to disseminate and receive health and patient information more quickly and accurately than ever before. Health-related sites are among those most sought out and frequented by the older population. They are able to research health topics and be more prepared to discuss them with their health care provider. This resource has afforded them the opportunity to be better informed, however, with the vast amount of information available on the Web, and the fact that anyone can create a website or post information, careful consideration of the validity of information needs to be taken. Is the site a reliable source and is the information current? Such vulnerabilities are of great concern.

Other areas of concern are privacy of personal information transmitted over the Internet; the practice of phishing, which is luring Internet users to fake websites by claiming to be a reputable source, such as a bank, to steal personal information; and computer viruses or worms. The aging population needs to be educated about the safety precautions available, such as firewalls, virus protections, filters, and anti-phishing strategies.

Related Topics

▶ [Isolation](#), ▶ [Loneliness](#), ▶ [Social support](#)

Suggested Readings

- Czaja SJ, Lee CC (2003) The impact of the Internet on older adults. In: Charness N, Schaie KW (eds) *Impact of technology on successful aging*. Springer, New York, pp 113–133
- McConatha D, McConatha JT, Dermigny R (1994) The use of interactive computer services to enhance the quality of life for long-term care residents. *Gerontologist* 34(4):553–556
- Morrell RW, Mayhorn CB, Bennett J (2002) Older adults online in the Internet century. In: Morrell RW (ed) *Older adults, health information, and the World Wide Web*. Lawrence Erlbaum, New Jersey, pp 43–57

Suggested Resources

The American Geriatrics Society. <http://americangeriatrics.org>
The Association for the Advancement of Retired Persons. <http://www.aarp.org>
MedlinePlus. <http://www.medlineplus.gov/>
The National Institute of Aging. <http://www.nia.nih.gov/>
NIH Senior Health. <http://nihseniorhealth.gov>
Senior Net. <http://www.seniornet.org>
WebMD. <http://www.WebMD.org>

Intersexuality

Angela Pattatucci Aragon · Rashmi Gangamma

Intersex is a blanket term used to describe individuals that possess bodies that the medical establishment cannot classify definitively as male or female. The occurrence is relatively frequent and is estimated at 1 in every 2,000 births.

The variations can be grouped into three major categories. The first encompasses people with chromosomal configurations other than XX (female) or XY (male), such as XXY, XXX, or a single X. Also known as *true hermaphrodites* in the more archaic medical terminology, these individuals are born with both ovarian and testicular tissue. The second is characterized by genetic variations in enzymatic pathways that affect the development of primary and/or secondary sexual characteristics independent of XX or XY chromosomal constitution. The third is characterized by physiological variations that may or may not have genetic underpinnings.

Earlier, those born intersexed negotiated their way in society as best they could. However, advances in endocrinology and surgical techniques over the last 40 years have led to the alteration of intersexed bodies to conform to idealized male or female morphologies as a matter of standard medical procedure. The policy has been applied absent public scrutiny until only recently, largely due to the belief that gender is the logical outcome of sex assignment and is therefore shaped by social learning. Nevertheless, the celebrated case of identical twin boys, one that was reassigned a girl at 7 months of age following a circumcision accident, calls this mindset into question.

Formation of the Intersex Society of North America (ISNA) in 1993 marked the beginning of a move-

ment to educate the public with the goal of removing the secrecy, shame, and unwanted genital surgery associated with intersex status. The intersex movement advocates providing the parents of intersexed newborns, as well as the intersexed children themselves, with honest and accurate information, including psychological counseling to address parental distress and referrals to other people dealing with the same issues. ISNA argues against using parental consent as a proxy for that of the intersexed child and believes that intersexed individuals should not be subject to surgeries designed to normalize their genitals without their explicit consent.

Aging among this population has not been studied adequately. As a natural process aging brings about changes in the physical, psychological, and social functioning of an individual. In 1999, it was estimated that there were about 17,350 intersex individuals above 65. While the practice of assigning sex at birth has been condemned, it still occurs. For such individuals it may be more stressful in later years to opt for sex reassignment surgeries (SRS). Changing would lead to a number of social and economic repercussions. The medical interventions that are required for the rest of their lives are expensive and may not be covered entirely by insurance. In addition to this, the possible side effects that treatments like hormone therapy could have on the health of the person could significantly compromise quality of life. Access to medical care could be a problem due to apprehension about the attitudes of the medical personnel and the risk of losing privacy about their status as intersex individuals. For those who have been suppressing their gender identity and/or sexual orientation through adolescence and adulthood, a phase of experimentation may begin which places them at a higher risk for acquiring sexually transmitted diseases (STD). Family members are known to experience guilt and feelings of shame which may be projected onto them. Lack of social support may in turn affect the well-being of the person. Finding partners and subsequently raising a family could be difficult which increases social isolation.

However, these concerns could be overcome if the individual is able to develop self-acceptance and a sense of optimism. With the help of advancement of medical technology, older intersex individuals can hope to attain a better quality of life. Building a social network that is supportive would also act as a buffer against stressors. Educating the community of their special needs and advocacy for their rights has been

undertaken by various organizations like ISNA. It must be noted, however, that considering the lack of literature on this population, there is a need to research the unique concerns facing them.

Related Topics

[Gender](#), [Gender role](#), [Homosexuality](#), [Lesbian](#), [Queer](#), [Transgenderism](#), [Transsexuality](#)

Suggested Readings

Colapinto J (2001) *As nature made him: the boy who was raised as a girl*. Harper Perennial, New York

Dreger AD (1999) *Intersex in the age of ethics* (Ethics in clinical medicine series). University Publishing Group, Hagerstown, MD

Kessler SA (1998) *Lessons from the intersexed*. Rutgers University Press, Piscataway, NJ

Suggested Resources

Witten TM (2001, October) White paper: transgender and intersex aging issues. Retrieved November 28, 2005 from <http://www.transcience.org>

Intimate Partner Violence

Juan Hernandez

The World Health Organization (WHO) provides the following definition of violence:

- ▶ The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.

Violence is increasingly regarded as a public health problem and it may be physical, sexual, psychological, or involve deprivation or neglect. The WHO definition emphasizes intentional behavior—what matters is committing the act, no matter what the outcome—whether public or private, reactive (following previous provocation) or proactive, criminal or not. Globally, in 2000, it is estimated that 1.6 million people lost

their lives to intentional violence: one-half resulted from suicide; one third, homicide; one-fifth were war casualties.

- Intimate partner violence (IPV), or domestic violence, is the form of aggression that women most commonly experience. Unfortunately, women are exposed to greater harm from violence inside their homes, and behind closed doors, than from encounters with strangers in the community. Although women in heterosexual relationships can be violent toward men—aggression also occurs in same-sex couples (both male and female)—in the majority of cases, it is a husband or intimate male partner who is violent toward a woman.

Violence by intimate partners occurs everywhere in the world but it is more pervasive in poorer countries and in rural regions. Younger women are more at risk but the violence does not spare older women. Physical aggression—slapping, shoving, hitting and beating—is often part of a wider behavioral pattern that also includes sexual abuse—for example, coerced sex—and psychological abuse. Psychological abuse can take many forms—threats and intimidation, verbal abuse, humiliation, isolating the victim from family or friends, denying access to health care or other services.

In industrialized countries, two patterns are well recognized among couples involved in violent conflict:

- Common couple violence— more moderate—in which unresolved conflict, frustration, and anger intermittently erupt into physical violence.
- An escalating pattern of battery, resulting in more severe injuries: the abuser terrorizes the victim by means of jealousy, entrapment, threats, and controlling behavior.

As of 2005, a WHO survey of 24,000 women in various countries presents disturbing findings: between 29% and 62% of the women, at most of the sites, had experienced physical or sexual violence by an intimate partner, or both, in their lifetime. In the same study, less educated women living in poorer countries or regions endorsed a pattern of resignation towards such violence and victimization.

IPV affects women 55 years and older but at lower rates than in the younger women. Since most health care providers tend to think of domestic violence as a problem of younger women, abuse of older women is often unrecognized. In one 2005 study, 8.6% of the women had experienced IPV since turning 55 years.

Older women do not frequently tell someone about abuse in their lives but when they do, it is easier to confide in a friend or relative. There is a lack of disclosure to physicians due to shame, embarrassment about “bringing up the subject,” physician insensitivity to IPV or providers’ lack of time. The same physician may treat both partners in the abusive relationship, thereby discouraging disclosure of abuse. Older abused women frequently have a very real dependency on the abusive husband because of finances or failing health. Health care providers, perhaps lacking sensitivity to the limited options of older women in abusive relationships, may adopt rejecting or judgmental attitudes that are not helpful. Such reluctance to disclose domestic violence to physicians is especially troubling because women living with abuse have higher rates of depression and physical complaints, such as chronic pain, leading to high utilization of medical services and thereby creating an opportunity for intervention.

Women who disclose violence at their physician’s office require a compassionate attitude, validation of their experience with IPV, together with respect for their particular timeline in dealing with abuse. Information about IPV services in the community and an appropriate referral may be all that is necessary from a physician. Successfully dealing with IPV is a process, not a one-time event.

Related Topics

- Crime, ➤ Elder abuse and neglect, ➤ Rape, ➤ Violence

Suggested Readings

- World Health Organization (1996) WHO global consultation on violence and health. Violence: a public health priority. WHO, Geneva, Switzerland. Available at <http://www.WHO/EHA/SPI.POA.2>
- World Health Organization (2005) WHO multi-country study on women’s health and domestic violence against women. WHO, Geneva, Switzerland, November 24
- Zink T, Fisher BS, Regan S, Pabst S (2005) The prevalence and incidence of intimate partner violence in older women in primary care practices. *J Gen Intern Med* 20:884–888
- Zink T, Jacobson CJ, Regan S, Pabst S (2004) Hidden victims: the healthcare needs and experiences of older women in abusive relationships. *J Womens Health* 13 (8):898–906
- Zink T, Regan S, Goldenbar L, Pabst S, Rinto B (2004) Intimate partner violence: what are physicians’ perceptions? *J Am Board Fam Prac.* 17:332–40

Iron Supplementation

Rajkumari Richmonds

Iron supplements in the form of elemental iron are prescribed for iron deficiency anemia. Iron is one of the most commonly known minerals that people associate with rich red blood. Food manufacturers who produce foods ranging from breakfast cereals to vitamin tonics talk about the need for iron. Iron helps to form hemoglobin in the red blood cells that carry oxygen. It is also needed for other important body processes such as brain function, a strong immune system, and healthy muscles.

Much of the iron our body absorbs is stored in the bone marrow where blood cells are made. When there is not enough iron in the blood stream, the body uses the bone marrow reserves. If the iron stored in the bone marrow is low, red blood cells do not form properly, are smaller than usual, and fewer in number.

In both men and women progressive increase in iron stores occurs with advancing age. The increase in iron stores in women is due to improved iron balance as a result of menopause. The requirements for iron are sharply reduced in post-menopausal women because their iron nutrition is adequate. Adult men generally have no problem in meeting iron requirements. Iron status improves as people age. Anemia is not usually a problem in a healthy, ambulatory elderly person. However, if elderly people suffer from severe protein-energy malnutrition, anemia is invariably present. Roughly 13% of people above 70 are anemic.

Causes of iron deficiency anemia are: iron loss from chronic or excessive bleeding, decreased ability to absorb iron, and insufficient dietary intake of iron, folate, or vitamin B.

The most common cause of anemia due to blood loss in the elderly is bleeding from the gastrointestinal tract. This blood loss is caused by a variety of diseases such as ulcers, gastric distress, and diverticulosis. Medical conditions such as cancer, kidney failure, or treatments for these conditions can also cause anemia. Other possible causes of blood loss include drugs such as non-steroidal anti-inflammatory drugs, and anticoagulants.

Aggressive attempts should be made to identify the cause of anemia and administer treatment even if occult blood is not detected in the stool. Even mild anemia may be a significant health risk factor.

Diseases involving inflammatory processes like rheumatoid arthritis result in short-lived red blood cells. The major defect of these disorders is an impaired ability to form hemoglobin that results in low serum iron levels and inadequate iron supply to the bone marrow.

Iron deficiency can be prevented by eating a healthy diet that includes foods rich in iron, folate, and vitamin B12. The best sources of iron are beef and other meats. Foods rich in iron include dried beans, lentils, iron fortified cereals, dark green leafy vegetables, dried fruits, nuts, and seeds. Folate and folic acid are found in citrus juice and fruits, dark green leafy vegetables, legumes, and fortified breakfast cereals. Meat and dairy products are rich in vitamin B12.

The first step in the treatment of iron deficiency anemia is to identify the underlying cause. The physician would order tests including a complete blood count (CBC) to look at the shape, color, number, and size of red blood cells, iron labs to measure the amount of iron in the blood and a ferritin level test that reflects the amount of iron stored in the body.

Once the diagnosis is confirmed, the underlying cause for iron deficiency should be treated. Treatment for iron deficiency anemia in elderly is 325 mg of ferrous sulfate once daily. Doctors may also prescribe multivitamins. It usually takes 3–6 months to replace iron stores lost by significant bleeding due to any cause. If the blood levels of iron is not increased even after iron supplementation the individual may have problem with iron absorption. This person may need iron injections. If the anemia is not due to iron deficiency, taking iron pills will not relieve the anemia and may cause iron toxicity. It could also cause an iron overload condition called hemochromatosis.

Side effects of iron therapy include nausea, constipation, diarrhea, and abdominal pain. To avoid these discomforts, iron supplements may be taken with meals; however, taking iron supplements with food reduces iron absorption by 40–66%. Enteric-coated iron tablets are not effective in the elderly because the coating is not dissolved in the stomach due to reduced secretion of hydrochloric acid in the stomach.

Elderly people have a decreased secretion of hydrochloric acid due to aging. Drugs such as antacids, H₂ blockers, protein-bound drugs, and tetracycline decrease iron absorption. A slow release iron prepara-

tion may be more appropriate than the usual form when prescribing iron on a daily basis. If there is no response to iron supplementation, the cause may be ongoing blood loss, poor absorption, noncompliance, or anemia due to other causes. Oral iron supplements without any indication of anemia may result in major gastrointestinal distress and excessive accumulations of body stores. This may also delay or prevent the diagnosis of occult gastrointestinal blood loss.

In order to get the most benefit from iron pills and iron content of the food:

- Take vitamin C or drink orange juice with pills.
- Steam vegetables to retain the iron content
- Avoid taking iron pills:
 1. Within 2 hours of taking antacids or tetracycline (an antibiotic)
 2. With tea, coffee, chocolates that are high in caffeine
 3. With milk and calcium rich foods or supplements
 4. With high fiber foods such as bran, whole grains and raw green vegetables

Iron deficiency may not be a cause but instead a result of anemia. Therefore taking iron supplements without consulting a physician can lead to serious health consequences. Let the physician diagnose, treat, and monitor the outcome.

Related Topics

- ◆ Gastroesophageal reflux disease

Suggested Readings

Chernoff R (1991) Geriatric nutrition. Aspen Publishers, Gaithersburg, MD

Suggested Resources

Mayo Clinic Medical Services. <http://www.mayoclinic.com/health/anemia/DS00321>

The National Anemia Action Council. <http://www.anemia.org/patients/>

Isolation

Anamaria Tejada

There is a common perception that social contacts and social relationships decrease as age increases, which in some cases leads to the experience of isolation. There is no agreement on how common isolation is, but some researchers in the gerontology field consider social isolation a pervasive and crucial problem for older adults.

Isolation occurs when a person's social network is so limited that it interferes with his or her ability to fulfill the basic human need of social interaction. Isolation is a subjective condition; different people have different needs, so it is difficult to determine who is isolated and who just enjoys limited interaction. Some people may be perceived by others as social isolates while they are actually satisfied with their social network. Also, the deficit could be in the quality and not so much in the quantity of the social network; so a person might be isolated even when surrounded by other people.

In general, social interaction dynamics change with aging. Compared with younger adults, older adults become more discerning and selective with their social partners, choosing to limit their interactions to those who they find rewarding and to avoid those who trigger negative emotional experiences. However, older adults continue to need and seek social contact and support.

Some researchers find it helpful to differentiate between *emotional* and *social* isolation. The former is the lack of a close attachment, a confiding relationship which fulfills the need of intimacy. The latter is the lack of companionship or multiple ties with a network of friends which fulfills the need of a sense of belonging. Both intimacy and companionship are necessary for older adults but the former seems to have a stronger impact on their health.

Some people might have a social network but its effect on their well-being is not as protective as having a close confidant. When they have a confidant they can get by without a large social network. This happens because they might view a larger social network as a source of stress, conflict, or criticism.

Older adults tend to be at a higher risk of becoming isolated than younger people because they are also at a higher risk of experiencing the loss of family members and friends. Their adult children move out and they might become widows or widowers living alone with-

out relatives close by. Many of them have lost some friends and co-workers through retirement, which has already reduced the size of their previous social network. Women are at a lower risk for isolation than men, because women tend to maintain more social contacts with relatives and friends while men tend to confide mostly in their spouses.

However, it is the decline of their health that puts older adults at a higher risk for isolation. When they experience sensory loss, like vision and hearing impairments, their communication skills also become affected. Communication deficits could then trigger social anxiety leading them to avoid social situations where they would feel pressured to communicate. A similar situation occurs if the older adult suffers cognitive impairments which also trigger insecurity and lead to withdrawal from social interaction.

Finally, difficulties with mobility or the inability to engage independently in regular activities also lead to a decrease in social interaction. Some older adults intentionally narrow their social contacts as a way to cope with their limitations and to minimize unpleasant social situations caused by their failing health. For older adults living in institutions, the overcrowded environment might create a perception of lack of privacy that in turn leads to social withdrawal resulting in isolation even when surrounded by many people.

There is an agreement that isolation has serious negative effects on the well-being of older adults. Just living alone increases the risk of accidents and physical injuries. Being isolated is related to poor physical and mental health and it can lead to earlier institutionalization. Social isolation can also result in specific adverse health outcomes like increased risk for cardiovascular disease. There is also evidence that the lack of social support has a debilitating effect on the immune system, increasing the risk of morbidity and mortality. Isolation is also detrimental to older adults' health because people without social support and living alone receive less information about their health condition, and less encouragement and practical assistance in their recovery, especially when they are battling a serious illness or had major surgery.

Some researchers believe that isolation by itself is not the cause of these health problems but the feelings of loneliness that accompany social isolation. If feelings of loneliness become frequent and intense, they can lead to depression and suicidal thoughts.

In conclusion, it is clear that older adults are at higher risk of isolation and that isolation is detrimental

to their well-being, while meaningful relationships have health protective effects. It is important then to identify ways to maintain or increase social support for older adults, keeping in mind that social interactions have their costs and their benefits. One innovative way to help decrease isolation among older adults could be the use of the Internet, especially for older adults free of cognitive impairments and who do not have a social network nearby. The internet can help them obtain and exchange information and remain connected. It also could facilitate communication for those who struggle with hearing loss or have limited mobility.

Related Topics

[▶ Depression](#),
 [▶ Friendship](#),
 [▶ Internet](#),
 [▶ Loneliness](#),
 [▶ Loss](#),
 [▶ Marriage](#),
 [▶ Social support](#),
 [▶ Suicide](#)

Suggested Readings

- Carstensen LL, Fremouw WJ (1988) The influence of anxiety and mental status on social isolation among the elderly in nursing homes. *Behavioral Residential Treatment* 3:63–80
- Lang FR, Baltes MM (1997) Being with people and being alone in late life: costs and benefits for everyday functioning. *Int J Behav Develop* 21:729–746
- Mistry R, Rosansky J, McGuire J, McDermott C, Jarvik L (2001) Social isolation predicts re-hospitalization in a group of older American veterans enrolled in the UPBEAT Program. *Int J Geriatr Psychiatry* 16:950–959
- Sorkin D, Rook KS, Lu JL (2002) Loneliness, lack of emotional support, lack of companionship, and the likelihood of having a heart condition in an elderly sample. *Ann Behav Med* 24:290–298
- Wenger GC (1997) Social networks and the prediction of elderly people at risk. *Aging Ment Health* 1:311–320

Kidney

Nancy Nora

The kidneys control the internal environment of the body; excreting waste products of metabolism, regulating fluids and electrolytes, as well as secreting numerous hormones. The normal function of the kidneys is key to the health and well being of the body. The kidneys are paired organs that are situated at the bottom and slightly below the rib cage in the back. Each is approximately 12 cm in length and 5–7 cm in width with the right kidney being slightly lower in position. Normally, the kidney is supplied by a single renal artery.

Each kidney contains about 1.2 million nephrons—working unit of the kidney. Each nephron has a glomerulus, a tangle of capillaries, small blood vessels, supplied by two arterioles that can be likened to a colander and a series of tubules. The excretion of waste begins by filtering the blood in the glomerulus and modifying this as it passes through the tubules. The glomerulus is an effective filter and limits the excretion of protein to less than 150 mg/day. One of the earliest signs of diabetic kidney disease, as well as that of other kidney diseases, is the finding of increased protein in the urine. This selectivity to what gets filtered helps to maintain normal oncotic or protein pressure and prevent the loss of critical proteins such as immunoglobulins, antibodies, and proteins involved in clotting. It is in the tubules that the urine is modified by secretion and reabsorption of electrolytes and water. Each day the kidney filters up to 180 l of plasma but typically excretes less than 2 l of urine.

Patients with renal disease are frequently asymptomatic and are identified on routine testing of urine and blood. Blood urea nitrogen (BUN) and creatinine are the two most common blood tests that are used to assess kidney function. Both BUN and creatinine levels vary inversely with the level of kidney function, the lower the kidney function the higher these laboratory values. BUN can change independent of a change in renal function. Many things (e.g., dietary protein intake, fluid or hydration levels, bleeding in the gastrointestinal tract, and medications) can affect the BUN, so measurement of creatinine is more useful. Creatinine is derived from the daily breakdown and build up of muscle—a relative constant—and it is freely filtered by the glomerulus and neither used up nor reabsorbed

(though there is some secretion). The clearance of creatinine, how much is processed in the kidneys each day is therefore a good measurement of kidney function, known as the glomerular filtration rate (GFR).

Aging itself may be associated with a decreasing GFR. In the Third National Health and Nutrition Examination Survey (NHANES III) study, 11% of individuals aged 65 and above, without diabetes or hypertension, had calculated GFRs of less than 60 ml/min. A smaller (ongoing) longitudinal study also involving normal patients found a decline in creatinine clearance of 0.75 ml/min per year in two thirds of the patients. Although aging is not always associated with declining renal function, there is definitely an increasing incidence of chronic kidney disease (CKD) in the elderly (which may be due to better treatment of comorbid conditions) that requires improved detection as well as treatment to improve outcomes.

An elevated creatinine can alert the clinician to the presence and degree of kidney disease, but it tells nothing regarding the cause of the problem. A urine analysis (UA) may not be useful for determining the degree of renal insufficiency, but it may give valuable clues to the cause. A UA is generally deemed abnormal by the finding of significant blood (>5 red blood cells per high power field), pus in the urine, cells that have formed into clumps or casts, or perhaps most important, at least from a prognostic standpoint, the finding of protein in the urine. If there is protein in the urine it is most important that the type and quantity of protein be characterized. A random specimen of urine can be sent for urine protein studies (electrophoresis and protein:creatinine ratios) to rule out diseases frequently seen in the elderly, such as myeloma. Proteinuria is recognized as an ominous sign for the progression of many renal diseases as well as a significant risk factor for cardiovascular disease. Even low levels of proteinuria (microalbuminuria) are increasingly being appreciated as a risk for vascular disease and one that may be modifiable.

If an elevated creatinine and/or an abnormal UA, especially with significant proteinuria is found, a 24-h urine collection should be obtained if possible. If it is not feasible, then a spot urine protein:creatinine ratio and a calculation of creatinine clearance should be done. Blood creatinine levels can be deceptive, especially in the elderly, due to decreased muscle mass and GFRs as low as 30 ml/min may be found with a normal serum creatinine. An article published in the *Irish*

Medical Journal in 2005 suggests that overreliance on serum creatinine in the elderly will fail to diagnose 90% of patients with CKD. The Cockcroft–Gault equation can be used to estimate the GFR:

$$Cl_{cr}(\text{in ml/min}) = \frac{(140 - \text{age in years}) \times (\text{body weight in kg})}{P_{cr}(\text{mg/dl}) \times 72}$$

For women, the result of the above equation is multiplied by a factor of 0.85 (to account for women having smaller body mass).

The following is the recommended classification of chronic renal disease by stage and the estimated prevalence within the United States of each stage as determined by a NHANES performed in 1999–2000: <http://www.utdol.com/application/abstract.asp?TR=renlfail/13508&viewAbs=1~3~4~5&title=1,3-5>:

1. Stage 1 disease is defined by a normal GFR (greater than 90 ml/min per 1.73 m²) and persistent albuminuria (2.8% of the total US population).
2. Stage 2 disease is a GFR between 60 and 89 ml/min per 1.73 m² and persistent albuminuria (2.8%).
3. Stage 3 disease is a GFR between 30 and 59 ml/min per 1.73 m² (3.7%).
4. Stage 4 disease is a GFR between 15 and 29 ml/min per 1.73 m² (0.13%).
5. Stage 5 disease is a GFR of less than 15 ml/min per 1.73 m² or end-stage renal disease (approximately 0.2%, as noted in a survey from 1988 to 1994).

Proper recognition of patients with CKD should translate into better care, including identification of reversible or treatable conditions, as well as awareness of other medical problems and methods to deal with them. Nowadays, as people take many medications at the same time, it is also imperative to make sure that the drugs used and the doses employed are appropriate for the degree of renal function.

Kidney disease is frequently divided into prerenal, renal, and postrenal causes. Prerenal disease includes any cause of renal hypoperfusion, or lack of blood flow, such as dehydration, sepsis with vasodilatation, congestive heart failure and increasingly commonly, drugs, particularly the nonsteroidal anti-inflammatory drugs (NSAIDs). Beyond the clinical scenario and physical examination, a disproportionate elevation in the BUN:creatinine ratio (>20), a high urine concentration (specific gravity), or a spot urine sodium less than 20 mEq may be useful clues.

Renal causes, actual problems in the kidney, commonly include acute tubular necrosis, infection, disease of the tissues (again, drugs are frequently implicated), and glomerulonephritis (inflammation of the glomeruli). The occurrence of glomerulonephritis, particularly due to inflammation of the blood vessels, may be more common in the elderly than was previously suspected. More sensitive blood testing and more liberal use of renal biopsy in this population have led to its recognition and treatment. Again, the urinary analysis may provide valuable information, including microscopic blood in the urine, high levels of proteinuria, and the presence of debris (casts). A careful urinalysis is critical as is as a high index of suspicion. Vascular disease of both the large and small vessels of the kidney may also lead to a slowly progressive worsening in kidney function and is typically characterized by a normal urinalysis, though some microscopic blood and low level proteinuria may also be seen with small vessel disease.

Examples of postrenal causes include obstruction from stones, tumors, and previous radiation therapy. Not surprisingly, in males, prostate enlargement is a frequent cause of acute as well as CKD. What is surprising is how often this condition occurs without the patient or the doctor suspecting it. An underappreciated fact is that obstruction frequently presents not with less urination but in fact with polyuria, or excessive urination. All patients with acute or chronic kidney failure should have imaging of the kidneys done (hopefully without iodinated contrast) especially any elderly male presenting without a readily explicable cause.

Related Topics

▶ [Kidney disease](#)

Suggested Readings

- Coresh J, Astor BC, Greene T, Eknoyan G, Levey AS (2003) Prevalence of chronic kidney disease and decreased kidney function in the adult US population: Third National Health and Nutrition Examination Survey. *Am J Kidney Dis* 41:1–12
- Lindeman RD, Tobin JC, Shock NW (1984) Association between blood pressure and the rate of decline in renal function with age. *Kidney Int* 26:861–868
- Martin A, Mellotte G, O'Neill D (2005) Chronic kidney disease in the elderly: A silent epidemic. *Irish Med J* 98(2):46–47

National Kidney Foundation (2002) K/DOQI clinical practice guidelines for chronic kidney disease. *Am J Kidney Dis* 39(Suppl. 1): S1–S266

Obrador GT, Pereira BJ, Kausz AT (2002) Chronic kidney disease in the United States: An underrecognized problem. *Semin Nephrol* 22(6):441–448

Suggested Resources

Post TW, Rose BD (2005) Assessment of renal function: Plasma creatinine; BUN; and GFR UpToDate (Online). Retrieved on 10-25-05 from uptodate.com/physicians/nephrology_primary.asp

Kidney Disease

Nancy Nora

Recent data suggest that almost 25% of individuals above 70 years old have a glomerular filtration rate (GFR) of less than 60 ml/min and that the incidence of end-stage renal disease (ESRD) is increasing. In 1973, the Medicare funded ESRD program had approximately 10,000 beneficiaries; in 2002 over 100,000 entered the program, and it has been projected that by 2010 over 650,000 patients will be enrolled. Chronic kidney disease (CKD) remains under recognized and therefore untreated with resultant failure to implement effective therapies for slowing the progression and treating its associated complications. Diabetes mellitus and hypertension are implicated in the majority of cases with glomerular, tubulointerstitial, and cystic disease accounting for the remaining.

Once the diagnosis of CKD is made, the focus of attention should be on preventing or slowing its progression and managing the complications of renal dysfunction. Worsening renal failure can be a consequence of drugs that are toxic to the kidneys, typically the nonsteroidal antiinflammatory drugs (NSAIDs). While NSAID administration can injure the kidneys in many ways, the adverse blood flow effects are more common in the elderly patients. NSAIDs, despite promoting salt retention, which can aggravate swelling and hypertension, decrease or affect blood flow to the kidneys especially in patients who may be underhydrated. NSAIDs are also frequently associated with high potassium levels; already commonly seen with

CKD, especially when combined with certain hypertension medications that are often prescribed for elderly patients with congestive heart failure. Many other drugs are associated with other causes of kidney problems.

The increasing use of iodine contrast for diagnostic and therapeutic x-rays and studies has also resulted in worsening of preexistent renal problems. Contrast associated kidney problems are common and severe in diabetics. Scrupulous attention to preprocedure hydration, the use of less toxic contrast in limited quantity and possibly treating before administering the dye, may help mitigate the damage.

Drug breakdown and excretion are also affected by kidney. When GFR falls, many drugs commonly used by the elderly cannot be used or their dosages should be decreased. Oral diabetic medications, such as the sulfonylureas, can have a prolonged duration of action resulting in episodes of low blood glucose. Metformin, another diabetic medicine should not be used in patients with a GFR less than 50 ml/min because of an increased risk of lactic acidosis. To avoid potential serious side effects, the doses of other drugs, including antibiotics and gabapentin, a nerve medicine, should be adjusted.

Progression of kidney disease may be due to other medical problems, such as high blood pressure in the kidney, which is clinically manifested by protein loss in the urine. Numerous studies, particularly in diabetics, have shown a benefit in using the class of medications called angiotensin receptor blockers or inhibitors to slow the progression of CKD. The benefit is greatest in patients with higher degrees of proteinuria, and most efficacious if begun early. Hypertension is present in more than 80% of patients with CKD. Aggressive blood pressure control to less than 130/80 is effective in slowing down progressive renal dysfunction but usually require multiple antihypertensive medications. The benefit from dietary protein restriction is less clear and must be prescribed with caution in the elderly. The NHANES III found in people over 60 years old that a GFR less than 30 ml/min was independently associated with malnutrition.

Many disorders accompany renal dysfunction and optimal care of the patient requires attention to all of them. Fluid and electrolyte imbalance, manifested by signs of excess fluid, high potassium, and acidotic state are the most frequent. Acidosis from kidney disease can lead to break down of muscle and decreased protein synthesis, resulting in loss of muscle mass

and weakness. An anemia commonly develops as the GFR drops below 60 ml/min. While it is crucial to rule out nonrenal causes of anemia first, the use of erythropoietin, a hormone that stimulates red blood cell production can correct the anemia with several potential benefits including improvement of fatigue, heart strength, and lower mortality. The anemia can usually be improved by a hormone injection once per week or perhaps even less frequently. Darbepoetin alfa, another agent with a threefold longer half-life and may allow monthly dosing in some patients.

Chronic renal failure is a risk factor for the development of heart disease as well as all cause mortality. Patients with CKD are much more likely to develop coronary artery disease and congestive heart failure, resulting in death, than they are to develop ESRD. Cardiovascular disease in CKD is treatable and possibly preventable. While high triglycerides are the usual lipid abnormality associated with CKD, high cholesterol is not uncommon. Renal failure as a risk for heart attack is equal to that of known heart disease; therefore, cholesterol goal (low-density lipoprotein [LDL] level) is similar to that of patients with established coronary artery disease. The recommendation is a goal LDL of less than 70 mg/dl.

While altered calcium and phosphate metabolism have long been known to be causes of bone disease from kidney problems, they are now thought to be significant risk factors in cardiovascular disease, as well. Though there is a complex interplay among calcium, phosphate, vitamin D, and parathyroid hormone, dietary phosphate restriction is a simple initial therapeutic modality to be employed in all patients with CKD. In addition to high potassium and many comorbid conditions (e.g., diabetes mellitus, hypertension, and congestive heart failure) commonly seen in CKD patients, a nutritionist can be key in developing a suitable diet for such patients.

CKD affects people of all ages. The number of new cases peaks in the sixth decade of life. A relentless growth in new cases of ESRD has occurred in all age groups, but the rate of new cases has grown most rapidly in patients aged 75 and older. In 2000, the average age of patients undergoing dialysis was 62 years with 20% of those starting dialysis being over 75. Kidney disease has a disparate impact on certain racial and ethnic groups. African Americans have the highest overall risk of CKD, which is not totally explained by the high incidence of diabetes and hypertension in this population. In 1996, African

Americans made up 12.6% of the US population but almost 30% of ESRD patients. Public Law 92-603, which became effective in 1973, instituted federally financed coverage for dialysis patients. The cost of this program has exploded beyond original expectations. This patient population makes up less than 1% of the total Medicare population but consumes over 5% of Medicare expenditures.

In the United States, the vast majority (93–95%) of geriatric patients with ESRD are treated in outpatient hemodialysis centers. Approximately 5% choose peritoneal dialysis and less than 0.5% opt for home hemodialysis. United States Renal Data System (USRDS) data indicate patients over 65 undergoing dialysis have a life expectancy of 3–5 years, much less than that of a patient without ESRD. Despite shortened survival, many elderly patients do well on dialysis. It has even been proposed that dialysis visits may provide a positive social stimulus. Predictors of poor survival among the very old include poor nutritional status, late referral for dialysis, and presence of significant comorbid conditions. Elderly patients also experience common complications during dialysis, such as low blood pressure, more than younger patients.

Dialysis should not be denied to patients based solely on advanced age. Dialysis should be utilized for a prolongation of life but not as a means for prolonging suffering or the dying process. The major contraindications to dialysis, which however are not absolute, are advanced malignancy, irreversible dementia, or advanced liver disease.

Related Topics

▶ [Calcium disorders](#), ▶ [Diabetes](#), ▶ [Hypertension](#),
▶ [Kidney](#), and ▶ [Nutrition](#)

Suggested Readings

- Hsu C-Y, Vittinghoff E, Lin F, Schlipak M (2004) The incidence of end-stage renal disease is increasing faster than the prevalence of chronic renal insufficiency. *Ann Intern Med* 141:95–101
- Manjunath G, Trighiouart H, Coresh J et al (2003) Level of kidney function as a risk factor for cardiovascular outcomes in the elderly. *Kidney Int* 63:1121
- Sarnak MJ, Levey AS, Schoolwerth AC et al (2003) Kidney disease as a risk factor for development of cardiovascular disease: A statement from the American Heart Association councils on

cardiovascular disease, high blood pressure research, clinical cardiology, and epidemiology and prevention *Circulation* 108:2151–2169
United States Department of Health and Human Services (2000) *Healthy people 2010: Understanding and improving health,*

2nd edn. U.S. Government Printing Office, Washington, D.C. pp. 4-3–4-25
United States Renal Data System (2005) Excerpts from the USRDS annual data report: Atlas of end-stage renal disease in the United States. *Am J Kidney Dis* 45(Suppl. 1):A5–A7

Laparoscopy

Gloria Halverson · Paul Lemen

Laparoscopy is the exploration of the abdominal cavity through the use of an instrument (essentially a camera) to visualize the contents of the abdominal cavity. Since Palmer's report of the first operative laparoscopy of a human tubal occlusion in 1962, the growth of operative laparoscopic surgery has been exponential. For example, the percent of laparoscopic hysterectomies (removal of the uterus) was 0.3% of all hysterectomies in 1990. This has now advanced to 10% with a concurrent decrease in abdominal hysterectomy (done via laparotomy, or a large abdominal incision). With the development of cameras for better visualization, better illumination systems, and new instrumentation within the last decade, virtually every type of abdominal surgery that can be done has been attempted laparoscopically except for cesarean section.

Advantages

Laparoscopic surgery has several advantages, which may be especially true for the elderly. Multiple studies have shown that as compared to laparotomy, laparoscopy has both shorter hospitalization and faster recuperation. Patients find that they have less postoperative pain, and total cost of surgical hospitalization is also decreased. Additionally, there is better microscopic visualization, less adhesion (internal scar tissue) formation, less blood loss, and a decreased risk of postoperative bowel dysfunction. The cosmetic appearance of the abdominal wall is improved due to the small size of subsequent scars from incisions.

Types of Procedures

Most gynecologic surgery can be performed laparoscopically, both as diagnostic or operative procedures. It is a good alternative for evaluating acute or chronic pelvic pain. It can also be used to accomplish a tubal ligation; treat an ectopic pregnancy, pelvic abscess, and endometriosis; remove an ovary, ovarian cyst, or fallopian tubes; or cut or remove abdominal adhesions. Hysterectomies can be done as laparoscopically assisted vaginal hysterectomies, laparoscopic subtotal

hysterectomies, or total laparoscopic hysterectomies. Surgeries for gynecologic malignancies, such as removal of lymph nodes, or radical hysterectomy can be done laparoscopically in some cases. Additionally, in general surgery, hernia repairs, removal of the gallbladder, appendectomy, gastric bypasses, and procedures for gastric reflux performed via laparoscopy have virtually replaced most laparotomies for these disease conditions. Surgery on the spleen, prostate, kidneys, colon, and small intestine can also be accomplished via laparoscopy.

Complications and Contraindications

Studies have shown that there is a 1.4% incidence of major complications from either laparoscopy or laparotomy. This would include pulmonary embolism, fistula formation, and additional unplanned surgery. However, the overall complication rate from advanced laparoscopic procedures as compared to laparotomy is decreased by 40%.

There are some patients in whom laparoscopy is inadvisable. These include people who have had previous surgeries in which there is a high risk of adhesion formation (internal scar tissue). Impaired pulmonary function may eliminate some patients from being considered for laparoscopy. Pulmonary shunting increases with a decrease in arterial oxygen tension, and arterial carbon dioxide tension rises.

Laparoscopy in the Elderly

Advanced age itself does not impede laparoscopic surgery. In fact, many surgeons feel it should in general be the preferred surgical approach for this group. In looking at studies done on senior adults in particular, a review of gynecologic surgical complications in a group of women over the age of 65 compared to those younger showed no increase in complications. In a review of endometrial cancer patients over the age of 65, with an average age of 74.7 years, patients were found to have an increased operative time with laparoscopy, equivalent estimated blood loss and lymph node counts with laparoscopy and laparotomy, but decreased infectious complications with a laparoscopic procedure. There have been studies done with multiple general surgical procedures that consistently show the same advantage to the elderly as to those

younger (i.e., shorter length of stay, and faster return to normal activity).

Future of Laparoscopic Surgery

Hand-assisted laparoscopic surgery (HALS) is being developed so that one minilaparotomy incision is made as well as a laparoscope is used. There are situations where this increases tactile feedback and increases the ability of the surgeon to palpate and perform blunt dissection, anticipate organ retraction, control bleeding, and facilitate rapid organ removal. In cases such as kidney donation, this will allow a faster recovery for the patient with smaller incisions, but still give some of the benefits achieved only by laparotomy.

Robotics is also coming into greater use. This allows for more delicate microsurgical procedures to be done, as the surgeon is able to work in a more natural position with more space and have their movements transferred by robotics. Additionally, it can allow for surgery being done from a distance, so that in areas where advanced laparoscopic training is not available to surgeons, a connection to a skilled surgeon will allow them to have consultation and assistance from afar.

Related Topics

▶ [Abdominal pain](#), ▶ [Endoscopy](#), ▶ [Gallbladder disease](#), ▶ [Ovarian cancer](#), ▶ [Uterine fibroids](#)

Suggested Readings

- Johnson N, Barlow D, Lethaby A, Tavender E, Curr E, Garry R (2005) Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev* (1):CD003676–CD003677
- Korolija D, Sauerland S, Wood-Dauphines E et al (2004) Evaluation of quality of life after laparoscopic surgery: Evidence-based guidelines of the European Association for Endoscopic Surgery. *Surg Endosc* 18(6):879–897
- O'Hanlan KA, Huang GS, Lopez L, Garnier AC (2004) Total laparoscopic hysterectomy for oncological indications with outcomes stratified by age. *Gynecol Oncol* 95(1):196–203
- Romanelli JR, Kelly JJ, Litwin DE (2001) Hand-assisted laparoscopic surgery in the United States: An overview. *Semin Laparosc Surg* 8(2):96–103
- Scribner DR Jr, Walker JL, Johnson GA, McMeekin SD, Gold MA, Mannel RS (2001) Surgical management of early-stage

endometrial cancer in the elderly: Is laparoscopy feasible? *Gynecol Oncol* 83(3):563–568

Weber DM (2003) Laparoscopic surgery: An excellent approach in elderly patients. *Arch Surg* 138(10):1083–1088

Suggested Resources

Web MD, Laparoscopy Testing; http://www.webmd.com/hw/digestive_problems/hw231905.asp

Latinos

Ernesto Delgado

There are several terms that are used to describe this category of people, mainly Latino and Hispanic. Generally, in the United States, the term “Latino” refers to any person of Latin American origin living in the United States or a person whose first language is Spanish; “Hispanic” describes a person whose ancestry is from Latin America or Spain but was born in the United States. The US Census Bureau uses the term Hispanic to refer to people whose origin is Mexican, Puerto Rican, Cuban, Central or South American, or other Hispanic or Latino, regardless of race. None is politically incorrect. The terms could generally be used interchangeably unless a preference has been voiced by an individual party. There are other terms to describe the category, but such terms often denote a specific ideology that is fractional at best.

Latinos have become the largest and fastest growing minority group in the United States. Latino seniors aged 65 and older account for about 5.2% of the total Latino population in the United States. Latino seniors, as a group, are estimated to grow to 14.1% of the Latino population by 2020. Among Hispanic seniors living in the United States, approximately 49% are of Mexican ancestry, 15% are of Cuban ancestry, 12% are of Puerto Rican ancestry, and approximately 25% are of other Hispanic ancestry. There are several health-related issues that Latino seniors are at higher risk for developing, in addition to having complications in seeking treatment.

Diabetes poses a large problem for Latino seniors because of the dangerous associated conditions, which

include cardiovascular disease, stroke, blindness, kidney failure, nerve disease, and amputation. Diabetes is the fifth highest cause of death for Latino seniors and one half of all cases of diabetes are in people above age 55. Latinos are approximately 1.7–1.8 times more likely to have diabetes than non-Hispanic Whites. Cardiovascular disease and stroke are 2–4 times higher in diabetics than in nondiabetics and are the number one killers of Latinos. About 73% of diabetics also have high blood pressure. Blindness due to diabetic retinopathy is the leading cause of new cases of blindness in adults. Diabetic nephropathy is the leading cause of kidney failure. As a result of diabetes, approximately 60–70% diabetics have nerve damage. Diabetes is also the leading nontraumatic cause of lower limb amputation, with the risk of amputation being 15–40 times greater for diabetics than nondiabetics. It is possible to prevent or delay the onset of diabetes by reducing risk factors. Education is the most important facet in treatment, because diabetes requires strenuous monitoring by the diabetic. Diabetes is a self-managed disease, and as such, the diabetic must take an active role in treatment. Diabetics must keep track of their condition; this includes intakes of food, exercise, blood testing, and medication.

Another area of concern for Latino seniors is lung disease. Latinos have an increased risk for respiratory problems because of air pollution; a disproportionately large number of Latinos live in areas that do not meet national standards for air pollutants. Pneumonia and influenza are the sixth leading cause of death in Latino seniors. The case rate for tuberculosis in Latinos has been found to be about eight times higher than that in non-Hispanic Whites. Although the Medicare program covers vaccinations to prevent pneumonia, annually only about 15% of Latino seniors receive a vaccination. Approximately 56.8% of Latinos received a flu vaccine, whereas 73% of non-Hispanic Whites received the vaccine.

Latino seniors face many obstacles to seeking treatment, one of which includes lack of insurance. In many cases employers of Latinos do not offer medical coverage, and Latino seniors might qualify for government programs such as Medicare. However, Medicare, like many government programs, requires US citizenship or permanent residence in order to receive benefits. Programs like those created under the Hill-Burton Act provide funding for those who are unable to pay for medical treatment. One result of no health insurance is the increasing number of emergency room visits

for non-life-threatening health problems. Hospital emergency rooms cannot refuse to provide services to anyone, so they have become a form of primary care for the uninsured, and many have now closed due to nonpayment for services. There are programs set up by the hospitals to help reduce the cost of medical bills for patients based on income, but these are not publicized by the hospitals.

If the senior does have medical insurance, often getting to the medical provider can be difficult, as seniors may live in areas removed from medical providers. Even when they are able to get to a medical provider, they may feel frustrated with the interaction. If a Latino senior does not speak English and the medical provider does not speak Spanish, the likelihood of miscommunication and frustration is high. Furthermore, a medical provider who is not sensitive to Latino cultural beliefs might cause the Latino senior to feel uncomfortable and less likely to seek future treatment.

Education is an area that will impact Latino seniors, as education is an indicator of earning power. Almost 90% of all Latinos have less than a college degree. Nearly 60% of Latinos have less than a ninth grade education, compared to 19.4% of other adults nationwide. As such, 24% of Latino seniors are below the poverty line, whereas only 9% of non-Hispanic Whites are in this category. Latinos, due to lack of education, find it very difficult to find jobs that will allow them to earn at a level to save money for retirement. Most will work low-wage service jobs, which will likely not offer retirement plans. A majority of Latino seniors who can collect Social Security will rely on it as a sole means of income. Many will live with their families, as a result of cultural beliefs combined with low levels of income. This will strain the younger generations, because under these circumstances most cannot afford to have a person to stay home and care for the elders instead of wage working. Traditionally, the youngest daughter will care for her parents until they die. There is a slight trend for elder Latinos to move into retirement homes subsidized by the government, instead of moving in with their family. However, these programs are in their infancy stage and have not been established as a viable model for housing.

Although this article is limited to issues in areas where Latinos seniors have a heightened risk of developing the condition, Latino seniors also face many of the same aging-related issues as seniors from other ethnic groups.

Related Topics

- ▶ Diabetes, ▶ Education, ▶ Health insurance,
- ▶ Medicare, ▶ Minority seniors, ▶ Retirement,
- ▶ Social Security

Suggested Resources

- Administration of Aging, Serving our Hispanic American Elders, http://www.aoa.dhhs.gov/press/fact/alpha/fact_serving_hispanicamer.asp (Accessed 22 December 2005)
- National Diabetes Education Program, Hispanic/Latinos and Diabetes http://www.ndep.nih.gov/diabetes/pubs/FS_HispLatino_Eng.pdf (Accessed 22 December 2005)
- United States Census Bureau, The Hispanic Population in the United States: March 2004, <http://www.census.gov/population/www/socdemo/hispanic/cps2004.html> (Accessed 22 December 2005)
- United States Census Bureau, Race and Hispanic Origin in 2003, <http://www.census.gov/population/pop-profile/dynamic/RACEHO.pdf> (Accessed 22 December 2005)
- United States Census Bureau, Selected Age Groups for the Population by Race and Hispanic Origin for the United States: July 1, 2003, <http://www.census.gov/Press-Release/www/releases/img/cb04-98-table2.pdf> (Accessed 22 December 2005)
- United States Census Press Releases. Hispanic and Asian Americans Increasing Faster Than Overall Population. <http://www.census.gov/Press-Release/www/releases/archives/race/001839.html> (Accessed 22 December 2005)

Laxatives

Rajkumari Richmonds

Laxatives are drugs used for the treatment of constipation. Laxatives are medications that increase the frequency and ease of passing bowel movements. They are usually recommended if dietary and behavioral changes are ineffective. Laxatives support and facilitate evacuation by increasing the stool volume and stimulating the large intestinal muscle by increasing the intestinal pressure. This provides the trigger for evacuation.

Constipation is the most common gastrointestinal complaint in the elderly with up to 60% of elderly outpatients reporting laxative use. Among the institutionalized elderly, up to 50% self report constipation and up to 74% use laxatives on a daily basis.

Laxatives may be classified according to the mechanism of action. The types of laxatives include stool softeners, lubricant laxatives, irritant or stimulant laxatives, osmotic laxatives, and bulk forming laxatives.

Stool softeners These agents soften the stool but do not necessarily cause a bowel movement. Example of this class is docusate sodium (colace). Take the stool softener with a full glass of water. Stool softeners hold water within the fecal mass and produce a larger and softer stool. Docusate sodium has no effect on acute constipation. Docusate sodium may be useful for patients with recurrent problems or those who will be treated with narcotic analgesic, which can cause constipation. Colace and mineral oils should not be taken on the same day.

Lubricant laxatives These include mineral oil for easy passing of the stool. Mineral oil is not recommended for long-term use. It decreases straining but impairs absorption of fat-soluble vitamins. Like stool softeners, mineral oil is used by patients who need to avoid straining, for example, after hernia repair, hemorrhoid surgery, and heart attacks. Mineral oil should be avoided in patients who are taking blood thinners such as warfarin. It decreases the absorption of vitamin K and therefore affects blood thinning with warfarin.

Mineral oil can cause pneumonia if it leaks into the lungs. Leakage of secretions from the mouth can enter into the lungs and can cause pneumonia due to aspiration. Elderly and people who had a stroke and those with swallowing difficulties are at risk for aspiration, especially when lying down. Avoid giving mineral oil at bed time. Individuals who are prone to aspiration should not take mineral oil. Prolonged use will increase the risk for increased absorption of the oil.

Stimulant laxatives Laxatives such as bisacodyl (Dulcolax and others), dantron, and senna stimulate nerves to produce colonic contractions and decrease fluid reabsorption. Stimulant and irritant laxatives increase the peristaltic movement of the intestine. Cas-cara and bisacodyl and castor oil work in a similar way. Bisacodyl tablets are enteric coated and should not be used in combination with antacids. The antacids cause premature rupture of the enteric coating. Senna, an active ingredient in Exlax and Sennacot, Fletcher's castoria, Sagrada (Nature's remedy), and Casanthraol are converted by the bacteria in the colon into active compounds. The active compounds then stimulate the

contraction of colon muscles. The laxative is effective within 6–12 h. Oral stimulant laxatives are taken at night to produce a morning bowel motion. They often cause abdominal cramps and are contraindicated for patients with bowel obstruction. Chronic use may lead to fluid and electrolyte imbalance, colonic atony (reduction in strength/tone of the walls of the colon), and tolerance to their effects. They are usually reserved for intermittent or short-term use. Stimulant laxatives are no longer indicated for the general management of constipation in the elderly. They should only be used for analgesic-induced constipation in palliative care or in the short term when bowel movement must be free from strain.

Osmotic laxatives Osmotic laxatives exert their effects by retaining fluid in the bowel or by changing the pattern of water distribution in the feces. Lactulose, an osmotic laxative should only be used when other laxatives have failed to produce an effect. This laxative can cause bloating, flatulence, and cramps. They are very sweet and some patients may not like the taste. They must be taken regularly for up to 3 days before an effect is seen, making them unsuitable for rapid release of constipation or for “as required” dosing.

Bulk-forming laxatives Bulk-forming laxatives increase the volume of the stool and increase water absorbency of stools. It should be taken with a glass of water, but should not be taken just before going to bed. Bulk-forming laxatives do not relieve acute constipation. They are contraindicated in patients with fecal impaction or bowel obstruction. They may be appropriate for long-term use for patients who have normal motility and complicated constipation. Psyllium (Metamucil) and methylcellulose (Citrucel) belong to this class.

Suppositories and enemas When oral laxatives have not produced a bowel movement or when rapid relief of rectal loading is required, a suppository or enema may be appropriate. An effect is usually seen within one to two hours of administration. Enemas may need to be repeated several times to clear impacted feces.

Laxative abuse

Complications of laxative abuse depend on the type of laxatives used, amount used, and the duration of

usage. Chronic use of laxatives result in mega colon and the individual is unable to eliminate the waste matter. Laxative abuse can lead to dehydration, electrolyte (basic blood or fluid components) abnormalities, edema, and bleeding.

Dehydration Laxatives cause fluid loss through the intestines. Dehydration affects the functioning of other body systems.

Electrolyte abnormalities Electrolytes such as potassium, sodium, and chloride are affected. Chronic diarrhea results in potassium loss.

Edema Chronic use of laxatives impairs the body's self-regulating mechanism of fluid balance and edema.

Bleeding People who abuse stimulant type of laxatives may pass blood in the stools and is potential for developing anemia. Laxatives should be used only as a last resort in the management of constipation.

Diet and life style changes are the first line of treatment. Repeated use of laxatives actually causes constipation. This may lead people to increase the dosage of laxatives, which in turn worsens the problem of constipation. Long-term use results in dependence, and in rare cases loss of neurological control of the large intestine.

There have been very few studies on the effective treatment of constipation among the elderly. Therefore, laxatives may not be appropriate for constipated elderly. Constipation should be managed by a “stepped care” approach, with the first step being the exclusion of comorbidity and then advice about dietary improvement. If this fails, prescribe the cheapest and safest laxative. If there is no relief other laxatives could be given under strict supervision of the doctor.

Related Topics

- [▶ Abdominal pain](#),
 [▶ Constipation](#),
 [▶ Diet](#),
 [▶ Nutrition](#),
 [▶ Vitamins](#)

Suggested Readings

- Gerbino PP, Gans JA (1982) Antacids and laxatives for symptomatic relief in the elderly. *J Am Geriatr Soc* 30(11 Suppl): S81–S87

- Joo JS, Ehrenpreis ED, Gonzalez L, Kaye M et al (1998) Alterations in colonic anatomy induced by chronic stimulant laxatives: The cathartic colon revisited. *J Clin Gastroenterol* 9 (4):283–286
- Lehne RA, consultation with Moore LA, and Hamilton DB (2001) *Pharmacology for Nursing Care*, 4th edn. Saunders, Philadelphia
- Petticrew M, Watt I, Sheldon T (1997) Systematic review of the effectiveness of laxatives in the elderly. *Health Technol Assess* 1(13):i–iv, 1–52
- Tedesco FJ, DiPiro JT (1985) Laxatives use in constipation. American College of Gastroenterology's Committee on FDA-Related Matters. *Am J Gastroenterol* 80(4):303–309

Learned Helplessness

Aditi Mehta

Learned helplessness is a model of depression that was developed through observations of various experiments initially performed by a psychologist named Martin Seligman in 1975. In this experiment, dogs were exposed to electric shocks from which escape was impossible. Eventually, the dogs gave up and did not even attempt to escape when given a chance. They had learned to be helpless from their experience of circumstances beyond their control. This behavior later generalized and the dogs always appeared apathetic and helpless. It was noted that these symptoms of learned helplessness looked somewhat like the symptoms of major depression.

Dr. Seligman extrapolated that this could happen to humans in similar situations where they see no escape or no way to change their circumstances. Much like the reaction of these dogs, previous uncontrollable bad experiences can leave a person feeling helpless and unable to succeed at any task at hand. The person just gives up without trying. This was felt to be a cause of depression in human beings.

This theory has been somewhat controversial, as it is not clear if helplessness in animals is equivalent to that in humans. Despite this, the learned helplessness illustrated in this experiment resembles depression, and understanding this may give people an insight into their patterns of thinking and behavior. A similar experiment, conducted by another researcher, exposed human subjects to a noxious sound from which there was no escape. The individuals who scored higher on

depression scales tended to develop learned helplessness faster than the others.

Biological Correlation

The mechanism of learned helplessness may be associated with biological changes in the body. Significant levels of stress may lead to the release of endogenous opiates, gradual destruction of the immune system, and an increase in the tolerance to pain. All these effects on the body may make it difficult for someone to change their behavior, even if they desire to do so.

Social Applications

Individuals are often forced to slow down in life due to physical limitations and chronic illness as they get older. These limitations are out of their control, leading them to feel extremely helpless. Although the physical limitation may have restricted certain activities in their life, they may give up hope and generalize this to other activities. They may stop participating in activities that give them happiness and satisfaction. They may start becoming depressed and sad about their present situation. Commonly in nursing homes and other extended stay facilities, elders are not able to individualize their care or make changes to their environment and they become resigned to their situation. This learned helplessness causes them to view things even more negatively and they get depressed. Likewise, school children who fail at school many times, start to believe that they fail no matter what and they give up trying.

Approach to Learned Helplessness

In Seligman's experiment, the dogs had to be forcibly dragged away from the shock once they had developed learned helplessness. The theory may be similar for humans—people may need to be forced out of their helpless situation. Once they are, they might feel a surge of self-esteem and a desire to maintain that position. This ultimately leads to remission of depression.

Children failing in school should be taught to persist trying and reverse the process. The elderly should be encouraged to persist trying to perform activities,

even if they have to slow down. Their children or other social supports can play an active role by encouraging them and building their morale rather than focusing on any setbacks.

Related Topics

▶ Behavioral modification, ▶ Depression, ▶ Emotions, ▶ Social support

Suggested Readings

- Garber J, Seligman MEP (eds) (1980) *Human helplessness: Theory and applications*. Academic Press, New York
- Hales RE, Yudofsky SC, Talbott JA (1999) *Textbook of psychiatry*, 3rd edn. American Psychiatric Press, Washington, D.C.
- Peterson C, Maier S, Seligman MEP (1993) *Learned helplessness: A theory for the age of personal control*. Oxford University Press, New York
- Sadock BJ, Sadock VA (2003) *Synopsis of psychiatry*, 9th edn. Lippincott Williams and Wilkins, Philadelphia, PA
- Seligman MEP (1991) *Helplessness: On depression, development, and death*, 2nd edn. W. H. Freeman, New York

Legal Services

Michael P. Ruiz

Legal services, which is also known as “legal aid” and “legal assistance,” is a phrase that is used to describe free legal assistance, whether in the form of advice, information, or representation in court. In most instances, the phrase is used to describe services given for civil, rather than criminal, cases.

From the late 1800s to the early 1900s, the American legal profession provided free legal assistance for the indigent through private groups and bar association committees. These groups were funded primarily through bar associations, law schools, foundations, social agencies, or local government. Unfortunately, this system of legal aid fell far short of meeting legal needs. In many areas of the country, especially rural areas, there was no assistance.

Two events in the early 1960s changed the government’s involvement in the provision of legal services.

In 1963, the US Supreme Court held in the landmark case *Gideon v. Wainwright* that states have a constitutional obligation under the Sixth and Fourteenth Amendments of the US Constitution to provide counsel to indigent defendants in felony criminal cases. In 1964, President Lyndon Johnson signed the Economic Opportunity Act, a centerpiece of his War on Poverty. Under the act, federal funds became available for the first time to fund civil legal services for the indigent. Ten years later, President Richard Nixon signed into law the creation of the Legal Services Corporation, a private, nonprofit corporation established by the Congress to provide civil legal services.

Today, civil legal services are provided through nonprofit organizations funded primarily by the Legal Services Corporation. The federal appropriation has not kept up with the increased need for services causing programs to look to additional sources for funding including state and local governments, courthouse filing fees, Interest on Lawyer Trust Account (IOLTA) programs, foundations, attorneys’ fees, and private donations. Legal services are, by law, means tested, with most individuals who qualify for legal services falling near or at the poverty level.

The issue of legal services for the elderly was addressed on a national scale with the passage of The Older Americans Act, which was signed into law by President Lyndon Johnson in 1965. Under the Act, states must provide “assurances that area agencies on aging will give priority to legal assistance related to income, health care, long-term care, nutrition, housing, utilities, protective services, defense of guardianship, abuse, neglect, and age discrimination.” Services are also to be targeted to “older individuals with economic or social needs.”

The Older Americans Act is one of the main funding sources for legal services for the elderly. There are almost one thousand Older Americans Act legal services providers nationwide, which provide over one million hours of legal assistance per year. The Act also funds senior legal assistance hotlines and pension counseling projects. Each state is required to appoint a Legal Assistance Developer who is responsible for developing and coordinating the state’s legal services and elders’ rights programs.

Legal services providers offer assistance to the elderly experiencing problems in civil matters in the form of advice, counseling, information, or representation. Services are provided either by a licensed attorney or trained paralegal. Types of matters for which

legal services are available include, but are not limited to, health care, income, public benefits (Social Security, Medicare, Medicaid, Supplemental Security Income, food stamps), employment, consumer complaints, nursing home resident rights, utilities, guardianship, wills, estates, and advance directives.

The Act also supports national legal resources centers that work to improve the quality and accessibility of legal services for the elderly. These grantees provide elderly law attorneys and service providers with training, written materials, case consultations, and service delivery assistance.

Related Topics

- [Area Agency on Aging](#), ➤ [Federal poverty level](#), ➤ [Older Americans Act](#)

Suggested Resources

ABA Commission on Law and Aging, www.abanet.org/aging
 Legal Services Corporation, www.lsc.gov
 National Association on Area Agencies on Aging: www.n4a.org
 National Legal Aid and Defender, www.nlada.org
 National Senior Citizens Law Center, www.nsclc.org

Lesbian

Sarah A. Smith · Julianne M. Serovich

There is no standard definition of lesbian. The behavioral definition of lesbian emphasizes current or lifetime sexual activity with other women. The affective definition considers the subtleties of sexual or emotional desire or attraction for other women (in real time or in fantasy) regardless of whether or not these desires are acted upon. The cognitive definition refers to adopting a lesbian identity. Typically, women who self-identify as lesbians will also fit the behavioral and affective understandings of the term. Nevertheless, some women may identify as lesbian for political reasons such as an expression of solidarity with women, but neither experience desire nor attractions for other women, nor have a history of lesbian sexual behavior.

Lesbian history has been a process of uncovering evidence of women with same-sex attractions or experiences. Actually, lesbian historians, following lesbian feminist interpretations of lesbians as encompassing an emotional attachment to another woman, have uncovered strong evidence that romantic friendships between women have likely existed throughout time. Sappho, the famous poet from a Greek island called Lesbos around the sixth century B.C.E., and from which the term lesbian is derived, is such an example. Some scholars consider it problematic to label romantic relationships between women in history as lesbian, because sexual orientation was not categorized according to gender until the late 1800s. However, historians point out parallels to women in modern society. For example, same-sex attractions or relationships among women in history likely would have been devalued in relation to heterosexual, procreative sex.

Lesbians are a demographically diverse group. Women whose sexual orientation is directed toward other women exist in all cultures and societies. There are lesbians of every race, culture, religion, nationality, ability level, age, socioeconomic status, size, etc. Despite the wide variety of lesbian lives, all lesbians are susceptible to discrimination based on their sexual orientation. *Homophobia*, the belief that homosexuality is wrong or repulsive, is something all lesbians experience at some level during their lifetime. Homophobia creates unique legal, financial, and social challenges for all homosexuals, but particularly lesbians. For example, many are fearful of leaving abusive relationships for a lack of legal recourse or protection. For older lesbians who did not have children or with little to no family available to assist, this leaves few options. Financially, lesbians have fewer options for protecting assets, claiming inheritance from partners, or protections from higher taxes.

Along with discrimination, many lesbians become victims of *hate crimes*, a type of social terrorism that is usually violent and is committed against people because of their minority status. Frequently older lesbians have practiced “passing” for heterosexual for protection. This can take the form of heterosexual marriage, assuming a professional identity that leaves no time for a personal life or embracing a single lifestyle. Many reject social opportunities that might threaten their heterosexual facade.

Although lesbians share the same health risks all women do, there is some evidence that lesbians may be at a higher risk of certain health conditions. For

example, some studies have found higher breast cancer mortality, mental health problems, and substance abuse in lesbian populations compared to heterosexual female populations. There is disagreement, however, over the etiology of health concerns specific to lesbians. Although some have argued that nulliparity (lack of childbearing) may leave lesbians susceptible to certain cancers, there are also numerous obstacles to adequate health care. Lesbians' access to health care may be affected by the lack of culturally competent health care providers, the presence of homophobia in the health care system, and limited access to health insurance. This can be exacerbated by the lack of domestic partner benefits, or being economically disadvantaged, which includes being unable to afford health insurance and health care. Furthermore, some lesbians may hold false assumptions about their own health care needs. For example, many believe that they do not need routine gynecological exams because they do not have sex with men.

Lesbians are faced with similar mental health and developmental challenges that all women experience. However, lesbians face the unique challenge of *coming out*—accepting and deciding whether to make their lesbian identity public. Coming out is a process that can occur throughout the lifespan. Although most lesbians come out as teenagers or young adults, claiming a lesbian identity can still occur in middle age or late in life. Regardless of the age that this milestone is confronted, the stress of enduring the process, particularly if it is confounded by threats of violence and discrimination, can result in co-occurring conditions such as depression, substance abuse, internalized homophobia, and other mental health difficulties. Finally, for older lesbians who lead a closeted life, the death of a partner or other close friends can particularly be emotionally burdensome.

In recent times, lesbians have begun to own, define, and create new opportunities for themselves in our society despite adversity. The most noticeable trend has been embracing motherhood. Although lesbians have always enjoyed the option of motherhood, a surge in the rates of women choosing motherhood either as single women or in the context of same-sex relationships has been witnessed since 1980. These opportunities, along with greater public acceptance, have allowed lesbians to participate more fully and openly in society and to experience a greater range of themselves as women.

Related Topics

[Feminism](#), [Gender](#), [Gender role](#), [Homosexuality](#), [Intersexuality](#), [Lesbian ethics](#), [Queer](#), [Transgenderism](#)

Suggested Readings

- Claassen C (2005) *Whistling women: A study of the lives of older lesbians*. Haworth, New York
 Panati C (1998) *Sexy origins and intimate things*. Penguin Books, New York
 Solarz AL (ed) (1999) *Lesbian health: Current assessment and directions for the future*. Institute of Medicine, Washington, D.C.
 Stein A (ed) (1993) *Sisters, sexperts, queers: Beyond the lesbian nation*. Penguin Group, New York
 Vida G (ed) (1996) *The new our right to love: A lesbian resource book*. Touchstone, New York

Lesbian Ethics

Angela Pattatucci Aragón · Julianne M. Serovich

A branch of ethics that cultivates the development of individual moral agency and integrity, lesbian ethics distinguishes itself from the focus on social control of traditional ethics. The centerpiece of the theoretical framework is that lesbians are oppressed in all societies. It also acknowledges that lesbians are agents of oppression, because sanctioned moral choices in societies uphold patriarchal oppression and are constrained by it. Lesbian ethics argues that in order to resist oppression lesbians must create a new value that supports thinking that undermines its credibility.

Traditional ethical thought is bankrupt for lesbians, because its function is social organization and control rather than individual integrity and agency. The dominance and subordination values around which traditional ethics revolve are antagonistic. Consequently, individual moral ability and agency is undercut rather than advanced. Taken together, traditional ethics legitimizes women's oppression by redefining it as social organization.

Within a traditional paradigm, *woman* derives her meaning from her relationship to *man*—the one who

dominates—and as long as this context prevails, domination of women by men will seem natural and desirable. Consequently, the patriarchal society formally denies lesbian existence because its very connotation implies a woman who thrives outside the sphere of male dominance. Instead, a lesbian is discounted as a confused heterosexual woman who is passing through a phase, a heterosexual woman who cannot get a man, a man in a heterosexual woman's body, or a man-hater. In patriarchal conceptualization, the notion of a woman loving another woman is impossible, or at the very least a man-hating monstrosity. Thus, the source of concern about lesbians is that they represent the potential for a reality in which male dominance does not exist, where women appropriate men's access to women. It destabilizes the foundation on which society is constructed. Indeed, lesbian reality renders men insignificant. Lesbian existence therefore carries the potential to effect a transformation of consciousness—the promise for autonomous female agency.

Lesbian ethics criticizes traditional ethical paradigms as fostering an illusion that all problems can be solved by an appeal to rules and principles. It notes that ethical principles are not applied in an egalitarian context, but rather in a reality of asymmetrical power. The ethical virtues that are lauded in society are therefore framed as master–slave virtues. Lesbian ethics argues that a majority of what passes for ethics in societies is not founded in the integrity and moral capability of an individual, but rather the extent to which individuals participate in the structural hierarchy of a social group or organization by adhering to its rules. Traditional paradigms mandate principles or rules of obligation to those occupying upper levels of hierarchical frameworks and corresponding rules of responsibility for those occupying lower positions, typically “for their own good.” Therefore, traditional ethics function to promote social organization and control at the expense of individual integrity and agency.

A fundamental premise of lesbian ethics is that the driving force behind dominance and subordination is the institution of heterosexuality, and that women's oppression will remain a reality as long as social interactions are governed by its suffocating paradigm. Thus, rather than prove false a patriarchal structure that revolves around socially enforced dominance and subordination, lesbian ethics seeks to work outside the existing framework, to pursue a transformation of consciousness that strips the meaning from existing

values, those which make oppression credible and acceptable, and renders them nonsensical.

Much of lesbian ethics focuses on language as a tool of oppression. For example, *woman* is more than a mere descriptive category, because imbedded within this concept are perceptions of normal female behavior and what qualifies as a woman. In other words, there is value attached to *woman*, value that is organized around a patriarchal dominance and subordination modality. However, if the values of oppression cease to be normalized—if they are no longer affirmed without question and cease to be integrated into lesbian lives—then lesbians will end the tyranny of patriarchal rule and their interactions will be less apt to result in destruction.

Often erroneously characterized as founded on a utopian philosophical framework, lesbian ethics is anything but that. The fact that lesbians live and interact within the current oppressive patriarchal schema accents the need for creating new value. Contrasting the escapism of utopian paradigms, lesbian ethics is a framework for action. It emphasizes that through examining and questioning the foundation of patriarchal oppression and how it permeates every aspect of social interaction, one discovers that it is possible to engender individual moral agency and integrity that exists outside of it. Lesbian ethics therefore seeks to generate ways in which lesbians can weave a different locus of value, one where lesbian choices, actions, and reactions lead away from the path of oppression, and one where lesbians become an energy field capable of resisting oppression.

Related Topics

[▶ Femininity](#), [▶ Feminism](#), [▶ Gender](#), [▶ Gender role](#),
[▶ Homosexuality](#), [▶ Lesbian](#), [▶ Masculinity](#), [▶ Queer](#)

Suggested Readings

- Allen J (1990) *Lesbian philosophies and cultures* (SUNY Series in Feminist Philosophy). State University of New York Press, Albany, NY
- Hoagland SL (1989) *Lesbian ethics: toward new value*. Institute of Lesbian Studies, Palo Alto, CA
- Mohin L (1995) *An intimacy of equals: lesbian feminist ethics*. Haworth Press, Binghamton, NY

Libido and Sexual Desire

Jerelyn B. Schultz

There is a general consensus in the literature that the level of libido or sexual desire begins to decline in midlife and that the decline continues into later life. Data from the National Health and Social Life Survey indicate that 30–40% of women aged 50–59 and 20–25% of men aged 50–59 reported a lack of interest in sex and these percentages increase during the next two decades of life. A number of reasons, both physiological and psychosocial, exist for the lack of sexual desire that is reported by both men and women as they age. These reasons include the hormonal changes that are associated with aging, physical illnesses and other health related issues that become more common at this stage of life, fear of sexual failure on the part of some men, lack of emotional intimacy in the relationship on the part of women, and the negative influences of ageism.

Much of the literature on the declining sexual desire of women has focused on the hormonal changes associated with menopause and the resulting physiological changes in women's bodies. During perimenopause, which typically begins around the age of 40, women's bodies begin to slow the production of estrogen. In addition, the level of free circulating testosterone is half of what it was at age 20. These hormonal changes not only influence a woman's menstrual patterns but also her level of sexual responsiveness and her interest in sex. Menopause or the permanent cessation of menstruation generally occurs around age 51. More attention is being paid to menopause by the general public and by the medical community in today's society because women have longer life expectancies and by 2020 there will be 60 million postmenopausal women. The "baby boom" generation is challenging the health care system to deal with menopause and its changes in women's lives in new and different ways. In addition, this generation is challenging the assumptions about sexuality and aging that have long been a part of society.

Masters and Johnson were the first to document how the hormonal changes of menopause affect the sexual arousal and response of women in midlife and beyond. They found that vaginal lubrication generally begins more slowly, taking several minutes or longer instead of 10–30s, and that the amount of lubrication is reduced. The decrease in circulating estrogen that

occurs during and after menopause also results in changes in women's vaginal tissues. The vaginal mucosa becomes thinner and the length and width of the vagina decrease. These contribute to a diminished ability of the inner vagina during sexual arousal. Contractions of the orgasmic platform and the uterus continue to occur at orgasm in older women, but the number of contractions is typically reduced and can even be painful for some women. Orgasm appears to be an important aspect of sexual activity of older women with almost 70% of women aged 60–91 indicating it as their first response when asked, "What do you consider a good sexual experience?" Almost one-third of older women, however, report a reduced capacity or ability to experience orgasm. Research has shown that older women who engage in sexual activity once or twice per week lubricate more readily than women who are sexually active on an infrequent basis and are more likely to remain orgasmic.

There has been a trend in the literature to draw analogies between female menopause and changes during midlife and later life in men. Terms such as male menopause, male climacteric, and andropause have been used. The model for the use of such terminology proposes a hormonal etiology together with change in sexual function and a variety of other symptoms. However, unlike female menopause there is no dramatic decrease in sex steroid hormones in men. Medical guidelines indicate that in aging men with normal health there is approximately a decline of 1% per year. By age 50, most healthy men can expect to have retained 90% of their circulating sex steroid hormones including testosterone. Male hormonal levels have been found to be susceptible to numerous health and lifestyle factors. It is difficult to determine whether the symptoms included in publications on male menopause are related to hormones, age, or health status, especially since the susceptibility to chronic disease increases with age.

Masters and Johnson also documented physiological changes in the sexual response cycle of older men including the intensity and duration of response. It may take several minutes of effective stimulation for a man to develop an erect penis instead of 8–10s. In addition, the erection may be less firm. This slower rate of sexual response may result in some men fearing that they are becoming impotent. Most men retain their erectile capacity throughout their lifetimes and when they and their partner understand that the longer time to erection is normal, it has little or no effect on their

enjoyment of sexual expression. A preoccupation with erection can lead some men to stop being sexually active. On the other hand, midlife and older men have a longer plateau phase of sexual response and therefore greater ejaculatory control, from which both they and their partners can benefit. Most aging males continue to experience considerable pleasure from their orgasmic responses although they may note a decline in intensity and the force of the ejaculation. Almost 75% reported in one study that orgasm was "very important" to their sexual experiences.

There is increasing evidence that testosterone is the major libido hormone not only in men, but also in women. Free testosterone level, not total testosterone level, should be assessed in otherwise healthy individuals who experience a flagging sex drive. The rate at which testosterone levels diminish with age is markedly different in men and women. When women's ovaries shut down during menopause, her body's level of testosterone can often decrease rapidly, often in a matter of months. In contrast, the changes in men are gradual rather than abrupt and typically take place over an extended number of years. Some of the common signs of testosterone deficiency in both sexes include decrease in sexual desire, reduced sensitivity of the nipples and genitals, decreased orgasmic capacity, diminished energy levels and possible depressed mood. Both men and women during mid- and later life may wish to seek medical advice regarding possible testosterone replacement therapy. It is critical that individuals seek the advice of an informed physician who can determine both the appropriateness of testosterone replacement therapy and the best dosage and method of administration.

As individuals age they are increasingly susceptible to chronic diseases that can influence their libido or sexual desire. During the middle years, diseases such as coronary disease, hypertension, diabetes, pelvic disorders, and cancer may become symptomatic for the first time. For example, circulatory dysfunction can lower the volume of blood to the penis and interfere with a full erection. Men and women with long-term diabetes may experience a range of altered sexual responsiveness. Damage to the pelvic nerves and disturbed circulation in diabetic men can contribute to difficulty with penile engorgement and erection while in diabetic women vaginal lubrication can decrease. Depression can be both a cause and an effect with regard to libido in a sexual relationship. If the middle and later years are perceived as threatening to self-image and sexuality,

depression can develop and exacerbate the problem. Changes in libido, potency, or sexual responsiveness can also lead to depression. The medications used to treat chronic diseases and depression also can have serious consequences on sexual behavior. For example, many antihypertensives have been demonstrated to seriously inhibit erection and ejaculation and reduce sexual interest in both sexes. Antidepressants, almost without exception, can cause adverse changes in sexual response including decreased desire in both sexes, erectile disorder in men, and delayed or absent orgasmic response in both sexes. As individuals age and are diagnosed with chronic diseases, it is critical that they ask their physician about the potential sexual side effects of the medications being prescribed for them.

Pelvic surgeries also have been a signal to end sexual activity for many middle and older aged men and women. Clinical reports have indicated that prostatectomies and hysterectomies can have an effect on sexual desire and orgasmic capacity in some individuals. Surgery for benign hyperplasia of the prostate has improved measurably, and rarely does potency have to be affected. Approximately 30–35% of midlife and older women will have a hysterectomy in their lifetime and 10–12% will be diagnosed with breast cancer. A hysterectomy or a mastectomy can represent a loss of "femininity" for some women and they may feel and behave as if they are unworthy of a loving, sexual interaction. Studies have suggested that women's altered behavior in their sexual relationships following such surgeries is more due to psychological factors than to physiological ones.

Research on sexuality indicates that women's experiences of sexuality tend to be more relationship and intimacy focused than men's. For example, in one study on midlife women with low sexual desire, 50% reported that they considered insufficient emotional intimacy in their relationship as a relevant factor in their low sexual desire. A longitudinal study on midlife women examined their sexual responsiveness across the menopausal transition. Over half reported desiring sex less often, having sex less often, finding arousal more difficult; and desiring more nongenital touching. Women reported that they wished that they themselves were more romantic, loving, affectionate, passionate, and desirous and that their husbands were more sensitive, loving, fun, and affectionate. Another longitudinal study found that loss of interest in sex was negatively correlated with marital happiness for middle-aged men and women.

The growing body of literature on sexuality and sexual desire in mid- and later life suggests that not only do the physiological changes associated with aging that affect sexual desire and sexual behavior need to be considered but also the psychological and relationship issues as well. One of the biggest issues influencing the sexuality of older women is the availability of a partner. Over half of men 75 and older have a sexual partner while only 21% of women do, according to an AARP study. A couple's pattern of sexual activity across their lifespan is the best predictor of their sexuality in later life. Their level of sexual interest and desire depends on their past sexual enjoyment of sex, current physical and mental health, relationship satisfaction and happiness, use of alcohol and psychotropic medications, stress of life events, and perceptions and meaning of aging. Most individuals can and do experience an interest in sexual behavior and intimacy throughout their lives and maintain sexual activity well into their seventies and beyond. As individuals enter later life, they often expand the variety of sexual behaviors that they engage in and focus more on the quality of their sexual interactions than on the frequency of sexual intercourse.

Related Topics

[Depression](#), [Hysterectomy](#), [Menopause](#), [Perimenopause](#), [Testosterone replacement therapy](#)

Suggested Readings

- AARP (1999) American Association of Retired Persons—Modern maturity sexuality study. AARP, Washington, D.C.
- Harvey JH, Wenzel A, Sprecher S (eds) (2004) The handbook of sexuality in close relationships. Lawrence Erlbaum Associates, Mahwah, NJ
- Laumann EO, Gagnon JH, Michael RT, Michaels S (1994) The social organization of sexuality: Sexual practices in the United States. University of Chicago Press, Chicago, IL
- Rossi A (ed) (1994) Sexuality across the lifecourse. University of Chicago Press, Chicago, IL

Suggested Resources

<http://www.niapublications.org/engagepages/sexuality.asp>
<http://www.sexhealth.org/sexaging>

Life Expectancy

Michelle M. Cornette · Mary F. Wyman · Heather M. Smith

Life expectancy refers to the amount of time, typically the number of years, a person is expected to live as calculated at birth. In recent decades, improved understanding of quality of life and disability has led to additional, more complex estimations of the number of years of health before death, or healthy life expectancy (HLE, also calculated as “disability free life years” [DFLY]).

In virtually every country across the globe, total life expectancy has increased dramatically over the past two centuries. In the United States, less than half of the cohort of persons born between 1835 and 1845 lived past age 30; for the cohort born between 1920–1930, more than half lived to see age 70. For the current cohort of young adults born between 1980 and 1990, 50% are expected to reach age 100. The Centers for Disease Control and Prevention cites the following top ten public health initiatives contributing to increased life expectancy in the past century: safer workplaces, safer and healthier foods, motor vehicle safety, infectious disease control, immunizations, decline in deaths due to coronary artery disease and stroke, family planning, recognition of tobacco use as a health hazard, healthier mothers and babies, and fluoridation of drinking water. Of note, average life expectancy has continued to rise, reaching a record high for the United States in 2003 at 77.6 years, up from 77.3 years in 2002. The estimated life expectancy for individuals in the United States for 2005 is 77.71 years.

There is significant variation in life expectancy between groups. Gender is highly related to total life expectancy; currently, on average, American white women live five years longer than American white men, at 80.5 years vs. 75.4 years. Over time, there has been a decrease in the life expectancy gap between men and women, down from what was a disparity of 7.8 years in 1979. Additionally, the gender difference in HLE is much smaller, with women experiencing more disability years on average than men.

Ethnicity is also a significant factor, as American black women experience an average lifespan of just 76.1 years and American black men just 69.2 years. Of note, however, disparities in life expectancy at birth between black and white persons have narrowed in recent years.

Native Americans live an average of only 45 years. However, it is a false assumption that all ethnic minorities in the United States have shorter lives than the majority white group. Latino men and women live two to three years longer than the US population average. This may be due primarily to differences in mortality related to certain diseases. Although older Latinos are more likely than other ethnic groups to die from diabetes, they are less likely than older non-Latino whites to die from heart disease, cancer, or stroke. Of note, though Latinos live longer than other populations, evidence suggests that they do so in relatively poor health. Asian Americans, especially those with high socioeconomic status (SES), also live longer than all other groups in the United States.

Internationally, there is significant variation in life expectancy across cultures. The Central Intelligence Agency's World Factbook, 2005, reports estimated life expectancies ranging from 83.51 (Andorra, Europe) to 33.22 (Swaziland, Africa). According to this source, those countries with highest life expectancies are concentrated in Europe; others in the top 25 include Japan, Hong Kong, and Singapore. Those countries with shortest life expectancies are concentrated in Africa. The HIV or AIDS epidemic is a major contributor to loss of healthy years in these countries. Although international, ethnic, and gender differences in life expectancy exist, the clear trend has been an overall increase in life expectancy over time.

The Social Security Administration predicts a continued slow increase in life expectancy in the future, with 2002 data projecting a maximum human life span of 100 years in about six decades. By contrast, some researchers recently have suggested that within 50 years, obesity could shorten average life expectancy by at least two to five years. Although others criticize these findings on methodological grounds and argue that they fail to account for likely medical advances, most agree that obesity may curb expected gains in life expectancy. Currently, it is argued that childhood obesity, which has more than doubled in the past 25 years and currently affects 15–30% of US children, has taken four to nine months off the average US life span. It is argued that childhood-onset diabetes (which has increased tenfold in the past 20 years) has been a major contributor to shortened life expectancy among the obese.

Having identified some clear trends in life expectancy, what are some of the factors that contribute to both individual and group variation in life expectancy?

Higher SES is related to longer life in the United States and in diverse cultures across the world. This relationship seems to vary with age, in that social inequalities in mortality and health are increased for older adults. In addition, an increase in SES-related total life expectancy (TLE) and HLE disparities over the past decades has been observed in some societies. Suggested causal factors include class-related disparities in access to health care, especially new methods of treating cardiovascular diseases, and class differences in alcohol consumption. Some argue that economic globalization, though contributing to economic growth and the dissemination of technologies that have increased life expectancy, also represents a potential risk to health and life expectancy through exacerbation of the rich–poor gap, promulgation of a life philosophy of materialism and greater consumption of resources, and erosion of the environment.

Family history, likely attributable to a combination of genetic and environmental influences, is among the strongest predictors of life expectancy. Disabilities contributing to altered life expectancy include cerebral palsy, severe mental retardation (MR), Down's syndrome, and other neurodevelopmental disabilities; many individuals possessing these conditions never reach older adulthood. Although severe MR decreases life expectancy, mild MR does not appear to predict shortened life expectancy; and today, people with varying degrees of MR live longer than previously expected. In one study, those with mild MR did not experience significantly shorter life expectancies, whereas those with profound MR experienced more than a 20% reduction in life expectancy across almost all ages. Epilepsy and hearing impairment increased relative risk of death for all levels of MR.

Adult-onset conditions predicting diminished life expectancy include Alzheimer's disease and traumatic brain injury (TBI). In a large-scale, ten-year study, Alzheimer's disease greatly shortened total life expectancy to a similar extent in men and women, with the most pronounced reduction among those who were younger. Besides their shorter survival, men and women with Alzheimer's disease spent more absolute years, and also a greater proportion of their remaining lives, with impairments in activities of daily living than did their nondemented similarly aged peers. Regarding TBI, one study found a clear relationship between severity of injury and greater mortality. In this study, life expectancy was reduced by an average of 7 years in the traumatic brain injured.

The effects on life expectancy of cigarette smoking, dietary contributions, stress, and the effects of a sedentary lifestyle have been well documented. Violence, risky sexual behavior, risky driving, suicide, and drug use have also been identified as top behavioral contributors to mortality. Further, researchers have identified psychological contributors to life expectancy. Conscientiousness, for example, has been found to predict adherence to health-preserving behaviors that extend life expectancy. In a large-scale study of an older-adult sample, self-rated life expectancy and health predicted mortality for both men and women. Another study revealed that older adults holding more positive attitudes toward aging lived more than 7 years longer than those who held negative attitudes. Research further indicates that depression in adulthood predicts decreased life expectancy, and older adults remain the group at highest risk for completed suicide, another contributor to mortality in this age group.

Given the strong influence of SES on life expectancy, promoting access to education, with the hope of ultimately increasing knowledge about physical and psychological health, financial resources, and access to health care, is critical, both domestically and internationally. Behavioral recommendations include maintaining a low-fat, low-sugar diet; exercise; and avoidance of cigarette smoking and excessive alcohol consumption. Early recognition and treatment of physical health issues is critically important. As poor psychological health contributes to poor physical health, and, as noted above, may contribute to life expectancy independently of physical health, adequate recognition and treatment of mental health issues is also imperative.

What are some of the public health and policy implications of the noted increase in average life expectancy over time? The older adult population in America is growing, owing in part to increasing life expectancy. Although the prevalence of chronic illness and disability increases with age, healthy aging is becoming increasingly more common. As a result, health care costs have become more concentrated at the end of life rather than during extra years of relatively healthy life. We have already begun to feel the economic impact of healthy aging, which is projected to increase further as the baby boomers enter older adulthood. Public policy issues to be addressed include the potential need for a geriatric work force, increased transportation needs as more older adults outlive driving privileges, examining the continued adequacy of the Social Security and Medicare programs, increased

need for long-term care, and the development of alternative strategies to pay for rising health care costs.

Related Topics

➤ [Disability](#), ➤ [Morbidity](#), ➤ [Mortality](#)

Suggested Readings

- Bogg T, Roberts BW (2004) Conscientiousness and health-related behaviors: A meta-analysis of the leading behavioral contributors to mortality. *Psychol Bull* 130 (6):887–919
- Fleming KC, Evans JM, Chutka DS (2003) A cultural and economic history of old age in America. *Mayo Clin Proc* 78:914–921
- Louria DB (2005) Extraordinary longevity: Individual and societal issues. *J Am Geriatr Soc* 53 (9, Suppl.):S317–S319
- McMichael AJ, Beaglehole R (2000) The changing global context of public health. *Lancet* 356 (9228):495–499
- Perls T, Kunkel LM, Puca AA (2003) The genetics of exceptional human longevity. *Geriatr Biosci* 50:359–368
- Rappaport AM, Parikh A (2003) Living to 100 and beyond: Implications of longer life spans. *Benefits Q* 19:27–35
- Riley JC (2001) *Rising life expectancy: A global history*. Cambridge University Press

Suggested Resources

- Centers for Disease Control and Prevention, QuickStats: Life expectancy at birth, by year --- United States, 1970–2003: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5414a6.htm> [the date is April 15, 2005]
- Central Intelligence Agency: World Factbook, 2005: <http://www.cia.gov/cia/publications/factbook/rankorder/2102rank.html>
- Life expectancy calculator: <http://www.agingresearch.org/calculator/quiz.cfm>
- National Center for Health Statistics Life Tables: <http://www.cdc.gov/nchs/products/pubs/pubd/lftbbs/lftbbs.htm>

Light Therapy

Aditi Mehta

Light therapy is most often used in clinical settings, as a treatment for seasonal affective disorder (SAD). SAD is a type of depression that sets in the winter, as the daylight time decreases. The concept of light therapy is based on the existence of a circadian rhythm that refers

to 24-h cycles of rest and activity that involve changes in the body, depending on the time of day or night. During winters, light therapy compensates for the deficit of natural light that is believed to be related to depression.

Light therapy is also sometimes used to treat insomnia; elderly people, in particular, may be good candidates for light therapy. A Japanese study showed significant improvement in behavior problems in patients with dementia who were exposed to morning bright light. This finding was later replicated in other studies.

Light therapy involves exposure to bright light in the range of 1,500–10,000 lux from a source such as a light box. The current recommendation for treatment of SAD is a minimum of 2,500 lux for 2 h each day for 1 week. Sometimes doses as high as 10,000 lux for smaller periods may be more effective for treatment of SAD. The best time of exposure is in the early morning before dawn, although some people prefer to use it after dusk. Therapy needs to be continued for at least 3 weeks to determine adequate response. It is not possible to use any random source of light, like bright kitchen lights or tanning bed lights. It is important to use the right source especially designed for the purpose of therapy.

Light therapy may be best suited for individuals with side effects from antidepressants or those with liver disease, who cannot tolerate antidepressants. Light therapy has been proven to have few side effects, and so it can be used as an adjunct to or an alternative to medications.

The common side effects of light therapy are the same as those experienced with SSRI-antidepressants but significantly milder. Common complaints are mild headaches, mild activation, nausea, or dizziness. The risk of people with a diagnosis of bipolar disorder cycling into mania or hypomania may be similar to what can occur with antidepressant treatment. Just like antidepressants, some of these side effects decrease spontaneously with time or by decreasing the intensity or duration of light exposure or sitting further away from the light source.

There is a theoretical risk of damage to the eye with light therapy, even though clinical evidence is lacking. However, baseline and yearly eye exams are recommended for patients with risk factors such as prior retinal damage, prior cataract surgery, diabetes, or those on photosensitizing medications like lithium,

phenothiazines, thioridazine, melatonin, and St. John's Wort.

Some people may find it cumbersome and time consuming to sit in front of a light source for 30 min every day. Finally, some insurance companies may not reimburse the cost of a light box and this may be a problem for some people.

Related Topics

➤ [Dementia](#), ➤ [Depression](#)

Suggested Readings

- Campbell SS, Terman M, Lewy AJ, Dijk DJ, Eastman CI, Boulos Z (1995) Light treatment for sleep disorders: Consensus report. V. Age-related disturbances. *J Biol Rhythms* 10(2):151–154
- Lam RW (ed) (1998) Seasonal affective disorder and beyond: Light treatment for Sad and non-Sad conditions. American Psychiatric Press, Washington, D.C.
- Mishima K, Okawa M, Hishikawa Y, Hozumi S, Hori H, Takahashi K (1994) Morning bright light therapy for sleep and behavior disorders in elderly patients with dementia. *Acta Psychiatr Scand* 89(1):1–7
- Sadock BJ, Sadock VA (2003) Synopsis of psychiatry, 9th edn. Lippincott Williams and Wilkins, Philadelphia

Suggested Resources

- Center for Environmental Therapeutics; www.CET.org
- Medscape from WEBMD, CME in Seasonal Affective Disorder: Diagnosis and Treatment Update, Section 3-Light Treatment: State of the Art, Lam, R.W. M.D. (12 August 2005); http://www.medscape.com/viewarticle/508141_14.
- The Society for Light Treatment and Biological Rhythms; www.SLTBR.org.
- wholehealthmd.com, Section Light Therapy

Liposuction

Janet M. Blanchard

Today, there is a great deal of emphasis directed toward diet and exercise to produce an ideal look for as ideal a body proportion as possible. However, for many

women, irrespective of how much they do, they cannot reach this goal. For that reason, they then seek a solution. Liposuction, also known as lipoplasty, is a procedure that can help remove these unwanted areas. It must be emphasized that this is not the replacement for diet and exercise and should not be used as a quick fix. Because of this, the American Society of Plastic Surgeons has delineated certain criteria that are utilized as a guide to help predict the outcome of the results. A woman should be within a reasonable goal of their body weight, have relatively good skin tone and have few stretch marks. Keep in mind that these are ideal conditions and many women do not fulfill the above. Some women have a goal of just being able to wear a pair of pants and have the hips match the waist; i.e., be in better proportion. Others would like to tuck in their blouses or sweaters without having a bulging stomach, whereas other women would like to wear a sleeveless top without the excess fat hanging on their arms.

Liposuction can be performed on almost any area of the body: cheeks, chin, neck, upper arms, breast or chest area, back, abdomen, waist, hips, buttocks, thighs, inner knee, calves, and ankles. Liposuction is one of the most popular cosmetic procedures performed today and a lot of attention has been given to this by the media. Some advertise this as being a simple procedure without any down time. This certainly is not true and should not be taken lightly. It is a procedure that is performed in an operating room setting, usually with a general anesthetic or sedation on a same-day surgical basis. There may be medical and psychological complications, some of which can be serious.

Women seeking consultation should make certain that this is performed in an accredited facility under sterile conditions. The procedure involves making one or more small incisions near the area to be suctioned. A wetting solution is then placed in this area, which helps facilitate the suctioning and helps cut down on the amount of blood loss. A tube is connected to a vacuum or suctioning machine, and the fat (adipose) is literally suctioned from that area. How much fat is removed is left to the expertise of the plastic surgeon. There are also guidelines set for the amount of adipose tissue to be removed. More than one area can be suctioned at one time.

There are basically two different types of liposuction: the standard method as described above and ultrasonic assisted liposuction. There are specific criteria for each and these would be explained at the

time of clinical consultation. Postoperatively, there is bruising and swelling. There is no excruciating pain, rather the patient feels bruised. A mild pain pill is prescribed and sometimes an antibiotic. In addition, a compression garment is worn to control swelling and any possible fluid accumulation. If more than one area is suctioned, very limited activity is advised for two or three days. It takes anywhere from 1 week to 1 month for most of the swelling and bruising to subside. There is also some associated numbness in the suctioned areas, which is very normal and also will subside within 1 week to 1 month. The compression garment is worn for 3–4 weeks and exercise is discontinued for this period of time as well. It takes approximately 3 months before the final appearance is evident; however, after the first week, a noticeable result will be apparent.

There are complications associated with any procedure and these should be discussed in detail with the consulting surgeon at the initial visit. Individuals should do as much research as possible prior to the consultation, and should make sure that all their questions are answered, including possible risks related to the procedure for their particular situation. There is a great deal of information available on the Internet. In addition, it is very informative to speak to someone who has had the procedure. Some surgeons use pictures to help patients understand the potential benefits and risks of the procedure as well as to understand the exact method of the procedure.

One of the most commonly asked questions relates to weight gain. If a woman should gain weight after liposuction, she will gain weight proportionately; i.e., the weight will distribute more evenly. Another question relates to cellulite. Liposuction will not treat cellulite and may, in some cases, accentuate this condition. Liposuction can be an extremely rewarding operation. All the risks and benefits should be discussed in detail with one's surgeon at the initial consultation so that one can make an informed decision whether this procedure will be of benefit. Recently, a new type of liposuction, termed liposelection, has been introduced. This is a state-of-the-art procedure, which is ultrasonic. The ultrasonic waves disrupt the fat cells, thereby allowing selective suctioning of the fat cells. The end result is less bruising, blood loss, and downtime. Again, the risks and benefits of this procedure should be discussed with one's surgical consultant.

Related Topics

- ▶ Body image, ▶ Cosmetic surgery, ▶ Diet, ▶ Obesity,
- ▶ Weight control maintenance

Suggested Resource

www.plasticsurgery.org

Liver Disease

Ilche T. Nonevski

Liver disease is the tenth leading cause of mortality in the United States, resulting in 44,677 deaths annually and costing over \$9.8 billion. Chronic liver disease encompasses a broad spectrum of causes that include infection, alcohol and drug toxicity, fatty infiltration, autoimmune and hereditary causes, as well as unidentifiable (cryptogenic) causes. In all these diseases, sustained damage to the liver over several decades can result in the development of permanent scarring and structural changes to the tissue, called cirrhosis. As cirrhosis becomes advanced, patients can develop severe and life threatening complications. Since there is no cure for chronic liver disease, the goal is to control disease activity and minimize the development and progression to cirrhosis.

The liver is responsible for a variety of crucial functions. Most substances that are absorbed from the gastrointestinal tract first pass through the liver, where they are metabolized and chemically altered, and then enter the systemic circulation. In addition to metabolizing food into active nutrients and waste products, the liver is also responsible for the clearance, excretion, detoxification, and activation of most medications. Equally important, the liver stores glucose and synthesizes proteins responsible for blood clotting and transport of vitamins, minerals, and hormones throughout the body. Bile is synthesized in the liver and transported to the gastrointestinal tract where it facilitates in digestion. Although there are no specific age-related liver diseases, there is a measurable decline in liver function with advancing age.

Symptoms commonly seen in liver disease include jaundice, cola-colored urine, and itching. This is because the impaired liver is unable to adequately process bilirubin, a by-product of red blood cell turnover, and results in the accumulation of bilirubin in the blood stream and other organs. Other symptoms include right upper quadrant pain, nausea, anorexia, and fatigue. As liver cirrhosis progresses, patients can develop derangements in protein synthesis and function, leading to accumulation of large amounts of fluid in the abdomen (ascites) and lower extremities (edema). The ascitic fluid can become infected and cause spontaneous bacterial peritonitis. Cirrhotic patients are at increased risk for bleeding throughout the gastrointestinal tract, but most commonly from swollen veins in the lower esophagus, called varices.

Hepatitis A and B are rare in patients over 65 years. However, approximately 3.9 million Americans have been infected with hepatitis C, making this the most common blood-borne infection, with almost 70% of these patients having evidence of chronic infection. The majority of cases are patients between 30 and 49 years who have a history of injection drug use, blood transfusions before active screening for hepatitis C began in 1992, or high-risk sexual behavior. However, the number of patients over the age of 50 is expected to increase in the coming decades. Between 2% and 17% of the patients infected with hepatitis C will go on to develop cirrhosis within 8–25 years after infection and there is a high risk of developing liver cancer in these patients.

Excessive alcohol consumption has been linked to the development of alcoholic hepatitis, fatty liver, and worsening cirrhosis. Daily consumption of greater than four alcoholic drinks in men and two drinks in women increases the risk of developing cirrhosis. Daily increases the risk of cirrhosis. Almost 40% of deaths from cirrhosis is caused by excessive alcohol consumption. The rate of progressing to cirrhosis is much higher in patients infected with hepatitis C who abuse alcohol.

Numerous commonly used medications and herbal supplements cause both acute and chronic liver disease. These include: (1) nonsteroidal anti-inflammatory drugs (NSAIDs) such as aspirin, ibuprofen, naproxen; (2) lipid-lowering medication such as statins and niacin; (3) antibiotics and antifungals; and (4) anti-seizure medications, to name a few. Medications like acetaminophen and certain vitamins possess a

predictable pattern of liver toxicity, whereas medications such as NSAIDs, antibiotics, and antivirals can cause toxicity after only one or several doses.

A substantial number of herbal supplements have also been linked to liver disease with fatal outcomes. These include Echinacea, Valerian, and Chapparral, to name a few.

The potential for toxicity is even higher in patients who already have underlying liver disease from hepatitis and alcoholic cirrhosis, among other conditions already mentioned.

The epidemic of obesity in the United States and other Western countries has affected not only the rates of diabetes, heart disease, and stroke, but also the development of liver disease. Studies suggest that between 10% and 40% of the US population may have nonalcoholic fatty liver disease (NAFLD), making it the most common liver disease in Western countries. NAFLD is characterized by the accumulation of fat in the liver without inflammation or scarring. NAFLD is usually benign and reversible, but can progress to non-alcoholic steatohepatitis (NASH). NASH is defined as the presence of liver inflammation and scarring (fibrosis), in addition to the fatty deposition seen in NAFLD. With time, NASH can evolve into cirrhosis and its associated complications.

NASH is associated with obesity, type 2 diabetes, and cholesterol abnormalities. The common link is related to insulin resistance, whereby cells and tissues do not respond appropriately to the action of insulin in regulating blood sugar and fat metabolism. Most patients with NASH will have an elevation of liver enzymes called aminotransferases. Since ultrasound of the liver can miss up to one third of cases, the diagnosis of NASH is made with a liver biopsy, which can show fat accumulation and fibrosis that is similar to the damage seen in alcoholic cirrhosis. Therefore, the diagnosis of NASH is made in someone without a significant alcohol history.

Two classes of autoimmune liver diseases primarily affect older individuals. In both instances, many of the patients are asymptomatic and the clinician detects this incidentally on a blood test showing abnormal liver function. In primary biliary cirrhosis (PBC), the immune system mounts a response to the bile ducts in the liver tissue, causing leakage of bile into the tissues and further damage, whereas autoimmune hepatitis is caused by antibodies that destroy liver cells and create fibrosis of the liver tissue.

Hemochromatosis and Wilson's disease are genetically linked liver diseases that result in the systemic overload of iron and copper, with deposition of large amounts in the liver. If untreated, mineral overload results in cirrhosis and affects the cardiovascular, endocrine, and neurological organ systems.

Diagnosis of liver disease is based on a combination of clinical, laboratory, radiographic, and biopsy findings. The initial evaluation for liver disease includes checking liver enzymes and other associated blood work for hepatitis and autoimmune diseases. An ultrasound of the right upper abdomen is helpful to image the liver. The best test for diagnosing the disease is a liver biopsy, which can help determine the type and extent of involvement. In addition, genetic testing is available for patients with suspected hereditary liver disease and allows screening of family members.

Treatment for chronic liver disease is geared toward the underlying disease process. Patients traveling to parts of the world where hepatitis A and B are endemic should undergo vaccination as a precaution. Patients with active hepatitis B or C can be treated with antiviral medication to decrease viral load and minimize disease progression. In patients with chronic liver disease, abstaining from further alcohol consumption may reverse some of the damage and improve response to treatment. Patients with hepatitis C are advised not to consume any alcohol as no safe dose is established. Because the aging population takes considerably more medications than their younger counterparts, careful examination of medication side effects and drug interactions is imperative to preventing liver toxicity. In addition, over-the-counter herbal supplements are not regulated by the FDA for toxicity, and caution is advised before taking these medications without discussing them with a healthcare provider. Autoimmune liver disease is usually well treated with a combination of immunosuppressants such as steroids and symptomatic control with other medications. Chelation therapy, in which iron or copper are removed from the blood, is an effective treatment for hemochromatosis and Wilson's disease.

In patients with cirrhosis, the goal is to prevent complications. This includes reducing the risk of gastrointestinal bleeding with certain medications or procedures, vaccinating for hepatitis A and B, and limiting disease progression when possible. Patients with fluid overload causing ascites or edema respond well to diuretic medications. Patients who have end stage liver disease

and meet selection criteria can undergo liver transplantation, which improves long-term survival and may cure the underlying disease.

Related Topics

◆ [Abdominal pain](#).

Suggested Readings

- Everhart JE (ed) (1994) Digestive diseases in the United States: Epidemiology and impact. (NIH Publication No. 94-1447). U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. U.S. Government Printing Office, Washington, D.C.
- James OF (1997) Parenchymal liver disease in the elderly. *Gut* 41:430-432
- Jansen PLM (2004) Non-alcoholic steatohepatitis. *Eur J Gastroenterol Hepatol* 16:1079-1085
- Riley TR Bhatti AM (2001) Preventive strategies in chronic liver disease: Part I. *Am Fam Physician* 64:1555-1560
- Riley TR Bhatti AM (2001) Preventive strategies in chronic liver disease: Part II. *Am Fam Physician* 64:1735-1740

Liver Spots

Paradi Mirmirani

Solar lentigines, also known as “liver spots,” “age spots,” or “sun spots,” are among the most common benign, pigmented lesions of the skin. These light-tan to dark-brown-colored spots develop in areas of the skin greatest exposed to the sun, especially the face, backs of hands, forearms, and upper trunk in older adults. They differ from ordinary “freckles,” which often start in childhood and may fade or even disappear with avoidance of sunlight. Solar lentigines occur in over 90% of those over 70 years, with incidence increasing with age. However, they may also develop in younger persons with high exposures to sunlight or tanning beds, especially those with fair complexions.

Although harmless, solar lentigines are a reflection of high intensity or cumulative sun exposure and may be associated with other signs of sun damage to the

skin, including skin cancers. In addition, because solar lentigines often have irregular borders, and can be greater than 1 cm in diameter, occasionally they may need to be distinguished from cutaneous melanoma, a form of skin cancer. Cosmetic treatments, including topical creams, chemical peels, liquid nitrogen, and laser therapies, may improve the appearance of solar lentigines. Protection from the sun, including avoidance of direct sunlight and diligent use of sunscreens with high ultraviolet sun protective factors is needed to prevent their recurrence.

Related Topics

◆ [Melanoma](#), ◆ [Skin disorders](#), ◆ [Skin care](#), ◆ [Wrinkles](#)

Suggested Readings

- Bologna JL (1993) Dermatologic and cosmetic concerns of the older woman. *Clin Geriatr Med* 9:209-229
- Rhoades AR (1999) Benign neoplasias and hyperplasia of melanocytes. In Freedberg, IM, Eisen AZ, Wolff K et al (eds) *Fitzpatrick's dermatology in general medicine*, 5th ed. McGraw-Hill, New York, NY, pp 1047-1051

Suggested Resource

American Academy of Dermatology (www.AAD.org)

Living Trust

Janet L. Lowder · Sandra J. Buzney · Lisa M. Montoni

A living trust, also called inter vivos trust, is an estate planning tool individuals may use to manage their personal assets during their lifetime and control distributions after their death. A trust is a contract that is created when one individual, the grantor, gives property to another person or financial institution, the trustee, to hold and manage for the benefit of one or more other persons, the trust beneficiaries. The same

individuals may be the grantors, initial trustees, and beneficiaries. A living trust describes a trust that the grantor may change or terminate (revoke) during his or her lifetime. The terms of a living trust allow the grantor to keep all the benefits of any property placed into the trust for the rest of his or her life. The grantor or the spouse of the grantor or a trust company may serve as trustee of the trust.

To be effective, a living trust must be funded once it is established. The grantor must transfer the intended trust property to the trust by naming the trustee as the property's owner in the appropriate ownership documents. Any property left solely in the grantor's name may pass through probate as part of the grantor's estate after his or her death. Examples of potential trust property include bank and brokerage accounts, stocks and bonds, a home and other real estate.

The administration of a living trust after the grantor dies has several advantages over the probate administration of a deceased individual's property. The terms of a living trust are detailed in a private document, the trust agreement, and administration of a trust is not generally made public. The administration of a will, in comparison, requires admitting the will to probate court making it a matter of public record; the various filings associated with will administration detail the nature and amount of the estate's assets, debts, and expenditures. Additionally, the trustee of the living trust retains much greater control over management of the trust property when compared to the court supervision imposed on an estate executor when a will is probated. The trustee may also begin distributing assets to trust beneficiaries much sooner than compared to the executor of an estate. In addition, a living trust can be used to manage assets for minors or individuals who lack capacity without the need to establish a guardianship. The trust can have a "spendthrift clause" to protect assets from creditors of beneficiaries other than the grantors and can specify the purposes for which those funds can be used and the ages at which trust funds are to be distributed to beneficiaries. Finally, a living trust is especially useful to avoid multiple state probate proceedings when homes and property are owned in a number of different states.

Living trusts, however, do have disadvantages. Establishing a living trust generally requires more time and effort than writing a will. All the assets that are intended for the trust must be re-registered, re-titled or otherwise validly transferred to the trustee of the living trust;

property acquired after the trust is created must be appropriately titled to ensure it is added to the trust. The costs associated with creating a living trust are generally more than those for creating a will. Also, there usually is still the need for a will to dispose off any property at death that may not have been transferred to the living trust during the grantor's lifetime. Most importantly, the trustee appointed by the grantor to manage the trust assets is not subject to court review unless the grantor or subsequent beneficiaries decide to bring a lawsuit against the trustee for mismanagement. Therefore, the grantor should seriously consider who is best suited to act as trustee.

Living trusts are also often used to avoid or reduce estate taxes. A living trust alone will not prevent the levying of estate taxes since the assets in the trust are part of the grantor's gross estate for estate tax purposes just as probate assets are. However, a properly written living trust, particularly for very wealthy couples, along with well-drafted wills and asset management plan, implemented under the advice of an attorney and financial planner, may lead to substantial tax savings for the grantor's family.

A living trust is not necessary or advantageous for all individuals. Probate administration at death can also be avoided by titling assets in the name of joint owners or to transfer on death. In addition, a living trust may jeopardize the grantor's eligibility for Medicaid benefits. The assets in a living trust are countable resources for purposes of Medicaid eligibility, and are treated as being owned by the grantor and beneficiary directly. Consultation with an attorney knowledgeable about the Medicaid rules of the state in which the grantor lives is important when creating a living trust.

Related Topics

▶ Financial planning, ▶ Probate

Suggested Resources

American Association of Retired Persons, Living trust: Deciding how to manage your property, 2006, Washington D.C. (1 February 2006); http://www.aarp.org/money/financial_planning/estate_planning/a2002-08-12-EstatePlanningLivingTrusts.html
Ohio State Bar Association (OSBA), LawFacts pamphlet: Living trusts, 2005, Columbus, OH (1 October 2005); <http://www.ohiobar.org/pub/lawfacts/index.asp?articleid=12>

Living Wills

Marshall B. Kapp

Beginning with California in the 1970s, all but a couple of states have enacted legislation regarding advance instruction directives for health care. These instruction directives commonly are known as living wills, even though they have nothing to do with the distribution of property, and deal with dying rather than living. Living will statutes often are termed “natural death” legislation.

Specific legal provisions vary from state to state. However, the common theme of living will statutes is support of an adult patient’s right, while the patient still is mentally capable, to sign a written directive concerning the patient’s wishes about the use of life-sustaining medical treatments in the event of later serious illness and an incapacity to make and communicate autonomous decisions at that future time. Compliance with such a directive protects or immunizes the involved health care professionals and treatment facilities against possible civil or criminal liability for withholding or withdrawing medical treatment under the conditions specified in the directive.

Ordinarily, the principal or maker of the document is presumed to have sufficient present mental capacity to execute and to revoke it, absent substantial evidence to the contrary. The legal force of an instruction directive goes into effect only when the patient, after signing the document, later becomes intellectually and emotionally incapable of making medical decisions personally. In most cases, it is left to the individual’s personal physician to clinically determine when that person has become incapable of making decisions and, therefore, when the advance directive becomes effective.

Most living will statutes and forms embody one of two approaches, either check-off options for particular types of treatment (for example, “I do/do not want to be maintained on an artificial feeding tube if I am in a permanently vegetative state”) or extremely general, amorphous standardized language to express preferences regarding particular categories of medical treatment (such as, “If I become terminally ill, do not use any extraordinary or heroic medical measures to keep me alive longer.”) Although usually we think of living wills as instruments for limiting life-sustaining medical treatment in the future, some states have living will statutes that permit people to specify in an instruction directive that they request (or even demand) the provision of

particular medical interventions under certain enumerated circumstances (for instance, “I want my life to be extended through any available medical interventions to the greatest extent possible, regardless of financial cost or any other consideration”).

A handful of states have adopted the legislative approach of providing a more open-ended format for documenting health care instructions prospectively. This creates an opportunity for individuals to write directives (often referred to as “Values Statements”) that express their values, beliefs, and preferences in their own words by responding to questions such as, “What would be your most important goal if you were critically ill—to stay alive as long as possible or to be made as comfortable and pain-free as possible?” Some living wills incorporate personal religious considerations that are especially significant to the individual executing the directive.

There is a growing body of evidence that, quite often, patients’ wishes as stated in their living wills concerning life-sustaining medical treatment are not respected and implemented by families and health care providers. Proof of this common disregard for instruction directives has influenced a substantial number of legal and ethical commentators to question the value of living wills and their continuing viability as part of the advance health care planning process.

Related Topics

➤ [Advance directives](#), ➤ [Capacity](#), ➤ [Durable power of attorney](#), ➤ [Informed consent](#)

Suggested Readings

- Gunter-Hunt G, Mahoney JE, Sieger CE (2002) A comparison of state advance directive documents. *Gerontologist* 42(1):51–60
- Haas F (2005) Understanding the legal implications of living wills. *Nurs Times* 101(3):34–37
- Hall MA, Ellman IM, Strouse DS (1999) *Health care law and ethics*. West Group, St. Paul, MN
- Kruse CB Jr (2002) A call for new perspectives for living wills (you might like it here). *Real Pop Prob Trust J* 37:545–552
- Schneider CE, Fegerlin A (2004) Enough: The failure of the living will. *Hastings Cent Rep* 34(2):30–42

Suggested Resources

www.abanet.org
www.caringinfo.org

Loneliness

Anamaria Tejada

There is a common perception that loneliness increases as people grow old. Loneliness is the unpleasant feeling associated to the lack of satisfaction with the quality or quantity of one's social network. It results from the subjective assessment that there is an absence of satisfying social contacts, or that there is a discrepancy between the desired level of social contact and how much social contact one actually has.

Loneliness has often been equated to social isolation, but some prefer to differentiate loneliness as the subjective experience and isolation as the actual absence of social ties. In addition, two types of loneliness have been described, depending on whether it results from emotional or social isolation. The former is related to the loss or lack of close, intimate ties whereas the latter is the lack of companionship or a network of friends.

Several factors put the elderly at a higher risk for loneliness. However, it is important to differentiate between young and old older adults. Young older people tend to have fewer but more stable and meaningful relationships and experience low levels of loneliness, whereas it is the old older people who are at higher risk for loneliness because they experience more losses, health problems, financial difficulties, and have less resources to cope. In general, the absence of a mate, childlessness, and relationship losses due to retirement and death are the main factors that contribute to loneliness.

Losing friends usually has a higher impact on loneliness than losing relatives because relationships with friends tend to be closer than relationships with relatives. Friends usually belong to the same cohort and share similar experiences; they also offer voluntary support compared to the obligatory assistance that some relatives feel they need to provide to the older adult. Friends are especially important when there is no spouse. For married people, their spouse is the main source of support, especially for men, who tend to remarry more often than women after losing a spouse.

Some personality traits, such as being shy, introverted, uncomfortable to take social risks, and having poor social skills also contribute to experiencing loneliness. Living in big cities compared to living in the country also seems to increase the risk for loneliness.

Poor health might be the main contributing factor for loneliness. People who have a disability or perceive

themselves to be in poor health tend to be lonelier than people in good health. When health is frail and there is more need for care and assistance, relationships might become more instrumental and lose their emotional quality. Quality or closeness in relationships is more important than quantity. In addition, older adults with mobility difficulties and sensory impairments also have limitations in their communication skills and in their ability to participate in regular activities, which increases the risk for loneliness.

Low income or low satisfaction with one's finances also increases the risk for loneliness. Those who have a higher socioeconomic level and more financial resources also have a more diverse network and more opportunities for social activities. Having low income also affects self-esteem and people with low self-esteem tend to feel inhibited to search for social contacts.

There is no agreement when it comes to the impact of gender differences on loneliness. Some believe that loneliness is lower among older women because throughout their lives women tend to develop more social skills and larger social networks than men. However, others have found that women tend to report more loneliness, but it can be that men are less comfortable than women about disclosing negative emotions. Women also tend to develop closer attachments with relatives or friends, whereas men tend to confide only in their spouses. The lack of a partner is then more detrimental for men, who have usually relied on their spouse for companionship, personal care, and for their involvement in social activities.

Loneliness is detrimental to the older adult's health and has a general debilitating effect. It has been related to higher risk for chronic illnesses and frequent episodes of sadness that can lead to depression, suicidal ideation, or alcohol abuse. It is important then to take measures to assist the elderly to decrease loneliness or cope with it more effectively. Some older adults attempt to cope by seeking relationships through religious groups; others use health services and the relationship with their physicians. This could be taken as an opportunity to help older adults cope with their loneliness. Health workers could incorporate mental health issues when providing general services to older adults. They could also coordinate social clubs or support groups for their patients to share information and support as a strategy to decrease loneliness and improve their overall health. These interventions could also reduce health care costs by preventing the multiple problems that loneliness triggers.

Other interventions should be directed toward increasing feelings of self-efficacy that help the older adult to maintain a sense of control over his or her life, in spite of the limitations that come with the aging process. It is also helpful to encourage older adults to increase their involvement in activities that include social interaction and discourage the use of television. However, it might be helpful to encourage the use of computers that allow them to remain informed and connected. Against popular views, older adults actually have the desire and the ability to learn to use the internet, even when they might express some initial fears to do so.

Finally, older adults who depend on others to perform activities of daily living (ADL) might benefit from moving to a nursing home where they receive the assistance they need and also have the opportunity to make new social contacts that in turn helps them to decrease loneliness.

Related Topics

[Bereavement](#), [Depression](#), [Grief and grieving](#),
[Informal caregiving](#), [Isolation](#), [Loss](#),
[Marriage](#), [Social support](#)

Suggested Readings

- Alpass FM, Neville S (2003) Loneliness, health and depression in older males. *Aging Men Health* 7:212–216
- Drageset J (2004) The importance of activities of daily living and social contact for loneliness: A survey among residents in nursing homes. *Scand J Caring Sci* 18:65–71
- Mullins LC, Elston CH (1996) Social determinants of loneliness among older Americans. *Genet Soc Gen Psychol Monogr* 122:455–473
- Neto F (2004) Coping with loneliness in old age: A cross-cultural comparison. *Curr Psychol* 23:124–137
- Pinquart M, Sörensen S (2001) Influences on loneliness in older adults: A meta-analysis. *Basic Appl Soc Psychol* 23:245–266

Long-Term Care

Anne R. Simpson

Long-term care (LTC) is a growing industry comprised of nursing homes, assisted living, residential, and shelter care facilities. These facilities house people who are in need of assistance with some daily life functions,

including meal preparation, bathing, dressing, toileting, and feeding. In addition, they are in need of a protected, safe environment.

Historically people have been reluctant to enter LTC facilities. The decision to do so is usually made at the urging of a medical professional, or by Adult Protective Services, when a caregiver can no longer provide the necessary care. Moreover, there are people who will admit themselves to a LTC facility, when they realize that their impairments have placed a restriction on their ability to live independently. LTC is supported through government and private insurance, in accord to the needs of the residents.

The 1999 National Center for Health Statistics' National Nursing Home Survey reported the existence of 18,000 nursing homes operating in the United States. At the time of that report the average number of beds per facility was 105. The average basic charge per day for private pay residents was \$146.00 for skilled care, \$114.00 for intermediate care, and \$101.00 for residential care. The average per diem rate was \$213.00 for Medicare residents and \$105.00 for Medicaid residents. At the time of the survey, there were 1,608,700 people residing in LTC facilities; of those 72.2% were female and 27.8% were male. Forty six percent of the residents were over the age of 85.

The LTC nursing home industry is highly regulated. The recognition of a need for regulation followed reports of abuse and neglect experienced by residents of LTC facilities. As a result, the Nursing Home Reform Act was enacted as part of the Omnibus Budget Reconciliation Act of 1987 (OBRA'87). The prevailing notion behind the OBRA guidelines is to eliminate substandard care in nursing homes, and to support the resident's right to self-determination; by doing so, LTC facilities would be held to standards of quality. The facilities would be monitored through regular visits by state surveyors to ensure that the standards of quality care are met. A transgression can lead to severe penalties for the facility in question.

The implementation of the Nursing Home Reform Act has given way to significant improvements in LTC nursing home facilities. Additionally, the residents of LTC facilities gained access to valuable rights, some of which are listed below:

- The right to personal privacy and confidentiality.
- The right of married couples to share the same room when both spouses consent to the arrangement.
- The right to self-administer drugs if the interdisciplinary team determines this practice is safe.

- The right to participate in treatment decisions.
- The right to refuse treatment, and to refuse to participate in experimental research.
- The right to be free from any physical or chemical restraints imposed for purposes of discipline or convenience and not required to treat the resident's medical condition.
- The right to be free from verbal, sexual, physical, and mental abuse, corporal punishment, and involuntary seclusion.
- The right to participate in social, religious, and community activities.
- The right to interact with members of the community both inside and outside the facility.
- The right to make choices about aspects of his or her life in the facility that is significant to the resident.
- The right to choose activities, schedules, and health care consistent with his or her interests, assessments, and plans of care.
- The right to be fully informed in language that he or she can understand of his or her total health status, including but not limited to, his or her medical condition.
- The right to choose a personal attending physician.
- The right to voice grievances without discrimination or reprisal.
- The right to refuse to perform services for the facility.
- The right to have reasonable access to the use of a telephone where calls can be made without being overheard.
- The right to organize and participate in resident groups in the facility.
- The right to reside and receive services in the facility with reasonable accommodation of individual needs and preferences, except when the health or safety of the individual or other residents would be endangered.
- The right to receive notice before the resident's room or roommate in the facility is changed.
- The right of a resident's family to meet in the facility with the families of other residents in the facility.

The LTC facilities are mandated to comply with these rules as a means to support the resident's right to self-determination and quality health care. When the resident lacks the capacity to voice his or her desires, the power of attorney or guardian will be called to make decisions for that resident. There are many

situations in which that position becomes strictly technical. As the population ages, a large number of people are without friends and family. This group has been categorized as the "un-befriended elder." To some degree they become wards of the state, and are provided a court-appointed guardian. States have limited resources; and to meet the demand, a treatment guardian may be asked to follow several people who may reside in different locations. This implies limited time for the guardian to engage in familial type visits with their charge. However, local community members are welcome to approach the LTC facilities with an offer to volunteer as a visitor.

In addition to residents' rights the federal mandate extended the area of concern to include both physician and facility services, such as

- The facility must ensure that the medical care of each resident is supervised by a physician.
- Another physician must supervise the medical care of the residents when their attending physician is unavailable.
- The resident must be seen by a physician at least once every 30 days for the first 90 days after admission, and at least once every 60 days thereafter.
- A facility with more than 120 beds must employ a full-time qualified social worker.
- A qualified dietitian must be employed on either a full-time, part-time, or consultant basis.
- Access to vision and hearing specialists must be provided.
- A licensed nurse must serve as a charge nurse on each tour of duty except in cases of special state waiver.
- If specialized rehabilitative services are required in the resident's plan of care, these must be provided by the facility.

LTC facilities serve highly vulnerable elders presenting significant physical and cognitive impairments. With the aging of the population, the participation of people from the community will play an increasingly vital role in shaping these facilities into an environment that suits the needs of coming generations.

Related Topics

- [Assisted living](#), ➤ [Long-Term care insurance](#), ➤ [Medicaid](#), ➤ [Medicare](#), ➤ [Nursing home](#)

Suggested Readings

Moller DW (2004) *Dancing with broken bones: Portraits of death and dying among inner-city poor*. Oxford University Press, New York, NY

Ouslander JG, Osterweil D, Morley J (1997) *Medical care in the nursing home*. McGraw-Hill Health Professions Division, New York, NY

Suggested Resources

American Medical Directors Association (AMDA)—www.amda.com

Centers for Medicare and Medicaid Services (CMS)—www.medicare.gov

National Center for Health Care Statistics (NCHS)—www.cdc.gov/nchs

Long-Term Care Insurance

Brandy L. Johnson

Long-term care insurance is an insurance policy that provides benefits over a long period of time for the chronically ill or disabled. Individuals who have a prolonged physical illness, a disability, or a cognitive impairment typically need long-term care. Many long-term care needs, such as bathing, dressing, or performing household chores, do not require skilled care. Therefore, aid with these types of activities is not covered by private health insurance or Medicare.

Long-term care insurance provides for aid with activities of daily living. Most long-term care insurance policies cover services rendered in the home, respite care, adult day care, hospice care, and care in an assisted living facility or nursing home. A long-term care insurance policy may cover, on average, 70% of the estimated lifetime nursing home costs and 90% of typical assisted living and home services costs. Often, a care management service is provided, which will evaluate the insured individual's needs and coordinate and monitor the delivery of long-term care services. By the end of 2002, 9.16 million long-term care insurance policies were sold in the United States. In 2004, approximately 6.4 million of these policies remained in force.

Long-term care insurance usually reimburses the insured individual for long-term expenses up to a fixed amount. For example, the insured individual may be reimbursed for \$100 a day. However, to receive the reimbursement, the insured individual is typically required to meet the policy's disability criteria. Nearly all policies define disability as either a severe cognitive impairment or the need for help in performing at least two activities of daily living. For instance, the insured individual would meet the disability requirements if he or she is unable to bathe and perform grooming activities without help.

The premiums paid under a long-term care insurance policy also differentiate this type of insurance from other forms of insurance. With health and life insurance, premiums generally increase with age. Long-term care insurance, on the other hand, offer a premium that will not increase as a result of an individual's circumstances. For example, the premium would not increase due to aging or health problems. Instead, long-term care insurance companies may increase premiums for entire classes of individuals, such as those 75 years of age and older, based upon the companies' experience in paying benefits. There are other factors that affect the price of premiums. These factors include experience with payment of benefits, the duration of benefits, the length of the waiting period before benefits are paid, the stringency of benefits triggers, whether policy holders can retain a partial benefit if they let the policy lapse, and the adjustment of benefits for inflation.

In purchasing long-term care insurance, it is important to consider inflation protection. Inflation protection is important because the cost of long-term life insurance has risen rapidly in recent years. An individual who is 60 years old might not need benefits for several years. Without inflation protection, the value of the 60-year-old's benefits made erode over time. Therefore, it is recommended that individuals under the age of 70 get a policy with 5% automatic, compound inflation protection.

Another consideration when purchasing long-term care insurance is tax treatment. An individual can purchase a tax qualified and non-tax qualified policy. These differences in these two types of policies were created by the Health Insurance Portability and Accountability Act (HIPAA). HIPAA established favorable tax treatment for federally qualified long-term care insurance policies. Today, nearly all long-term care insurance policies meet HIPAA standards. A federally

tax qualified plan offers certain federal income tax advantages. An individual who has a tax qualified plan may deduct his or her premiums provided the individual itemizes his or her deductions and has medical costs in excess of 7.5% of his or her adjusted gross income.

The cost of long-term care insurance varies with the consumers' age at the time of the purchase, the amount of coverage, and the policy's other features. The best time to purchase long-term care insurance is when an individual is in his or her 50s. At age 50, an individual will pay less in annual premiums than when he or she is in her 60s. By purchasing a policy early, an individual protects himself or herself from the risk that he or she will become ill and will have to pay more for coverage or not qualify for coverage at all.

As the future of social security is in question, long-term care insurance may become more and more popular. This could lead to a reduction in cost and, if the market so demands, long-term care insurance may include policies offering additional benefits that are not currently available.

Related topics

[▶ Institutionalization](#),
 [▶ Long-term care](#),
 [▶ Medicaid](#),
 [▶ Medicare](#),
 [▶ Quality of life](#)

Suggested Readings

- Freiman M (2005) A new look at U.S. expenditures for long-term care and independent living services, settings, and technologies for the year 2000. AARP, AARP Public Policy Institute, Washington, D.C.
- Kassner E (2004) Long-term care insurance. AARP, AARP Public Policy Institute, Washington, D.C.
- Merlis M (2003) Private long-term care insurance: Who should buy it and what should they buy? The Kaiser Family Foundation, Washington, D.C.
- Rowley S (2004) The consumers' guide to long term care insurance. Arthurhouse, Bloomington, IN

Suggested Resources

- AARP, Policy and Research. <http://www.aarp.org/research/>
- The American Geriatrics Society. <http://www.americangeriatrics.org>
- National Citizens' Coalition for Nursing Home Reform. <http://www.nccnhr.org>

Loss

Anamaria Tejada

Loss is a difficult concept to define. It usually refers to the experience of being deprived or missing something or someone of value. It can also refer to the decline or decrease of vital functions or skills. There are concrete or objective losses (loss of a loved one to death or loss of vision), but the experience or impact of loss is subjective and depends on each individual's circumstances. Loss is then relevant to the process of aging given that it brings numerous and challenging physical, psychological, and social changes that are or can be experienced as losses. Aging in general is usually viewed as the loss of youth. Older adults' response to loss will vary depending on their gender, ethnicity, education, finances, family situation, and individual traits.

Physical and Health Losses

As people grow old, they face increased health and physical changes. Particularly, women in this society experience aging as the loss of their youthful beauty and face agist attitudes and stereotypes that can affect their self-concept and lower their self-esteem. But besides society's negative perceptions there are real health problems that come with age, and for some older adults these health problems have more adverse and long-term effects on their well being than the loss of a significant relationship. Some of the multiple health challenges that come with age include the increase of sensory losses: vision, hearing, or the combination of both. There is also a higher likelihood of loss of mobility and the consequent difficulty to perform activities of daily living (ADL). In addition, there is a higher risk of developing memory loss, cognitive impairments, or dementia. These health losses affect older adults' life in multiple ways.

Vision loss, for example, affects all aspects of life. It causes anxiety and frustration and interferes with older adults' ability to perform routine activities like writing checks and driving. As a consequence, they may lose self-confidence and their sense of wholeness. Vision loss also triggers fears of dependence and puts older adults at higher risk for depression and isolation.

Hearing loss interferes with proper communication. When hearing fails, people tend to rely on their

vision to fill in the gaps. Some people adjust by lip reading and by obtaining clues through body and facial language. So when both hearing and vision are affected, older adults experience communication breakdowns in daily conversations. These breakdowns lead to a disruption in common social behaviors. Older adults with this problem feel limited, insecure, and more vulnerable. In social situations they become easily exhausted, bored, and then tend to withdraw. This dual sensory loss can also result in limited mobility and increased need for assistance with ADL, which in turn leads to feelings of helplessness and loss of autonomy.

Older adults can learn how to compensate for their sensory loss and develop a new healthy lifestyle. Medical and rehabilitation interventions are important in this process of adjustment. Communication rehabilitation is especially important; people can identify environmental factors that contribute to improved communication and also practice strategies to repair communication breakdowns when they occur. In addition, group interventions are particularly helpful to decrease the social isolation that often accompanies sensory loss and to share coping strategies with others who are experiencing similar challenges.

Sensory loss should be seen as part of a continuum of health problems. Aging adults with sensory loss tend to be in poorer health than the general population and to have higher rates of coexisting medical conditions like hypertension, diabetes, and osteoporosis. By improving health in general, some of these sensory losses could also be prevented or improved. Because sensory loss affects older adults in multiple ways, a multidisciplinary approach to the problem is recommended. Interventions should be directed toward maintaining independence and social interaction, keeping in mind that changes in the environment (larger print size, better lighting and color contrast) could help with these goals.

Retirement

As health declines, many older adults start to consider retirement. With it comes the loss of professional identity, work-related roles and the daily routine and interaction with coworkers. As a result, retirement becomes one of the major changes in the life of older adults. It also impacts their marital relationships, in positive and in some cases negative ways.

Bereavement and Grief

The likelihood of losing loved ones to death increases with age. After losing a loved one, people go through a process of bereavement that varies depending on diverse factors. In most cases the loss of a loved one affects every aspect of the bereaved person's life: social, physical, and emotional. Many older adults adjust to their new situation without need of professional help, but in some cases, they are unable to cope with the loss and might develop depression or other health problems.

Having social support from relatives and friends contributes to a healthy grief process. If natural supports are not in place, there are some interventions that can assist the bereaved in their grief. For example support groups organized by funeral homes or hospice programs provide a space to interact with other older adults who have similar experiences and can relate to the struggles of bereavement. Support groups also give the bereaved the opportunity to share the stories and the emotions related to their loss, which has been found to be an important part of the healthy grieving process.

If the bereaved becomes clinically or severely depressed, professional care might be needed in the form of counseling or psychotherapy. The goal of this kind of intervention is to help the bereaved accept the loss, work through the emotions and problems that the loss has created and help them redefine their lives and their identities without their loved one.

Among the multiple losses of loved ones that older adults go through, the loss of a spouse has been found to be especially hard. When losing a spouse, older adults not only lose their mate but also the person who assisted them in managing the household and social activities. Depending on their roles in the family, one partner might not have the skills to perform certain tasks. For example, widows might need to learn how to manage the bills and make payments whereas widowers might need to learn how to take care of themselves and others depending on them.

In spite of the changes in gender roles, women remain in charge of caring for others and the greater part of their identity is still defined by their relations or connectedness to others. Because of this, some people have compared widowhood to retirement. Usually older women no longer take care of their children who in most cases are already adults, so by losing their husbands they completely lose their caregiving role.

Losing a spouse also increases the risk of health decline. This might happen because the loss of a spouse disrupts established health care practices and might also prevent the development of new ones. When widows or widowers are overwhelmed with the emotions and adjustments associated with grief, they might neglect their nutrition, daily exercise, and regular medical care. They are also at higher risk for falls or accidents because they pay less attention to their personal safety.

When helping and supporting bereaved adults, it is important to address not only the emotions related to the loss but also the practical changes that they need to implement in their daily lives so they can maintain their health and social involvement. Programs that provide self-care and health education, and information on how to access community resources help the bereaved to adjust to their new lives without their spouses, and to develop a new sense of confidence in their ability to take care of themselves.

In conclusion, aging can be seen as a challenging process with a higher risk of experiencing loss. The way older adults cope or adjust to the challenge of their multiple losses will vary depending on several factors including their overall health, gender, ethnicity, socioeconomic status and education. Professionals and the general public can be informed and educated to empower and advocate for older adults to redefine what growing old means and to reframe their losses as life changes that can be overcome successfully.

Related Topics

[▶ Activities of daily living](#), [▶ Ageism](#), [▶ Ambiguous loss](#), [▶ Bereavement](#), [▶ Body image](#), [▶ Death](#), [▶ Dementia](#), [▶ Depression](#), [▶ Early retirement](#), [▶ Empty nest syndrome](#), [▶ Grief and grieving](#), [▶ Isolation](#), [▶ Loneliness](#), [▶ Marriage](#), [▶ Memory](#), [▶ Retirement](#), [▶ Role loss](#), [▶ Social support](#), [▶ Vision](#), [▶ Widowhood](#)

Suggested Readings

Åberg AC, Sidenvall B, Hepworth M, O'Reilly K, Lithell H (2005) On loss of activity and independence, adaptation improves life satisfaction in old age: A qualitative study of patients' perceptions. *Qual Life Res* 14:1111–1125

Brennan M (2003) Impairment of both vision and hearing among older adults: Prevalence and impact on quality of life. *Generations* 27:52–56

Crews JE (2003) The role of public health in addressing aging and sensory loss. *Generations* 27:83–90

Guinther PM, Segal DL, Bogaards JA (2003) Gender differences in emotional processing among bereaved older adults. *J Loss Trauma* 8:15–33

Heine C, Browning CJ (2002) Communication and psychosocial consequences of sensory loss in older adults: Overview and rehabilitation directions. *Disabil Rehabil* 24:763–773

Hurd LC (1999) We're not old: Older women's negotiation of aging and oldness. *J Aging Stud* 13:419–439

Morgan Jr, James P (1994) Bereavement in older adults. *J Ment Health Counseling* 16:318–326

Lyme Disease

Lori B. Siegel

Lyme disease is the result of an infection from a tick bite that may cause many symptoms including a flu-like illness, heart problems, nerve problems, and arthritis. This disease may occur in any age group and the severity of the symptoms does not depend on age. The diagnosis may be considered late in people over age 50 because of concurrent medical conditions. Even a patient with known cardiac, neurologic, or arthritic conditions should be evaluated for Lyme if they have a worsening of their condition and the appropriate risk factors discussed below.

Lyme disease is an infection caused by a bacterium, *Borrelia burgdorferi*, which is carried by the adult deer tick. It begins slowly after a tick bite or because the bite is rarely noticed, it is suspected if there was potential exposure to ticks. Lyme disease has been reported throughout the United States and is associated with exposure to the white tailed deer. The ticks that spread Lyme disease are smaller than the classic dog tick. The peak times for infection are between May and November. Identification of a tick bite or early recognition of symptoms is the key to appropriate diagnosis and treatment.

Lyme disease is a multistage disease and may progress to involve many organs. The damage does not occur due to the direct tick bite, but rather from a nonspecific immune response to the infection.

Usually within 3 days to 1 month after a tick bite, people will develop a rash called erythema migrans (EM), which begins as a small red area and enlarges to a ring-like lesion with a pale center. This may be warm but is usually not painful and often goes unnoticed. The red ring around the rash is the active infection and through this phase, the infection enters the bloodstream and disseminates. When the bacteria spread, some people develop other rashes like EM. They also may develop a flu-like illness including headache, fatigue, fevers, chills, muscle pain, and joint pain. There is no indication for prophylactic treatment of a tick bite, unless these symptoms develop.

The later manifestations of systemic Lyme disease may occur weeks to months after the tick bite. If the initial infection is untreated, approximately 60% of people will develop arthritis. The Lyme arthritis usually involves the large joints and is symmetric. The arthritic flares are intermittent and although they may wane over time, some develop chronic arthritis. Fifteen percent of untreated patients develop neurologic sequelae of Lyme disease that includes inflammation of the central nervous system (such as meningitis and encephalitis), nerve root manifestations such as facial paralysis (palsies). Cardiac manifestations of untreated Lyme develop in 80% of the population and may present as a rhythm disturbance such as heart block, congestive heart failure, or an abnormal enlargement of the heart.

The diagnosis of Lyme is based upon a history of a tick bite with some clinical manifestations. In early Lyme, there is no need for testing if the history and rash are classical. In patients with nonspecific symptoms or an unclear history, serologic Lyme titer testing is helpful. These tests should be used with caution since many false positives may exist, which can cause great confusion.

The treatment of Lyme disease is best done early, but late Lyme disease may also be successfully treated. Oral antibiotics, such as doxycycline, amoxicillin, and cefuroxime are adequate in early disease. Intravenous antibiotics are best for the later stages or incomplete remission in early disease. The endpoint of treatment may be difficult since it may take up to 3 months for symptoms to diminish after a course of antibiotics. Serial titers are often not helpful because antibodies are still detectable long after the infection is eradicated.

The best treatment is to prevent infection by avoiding tick bites in endemic areas and minimizing exposed skin. The use of insect repellents and frequent tick “checks” and removal are also helpful in prevention. There is no indication for prophylactic treatment of a tick bite, unless symptoms develop. Although there was a vaccine for Lyme disease, it is no longer available because it was associated with vaccine-induced arthritis. Further investigation into other vaccines is ongoing.

Related Topics

[Chronic fatigue syndrome](#),
 [Fibromyalgia](#),
 [Rheumatoid arthritis](#),
 [Travel](#).

Suggested Readings

- Klippel JH (ed) (2001) *Primer on Rheumatic Diseases*, 12th edn. Arthritis Foundation, Atlanta, GA
- Klippel JH, Dieppe PA (1998) *Rheumatology*, 2nd edn. C.V. Mosby, St. Louis, MO
- Klippel JH, Dieppe PA, Ferri FF (2000) *Primary Care Rheumatology*. Harcourt, London

Male Reproductive Function, Aging and Testosterone Replacement

Derek Raghavan

The male reproductive system is composed of several elements including the central nervous system (brain), hypothalamus and pituitary (glands that regulate hormonal function), testicles, and the components that transport and metabolize androgens (male sex hormones). These elements are linked, and essentially cause the functioning of the testicles to produce testosterone and other sex hormones that produce male sexual characteristics and other functions. For example, male hormones are required for the production of sperm, male physical characteristics, and are even required in the production of some blood components, and they also contribute to bone metabolism. Details of testicular function are summarized elsewhere in this volume (“The Testis”).

With increasing age, testicular function often wanes, and it is common for older men to have lower blood concentrations of testosterone and other male hormones, such as those that arise in the adrenal glands. Around half the men aged 70 years and older have reduced levels of these hormones.

The effects of low androgen levels include loss of muscle mass and muscle strength, reduced libido and reduced ability to develop and sustain erection of the penis, reduced bone mass, increased osteoporosis, and an impaired sense of well being, often with depression.

Testosterone replacement has been used to improve the sense of well being and sexual function. In theory, this should also improve bone mass, and reduce the potential for developing osteoporosis. The most common indications for testosterone replacement therapy in the elderly include symptoms of hypogonadism or measurable testosterone deficit. However, as many elderly men suffer from benign prostatic hyperplasia (see “The Prostate”) or prostate cancer (see “Prostate Cancer”), testosterone replacement therapy has potential hazard as both conditions are quite sensitive to stimulation by male hormones, such as testosterone. Dehydroepiandrosterone (DHEA), a chemical derived

from the adrenal male hormone, androstenedione, is available in health food stores, and is often taken by elderly men as a supplement and stimulant. It is not at all clear that this is a safe practice.

There are several available preparations for testosterone replacement therapy, including injections, tablets, cutaneous patches, and a gel. Some physicians believe that it is safer to use short-acting preparations, in case of adverse effects, although patches and gels are often used for patients on long-established therapy. When on therapy, side effects should be monitored, including blood work to rule out abnormalities of blood count, liver function tests, and prostate-specific antigen (PSA) levels (a protein released by prostate cancer and by benign prostatic hyperplasia). Occasionally, testosterone replacement can lead to increased levels, and this may be associated with increased aggression and other abnormalities of behavior. Testosterone replacement therapy should only be used under the care of a physician.

Related Topics

- ▶ Benign prostatic hyperplasia, ▶ Prostate cancer, ▶ Testicular cancer, ▶ Testis

Suggested Readings

- Bacon CG, Mittleman MA, Kawachi I, Giovannucci E, Glasser DB, Rimm EB (2003) Sexual function in men older than 50 years of age: Results from the health professionals follow-up study. *Ann Intern Med* 139:161–168
- Harman SM, Metter EJ, Tobin JD, Pearson J, Blackman MR (2001) Longitudinal effects of aging on serum total and free testosterone levels in healthy men. *J Clin Endocrinol Metab* 86:724–731
- Swerdloff RS, Wang C (2004) The testis and male sexual function. In: Goldman L, Ausiello D (eds) *Cecil Textbook of Medicine*, 22nd edn. Saunders, Philadelphia, pp 1472–1483
- Wang C, Swerdloff RS (1997) Androgen replacement therapy. *Ann Med* 29:365–370

Suggested Resources

- www.ncbi.nlm.nih.gov
www.webmd.com

Malnutrition

Rajkumari Richmonds

Malnutrition is common in the elderly and may be broadly divided as marasmus or protein-energy malnutrition (PEM) or kwashiorkor. The term marasmus is derived from the Greek *marasmos*, meaning wasting or withering. It is a type of malnutrition caused by protein and calories. This can be compared to starvation. Kwashiorkor is caused by protein deficiency. Malnutrition includes both undernutrition, such as starvation, and overnutrition, or obesity. Malnutrition is often associated with mental disorders such as depression and cognitive decline as well as somatic disease. It is a major cause of functional decline and increases morbidity and mortality in the elderly. Not every individual age at the same rate. The elderly handle disease in ways that are different from younger adults. For instance, the elderly may have pneumonia without chest rales or an elevated temperature. When old age is reached, lifelong patterns, genetic factors, and outside factors makes great differences among people of the same chronological age.

Malnutrition may increase the body's susceptibility and decreases its resistance to infection. Patient's nutritional status before any infection determines the treatment outcome. The increased metabolism, and breakdown of tissues caused by infectious diseases can have a devastating effect in the malnourished individual.

Good nutrition plays a crucial role in keeping older people healthy. Many older people do not eat well. Malnourished patients who remain untreated literally waste away. For most patients this wasting and not the disease itself lead to expensive medical treatments. Treatment of malnourished patients starts with nutritional assessment before hospital admission. This single nutrition intervention will result in savings of millions of dollars by avoiding a lengthy hospital stay. Appropriate plasma and tissue levels of the fat-soluble vitamins, particularly A and E, help resist infection by maintaining the integrity and composition of the external cell membrane.

Causes of malnutrition include physiological changes of aging and psychosocial factors. The physiological changes of aging affect the overall nutritional status of older adults. These changes include altered thirst, poor dentition, difficulty in swallowing, gastrointestinal functioning, sensory losses, decreased

metabolic rate, anorexia, and early satiety. Pain, discomfort, or loss of appetite related to these changes may result in altered food choices and poor intake, with the resultant impact on weight status.

Among psychosocial factors, depression is the most common emotional disorder of later life. It often goes unrecognized or undertreated but it is believed to be present in 5–10% of community residents above age 65 and in 15–25% of long-term care residents. Loss of independence and functional ability are some of the greatest challenges to the older adult. Social isolation also places older adults at high risk for malnutrition. Loneliness has been related to dietary inadequacies. Financial limitations affect all aspects of the older person's life. Cultural factors and changes in cognition also affect the food choices that older adults make.

Protein-Energy Malnutrition (PEM) on Marasmus

Marasmus (PEM) occurs when food intake does not meet the needs of the body for protein and calories. It causes severe tissue wasting, excessive loss of lean body mass, loss of subcutaneous fat stores, and dehydration. The skin becomes dry, atrophic and loose, hanging in wrinkles especially around the thighs and buttocks. Anemia, hair changes, diarrhea, and signs of vitamin deficiencies may be present. The mental status of the person appears to be unaffected. This results in significant weight loss. However, visceral protein stores and function remain intact. Edema (swelling) is generally absent and serum albumin and transferrin or prealbumin levels are normal.

The deterioration in nutritional status occurs in a period of months to years. The usual causes of PEM are decreased oral intake and disease factors such as uncontrolled diabetes, gastrointestinal bleeding, malabsorption, diarrhea, or nephrosis.

The body systems adapt to malnutrition in complex ways. Chronic malnutrition leads to decreased body mass and fat stores. The hormone production of insulin and thyroid hormones decreases, resulting in a decline in basal metabolic rate (BMR). This is a compensatory mechanism for conserving organ function and protein utilization. With no food intake the weight loss is about one half of a pound a day. As the starvation status continues mineral loss leads to changes in the composition of the body fluid compartments. There is a decrease in the intracellular fluid and

an increase in extracellular fluid compartments. If the individual continues to be malnourished, loss of visceral protein occurs together with the loss of function of vital organs especially in the intestine, stomach, and liver. When the weight loss reaches 40% of ideal body weight, death occurs. Body mass index (BMI) is not considered a good indicator of nutritional status due to physiological changes in body composition that occurs in old age, such as a decrease in height.

Kwashiorkor or Protein-deficiency Malnutrition

Unlike marasmus the visceral protein store is severely compromised in protein deficiency or kwashiorkor. Persons with kwashiorkor do not appear to be emaciated as in marasmus due to generalized edema. In the absence of adequate protein intake, the body's fuel supply shifts from carbohydrate to fats and body reserves of protein and muscle tissues. The body retains sodium and fluids, which lead to edema. Serum protein level drops because of edema (dilution effect) and failure of protein synthesis in the liver. People with kwashiorkor are prone to frequent infection. Characteristic changes in the skin may occur. The dermatitis of kwashiorkor consists of areas of deep pigmentation and other areas of deeper pigmentation. Ulcers and deep cracks in the skin may be seen, compounded by lesions caused by vitamin deficiencies. Death usually results because of the immune system's inability to fight against infection. The wasting of the respiratory muscles decreases the ability to clear the lungs and can lead to death. This process is hastened if the patient has undercurrent illness that can cause metabolic stress.

Hair loses its luster and becomes sparse, thin, and soft. Anemia is commonly caused by a deficiency of protein, iron, vitamin C, vitamin B₁₂, and folic acid. The liver is always enlarged (hepatomegaly) and is infiltrated with fat. Lesions of the mouth and tongue due to vitamin deficiencies are seen. Apathy is present and the person is uninterested in their surrounding and is very irritable.

Reversal of malnourished status requires a careful balance of nutrition support, and tolerable exercise for developing muscle strength. Malnutrition can be treated with high caloric liquids. Nutritional supplement should be embedded in the interdisciplinary protocol of screening and treatment for malnutrition.

If the cause of weight loss is anorexia (lack of appetite) supplements may not be very effective. Supplementation may not significantly increase the energy intake and there is a corresponding decrease in the intake of protein, fat, water, and many other vitamins. Clinical guides to preventing and managing malnutrition in long-term care are based on three trigger conditions and are as follows:

1. Involuntary 5% weight loss in 30 days or 10% in 180 days or less
2. BMI less or equal to 21 kg/m²
3. Resident leaves 25% or more food uneaten at two out of three meals (assessed over 7 days based on a 2000 cal/day.)

These clinical triggers will result in a careful analysis of the potential causes of weight loss. If anorexia is due to a patient's inability to feed himself or herself or if the individual does not like the food being offered, changes can be made. But if anorexia is due to other causes, appetite stimulants may be recommended. Related issues such as time, consistency, taste, type of meals, mood, behavior, cognition, mobility, and social support should be addressed.

It is easier to prevent diseases than to cure them. The prevention program should include eating a healthy diet, physical activity, and moderation in the use of tobacco and alcohol.

The response to the treatment by the severely malnourished person is slow. Prolonged hospitalization may be necessary. Treatment needs to be approached gradually. An adequate amount of both proteins and calories are necessary for weight gain. If the diet during convalescence is inadequate, it will make the individual prone to infections. Complications and concurrent illness such as anemia, diarrhea, infections, dehydration, and vitamin deficiencies should also be treated. Potassium and additional fluids may be necessary if the diarrhea is severe.

Related Topics

[▶ Body mass index](#), [▶ Diet](#), [▶ Nutrition](#), [▶ Vitamins](#)

Suggested Readings

American Dietetic Association (1991) Nutrition intervention manual for professionals caring for older Americans. ADA, Chicago, IL

- Gazzotti C, Arnaud BF, Parello M et al (2003) Prevention of weight loss in older people during and after hospitalization results from randomized controlled trial *Age Aging* 32:321–325
- Henderson CT (1988) Nutrition and malnutrition in the elderly nursing home patient. *Clin Ger Nutr* 4(3):527–547
- Roberts SB (2000) Energy regulation and aging: Recent findings and their implications. *Nutr Rev* 58:91–97
- Schlenker ED (1997) *Nutrition in aging*, 3rd edn. Mosby, St. Louis
- Vellas BJ, Hunt WC, Romero LJ, Koehler KM, Baumgartner RN, Garry PJ (1997) Changes in nutritional status and patterns of morbidity among free-living elderly persons: 10-year longitudinal study. *Nutrition* 13:515–519

Mammography

Carol Wood · Elizabeth Cogbill · Edith Burns

The mammogram is an x-ray of the breast carried out in several views to maximize the ability to see abnormalities of the tissue on film. It is used both as a screening and diagnostic tool. It consists of compressing the breast between metal plates and using radiography to image the tissue. It has been described as uncomfortable or mildly painful but brief. Most large outpatient clinics and hospitals own a mammography machine and interpretation of the images is evolving into a subspecialty in radiology.

Mammography is the tool of choice in screening for breast cancer because of its comparatively higher rate of detection and cost-effectiveness, especially when correlated with clinical examination. It is more sensitive than self-breast examination or clinician-breast examination in screening for most types of breast cancer, detecting lesions well before they are palpable by the patient or physician, and before the cancer becomes invasive, which increases the chances for successful treatment. It is also the first-line diagnostic tool for evaluating previously identified abnormal physical symptoms and signs such as skin changes, palpable masses, and nipple discharge or retraction.

When used as a screening mechanism, mammography can detect breast cancer about 1.7 years before a patient or physician would palpate it on examination. This is a sizable window of time during which mammography may identify abnormalities in the breast for further evaluation. It can detect lesions 12 mm or larger, although sensitivity varies with age, ranging from 54% to 58% in women below age 40, increasing

to 81% to 94% in those over 65. Sensitivity is also affected by substantial variability in interpretation and reading accuracy among radiologists. Specificity is not quite as high, with about a 15% false negative rate, meaning that 15% of the cancers may not be seen usually due to location or masking by dense surrounding tissue, such as fibrocystic changes. Because older women are more likely to present with a mass rather than calcifications (seen more often in younger women) and because of age-related breast changes such as atrophy of adipose tissue, mammography is more sensitive in older women.

The optimal interval between screening mammograms is unknown, and practice varies widely. In the UK, a randomized study compared a screening interval of 1 year to the standard 3-year interval, enrolling women aged 50 to 62. The group undergoing more frequent screening was found to have more cancers of slightly smaller size, but the grade and node status were similar in both groups. The likelihood of diagnosing cancer was found to be highest with the first screening examination and dependent on age, decreasing in follow-up examinations.

Randomized trials have shown a 26% reduction in breast cancer deaths as a result of screening women between the ages of 50 and 74, an effect which may be greater among women aged 65 to 74 than those aged 50 to 64.

The radiation exposure from mammograms is very small. It would take about 200 mammograms to increase a woman's risk of adverse side effects such as cancer itself. While decreasing deaths from cancer is a result of the use of mammograms, identifying breast cancers at an earlier stage can allow options such as breast-conserving surgery and the patient may be able to avoid aggressive chemotherapy or radiation therapy.

Screening Recommendations

Several different expert panels and organizations have provided recommendations for the use of mammography to screen for breast cancer. While all agree that screening in women age 50 and older is beneficial, there is debate over the efficacy of screening women without a family history of breast cancer under the age of 49. Benefits of routine screening for breast cancer with mammography in this age group have not been solidly proven, though multiple studies have shown a modest decrease in breast cancer mortality with

Table 1
Summary of mammography recommendations

	USPSTF	AGS	NCI	AC OB/GYN	AMA	ACS	ACR
Age of initial screening	40		40	40	40	40	40
Frequency (years)	1–2	1–2	1–2	1	1	1	1
Recommendations for women greater than 70 years of age	Yes	Yes	No	No	No	No	No

screening in this age group. There is also disparity on recommended frequency of screening, and whether or not there should be a “stopping point.” This ambiguity makes the task of screening decisions for older women more difficult. Most of the expert groups agree that breast cancer screening should be continued as long as a woman has a life expectancy of at least 10 years.

• **Table 1** summarizes these recommendations.

The US Preventative Services Task Force (USPSTF) recommends screening mammography with or without a clinical breast examination every 1 to 2 years for women aged 40 and older. They state evidence is strongest for using the mammogram between ages 50 and 69. The task force does not make a specific recommendation of the course to take after age 70. The American Geriatric Society (AGS) recommends screening mammograms every 1 to 2 years for women until age 75. After that age, it is recommended every 3 years for women with a life expectancy of 4 or more years. The National Institutes of Health, National Cancer Institute (NCI), Breast Cancer Screening Forum recommends that screening for women above age 70 should reflect their general health and risk factors. The American Cancer Society (ACS), the American Medical Association (AMA), and the American College of Radiology (ACR) recommend annual mammograms beginning at age 40, but do not provide recommendations on frequency or age at which to stop screening.

Although the single greatest risk factor for breast cancer is age alone, older women with a family history of breast cancer, or current or long-term (>7 years) exposure to hormone replacement therapy (HRT) are at increased relative risk and many of these women need to be encouraged to continue routine mammography screening.

Related Topics

- Breast cancer
- Breast examination
- Cancer
- Cancer screening

Suggested Readings

- Peek ME (2003) Screening mammography in the elderly: A review of the issues. *J Am Women Assoc* 58(3):191–198
- U.S. Preventive Services Task Force (USPSTF) (2002) Recommendations and rationale screening for breast cancer. *Ann Intern Med* 137(1):344–346
- Walter LC, Eng C, Covinsky KE (2001) Screening mammography for frail older women: What are the burdens? *J Gen Inter Med* 16:779–784

Suggested Resources

- American Geriatrics Society (AGS) Position statement, breast cancer screening in older women, AGS Clinical Practice Committee (January 1, 1999); www.americangeriatrics.org/products/positionpapers/brstcncr.html
- Mammographic Screening for Asymptomatic Women, American Medical Association, Report 16 of the Council on Scientific Affairs; www.ama-assn.org/ama/pub/article/2036-2346.html
- National Cancer Institute: <http://www.cancer.gov/cancertopics/types/breast>

Managed Care Organization

Janet L. Lowder · Sandra J. Buzney · Lisa M. Montoni

A Managed Care Organization (MCO) is an entity that contracts to provide health-care individuals who are members of the MCO, often called “subscribers” or “enrollees.” Several types of MCOs exist: the Health Maintenance Organization (HMO); the Preferred Provider Organization (PPO); and the Point-of-Service plan. MCOs have increasingly become the norm in the delivery of health care services over the past 15 years

because of the high cost of health care. The goal of MCOs is to reduce the cost of health care by negotiating lower fees for health-care services, monitoring what types of treatments subscribers utilize, and reviewing the relative effectiveness of treatments when compared to their cost.

Most people with health insurance coverage in the United States participate in some form of MCO available through their employer. The employer pays the MCO plan a set amount of money in advance for an employee's health care and the employee pays a copayment. Instead of traditional fee-for-service health care, MCOs provide a network of providers employed by or under contract with it to provide services to the plan enrollees pursuant to a predetermined compensation arrangement between the MCO and the providers. The compensation arrangement may be based on a discounted fee-for-service rate or a set monthly fee per patient, called "capitation." MCOs perform regular utilization reviews to ensure that services are both medically necessary and cost efficient. The design of MCO plans includes financial incentives to encourage enrollees to obtain health care services from providers within their network.

Enrollees in an MCO plan must choose doctors or hospitals from the plan's network as part of a cost-control feature of the plan. A small number of plans will allow visits to providers outside the network, but the enrollee must pay more for those visits. Also, most plans require the MCO plan's prior authorization and referral from the primary care physician (PCP) in order for a visit to a specialist or nonemergency admission to a hospital to be covered by the plan.

The HMO, a subset of MCOs, provides prepaid medical services to enrollees through doctors and hospitals in a broad geographical area. The HMO may employ its own doctors to provide services to enrollees, or it may contract with groups of doctors on a monthly fee-per-patient basis. Generally, HMO enrollees experience more restrictions in medical care choices because patients are required to use participating physicians employed by or under contract with the HMO for all medical care except in the case of a medical emergency. However, HMOs typically result in fewer out-of-pocket costs or other benefits for the enrollee, such as lower copayments and deductibles and prescription drug coverage.

PPOs, another type of MCO, serve a distinct geographical area. The doctors, who make up the PPO network of providers contract with the insurance carrier to provide services at a prenegotiated, discounted

fee-for-service rate. PPOs retain the fee-for-service and freedom of choice aspects of traditional health-care delivery systems, and offer enrollees reduced health-care costs in exchange for using providers who have contracted with the PPO. Providers gain access to a broad patient base in return for discounting their fees. In addition to agreeing to specified fee schedules, providers are required to comply with certain utilization and review guidelines.

Unlike many HMOs, the PPO is never the actual provider of medical care. Some PPOs may employ a "gatekeeper" control over specialized care—payment for covered services which the PCP cannot provide is contingent on a referral from the PCP. The open panel PPO model, however, allows enrollees to have total freedom when selecting health care providers by permitting payment for care, even care from a provider outside the PPO, that is not contingent on referral from a gatekeeping physician. Enrollees who stay within the network of providers, however, are rewarded with lower deductibles and reduced or eliminated coinsurance payments for care given by in-network doctors and hospitals.

Point-of-service plans offer more flexibility to choose a physician than an HMO, but are more restrictive than a PPO. Point-of-service plans combine the gatekeeper and open panel models of PPOs, and reward enrollees who stay within the provider network with additional benefits.

MCOs have become a dominant force in the delivery of health care. Critics of managed care assert that cost-control is achieved by managing care in ways that lead to a lower quality of care. Without controls, many feel that developers of managed care products will continue to prioritize cost containment to the detriment of quality of care and accessibility to health care services. Contrary to this concern, however, is the argument that the MCO cost-containment efforts have allowed health care to remain affordable and accessible to a wider group of individuals.

Related Topics

➤ [Health insurance](#)

Suggested Readings

Freiber JP (1993) The ABCs of MCOs: An overview of managed care organizations. *Illinois Bar J* 81:584

Henry JF (1997) Comment, liability of managed care organizations after *Duke v. U.S. Healthcare*, an elemental analysis. *Cumberland Law Rev* 27:681

Iglehart JK (1994) Health policy report: Physicians and the growth of managed care. *New Engl J Med* 331:1167

Randall VR (1994) Managed care, utilization review, and financial risk shifting: Compensating patients for health care cost containment injuries. *University Puget Sound Law Rev* 17:1

Suggested Resources

Washington State Office of the Insurance Commissioner, A Consumer's Insurance Glossary, March 2002, <http://www.insurance.wa.gov/consumers/glossary.asp>

Marital Satisfaction

Aruna Tummala

Marriage has been described as the most important and fundamental human relationship because it provides the primary structure for establishing a family relationship and rearing the next generation. The desirability of marriage is reflected in surveys suggesting that 90% of Americans will choose to marry at some point in their lives. Studies indicate that people are generally happier and healthier when they are married. A good marriage provides individuals with a sense of meaning and identity in their lives.

Although marriage seems to be a highly desirable relationship, statistics indicate that marital satisfaction is not easily achieved. The high rates of divorce bear testimony to this fact. Between one half and two thirds of all marriages in the United States end in divorce. The experience of emotional bonds created by spouses through mutual relationship is significant for reaching the state of satisfaction (marital) and fulfilling personal needs. It is not surprising that researchers have been intrigued about the nebulous concept of marital satisfaction. Initial research focused on studying why marriages failed. This approach was abandoned in favor of studies that looked at what helped marriages succeed. Studies have looked at marriages of varying duration and have identified spousal characteristics, marital characteristics, and more recently marital interaction processes that contribute to marital satisfaction.

Numerous attempts have been made to identify the components of marital satisfaction. Fenell used a

consensus-building technique to narrow down a large list of marital characteristics to the ten most important ones in long-term successful marriages. These ten characteristics, in order from most to least important, were identified as: lifetime commitment to marriage; loyalty to spouse; strong moral values; respect for spouse as a friend; commitment to sexual fidelity; desire to be a good parent; faith in God and spiritual commitment; desire to please and support spouse; good companion to spouse; and willingness to forgive and be forgiven.

Marital Satisfaction in the Elderly

Among the social and demographic changes of the twentieth century, the spectacular increase in longevity has had a profound impact on the marriages of older people. The later decades of marriage, like the earlier ones, are marked by life events, which result in specific developmental tasks. Although there is individual variation in the ages at which these events occur, a typical pattern is that in their fifties a couple enters the post-parental years of marriage; in their sixties they anticipate and deal with retirement; and in their seventies they are likely to be faced with the prospect of separation through the death and chronic illness of one of them. Another new phenomenon faced by couples in their fifties is that of "the sandwiched generation." These couples now have interactions not only with their married children but also with their even older parents. These interactions may be a source of conflict or even of support for couples in their fifties.

So, what happens to marital satisfaction across the life span? Studies show that across cohorts (belonging to different life stages), marital satisfaction exhibits a curvilinear, U-shaped relationship with time as satisfaction is high at the outset (e.g., honeymoon period), dips in the middle years, and appears to rise again in later life. Does this reflect a sampling bias as troubled marriages may end in dissolution and hence are not even included in studies of long-term marriages? Not necessarily so, as long-term marriages although indicating stability, are not invariably satisfying to the partners.

Lauer studied 100 couples married for 45 years or more to elucidate factors associated with stable and satisfying marriages. The variables identified by couples as important to their marriages were: being married to someone they liked as a person and enjoyed being with; commitment to the spouse and to marriage; a sense of humor; and consensus on various

matters such as aims and goals in life, friends, and decision making. Husbands and wives were strikingly similar in their responses; thus, men and women perceive the same variables to be critical in the success of long-term marriages. Other studies indicate that in older couples, the resolution of conflict was less emotionally negative and more affectionate than in middle-aged marriages. Compared with middle-aged marriages, older couples evidenced reduced potential for conflict and greater potential for pleasure in several areas (including children), equivalent levels of overall mental and physical health, lesser gender differences in sources of pleasure, and marital interaction in older couples was associated with more affective positivity and lower physiological arousal.

Sexual Patterns and Its Relationship to Marital Satisfaction in the Elderly

Unfortunately there is paucity of research in this area. Marsiglio and Donnelly examined sexual behavior among married persons 60 years of age and older using data from the National Survey of Families and Households, which showed that about 53% of the entire sample (aged 60 years and older), and 24% (aged 76 years and older), reported having had sexual relations at least once within the past month. While respondent's age was significantly related to sexual behavior, gender or race were not influential variables. Litzinger and Gordon studied links between communication, sexual satisfaction, and marital satisfaction. They found that communication and sexual satisfaction independently predict marital satisfaction. However, significant interactions exist between communication and sexual satisfaction such that if couples are successful at communicating constructively, sexual satisfaction fails to contribute to marital satisfaction.

The marital relationship is one of the most important factors influencing the life satisfaction of the elderly. Marital happiness is a significant contributor to general sense of happiness. A satisfying marriage fulfills intimacy needs of the partners and enhances physical and mental health. However, elderly couples in today's era face new challenges associated with prolonged longevity. For instance, couples have to deal with deteriorating neurological disabilities, may have to be caregivers to spouses with dementia, and are faced with choices of admitting their spouse into nursing

homes and hospice care. Further research is required to study the influence of these factors on marital quality and happiness.

Related Topics

- ▶ [Coresidence](#), ▶ [Divorce](#), ▶ [Domestic partnerships](#), ▶ [Emotions](#), ▶ [Identity](#), ▶ [Marital status](#), ▶ [Marriage](#), ▶ [Sexuality](#)

Suggested Readings

- Brubaker TH, Kimberly JA (1993) Challenges to the American family. In: Brubaker TH (ed) *Family relations: Challenges for the future*. Sage Publications, Newbury Park, England, pp 3–16
- Fenell DL (1993) Characteristics of long-term first marriages. *J Mental Health Counseling* 15:446–460
- Gottman JM (1994) What predicts divorce? The relationship between marital processes and marital outcomes. Erlbaum Publications, Hillsdale, NJ
- Lauer RH, Lauer JC, Kerr ST (1990) The long-term marriage: Perceptions of stability and satisfaction. *Int J Aging Hum Dev* 31:189–195
- Litzinger S, Gordon KC (2005) Exploring relationships among communication, sexual satisfaction, and marital satisfaction. *J Sex Marital Ther* 31(5):409–424
- Marsiglio W, Donnelly D (1991) Sexual relations in later life: A national study of married persons. *J Gerontol* 46(6):S338–S344
- Rosen-Grandon JR, Myers JE, Hattie JA (2004) The relationship between marital characteristics, marital interaction processes, and marital satisfaction. *J Counseling Dev* 82(1):58–68

Marital Status

Kathleen Franco · John Franco · Mohammed Alishahie

Marriage, particularly long-lasting continual relationship, enhances physical and mental health. Even when one partner has a chronic physical illness, the benefits are substantial. Some couples can become closer after serious illness, especially if they remain optimistic, communicate clearly with one another, and demonstrate affection. In general, married persons are more likely than their nonmarried counterparts to be financially stable, have decent housing and adequate medical care, and less likely to have unhealthy behaviors.

Being married is also associated with more favorable health outcomes, such as greater functional recovery after hip fracture surgery and a better course of illness for many chronic conditions.

There is discrepancy in the literature about whether wives or husbands benefit more from marriage. Consistently married people do live longer than those who have experienced a dissolution or break-up even if the latter individuals remarried. Psychosocial factors in childhood may also impact the stability of marriage, and experiencing a parental divorce during childhood may predict inconsistent marriage as an adult.

Over 75% of men 65 or older are married while only about 40% of women are married in their later years. Women above the age of 65 are three times as likely as men to be widowed, and widowed individuals have lower morale than their married counterparts. Although this may continue over time, it is most intense immediately after the loss. After loss of their spouse to death, men are seven times more likely to remarry than are women who have lost their spouse.

People who divorce generally do so before the age of 65; 5% of men and women 65 years of age or older are divorced. Individuals who are older feel that divorce is more emotionally devastating than losing a job and similar to a major illness. If they do divorce later in life they worry about the impact on the children, similar to younger couples. When divorce occurs in an older couple, over 30% of the adult children are supportive, another 20% are accepting of the decision, but about 50% remain angry and upset.

Older women initiate divorce more often than men, with nearly 30% reporting physical or emotional abuse as the primary reason for divorce. Different values, marital infidelity, and alcohol or chemical dependency follow as lesser precipitants. Fear of being alone, not having adequate funds, and never finding another mate are of the greatest concern at the time of decision. About 50% report higher stress and 30% report depression after the end of the marriage. In addition, both depression and cognitive impairment are highly correlated with not being married in older age. Elderly couples presenting for marital therapy may not be taken as seriously as their younger counterparts. Approximately 30% remarry, but only 6% to the same person. Another 4% have sexual encounters episodically with the former spouse over the next few years. How the baby boomers will alter these statistics of more traditional seniors is not yet known.

There are some variations across elders of different ethnic or religious backgrounds. African Americans report that divorce has less impact than a major illness or loss of a job. Baptists report a brighter outlook than do other Protestants and Catholics.

There is twice as much psychological and physiological stress for caregivers of those with dementia than with any other chronic illness. People with dementia who are married are cared for at home for a longer period of time than their nonmarried counterparts. Most studies have found religious participation and similar religious backgrounds are associated with greater marital stability, higher life satisfaction, and improved health.

In conclusion, long stable marriages are beneficial to both physical and psychological well-being. Couples who remain respectful, committed, and affectionate generally cope with life's hurdles. Those few late life divorces that do occur are more likely initiated by an abused wife. A nurturing relationship permits the partner's greater likelihood of staying in their own home and a better course with most chronic illnesses.

Related Topics

▶ Divorce, ▶ Domestic partnerships, ▶ Loss, ▶ Marriage, ▶ Marital satisfaction

Suggested Readings

- Bennett K (2005) Psychological well-being in later life: the longitudinal effects of marriage, widowhood and marital status change. *Int J Geriatr Psychiatry* 20(3):280–284
- Cohen GD (1999) Marriage and divorce in later life. *Am J Geriatr Psychiatry* 7:185–187 [<http://www.ajgponline.org/cgi/content/full/7/3/185>]
- Dorval M, Guay S, Mondor M et al (2005) Couples who get closer after breast cancer: Frequency and predictors in a prospective investigation *J Clin Oncol* 23(15):3588–3596
- Eloniemi-Sulkava U, Notkola IL, Hamalainen K et al (2002) Spouse caregivers' perceptions of influence of dementia on marriage *Int Psychogeriatr* 14(1):47–58

Suggested Resources

- Montenegro X (2004) The divorce experience: A study of midlife and beyond. Executive Summary; <http://www.aarp.org/research/reference/publicopinions/aresearch-import-867.html>

Marriage

Anamaria Tejada

Among older adults' social relationships, marriage continues to occupy the central position and to have a strong positive influence on people's general sense of well-being. However, the dynamics of marriage have been affected by the changing social context. The constant transformation of gender roles over the past 50 years, the increased longevity of the population, and the changes in the workforce and the health care system, have all had an impact on marriage in late life. The increase in the divorce rate is another factor to consider. By the time people reach 60 years, approximately 50% of those who got married in their younger years will have a long-term relationship (of 20 years or more), while the rest will be divorced and remarried or divorced and remained single. In addition, a higher number of people are marrying later in life.

In spite of these social changes and the high divorce rates, marriage continues to be seen as one of the main sources of comfort and well-being throughout life. The marital relationship is the focal point of older adults' everyday life. It provides structure for daily activities and partners usually rely on each other to manage not only the household but also their engagement in social activities. The closeness, support, and intimacy that older adults find in marriage are unique, so much that when people no longer have this relationship they are at a higher risk for loneliness, isolation, depression, and multiple health problems. Married individuals usually report higher levels of morale, psychological adjustment, happiness, and life satisfaction than nonmarried ones.

Marriage has a documented protective effect on health. There is evidence suggesting that married people tend to live longer and experience less disease than nonmarried ones. It has also been found that married adults recover faster from serious illnesses than their nonmarried counterparts, and that they have a higher survival rate and longer survival time when faced with life threatening illnesses like cancer. Married individuals also report fewer somatic symptoms and seek less health services than unmarried ones. It is believed that these benefits are in great part the result of the social support that marriage provides to the spouses, but it has also been noted that marriage affords material or financial benefits that increase married

individuals' access to health care services. It has also been documented that the health benefits of marriage are significantly higher for married men than for married women.

Certain events in a couple's life, like retirement, have a serious impact on their relationship. Due to the changes in gender roles and the increase in dual-career couples, it is now more common than ever to have both spouses retiring at the same time. Whether it is only one or both spouses who retire, the couple faces a completely new daily routine. Once parenting and work no longer structure their lives, the couple has the freedom and the need to choose their daily activities and to organize their time in new ways. This new freedom can be positive for the relationship, giving the spouses more time to spend together and to reconnect. Either individually or as a couple, they can now pursue old interests or develop new ones; there is more time for leisure and social activities.

Retirement can also have a negative effect on marriage. It might bring financial hardships that lead to an increased sense of burden and stress. In addition, retirement forces some couples to face long term tensions and conflicts that were avoided for years thanks to work and other family responsibilities. In other cases, after retirement, men become more involved in household work, which up until then might have been the wife's main responsibility, especially if she did not work outside the home. This may create conflicts if women perceive their husbands' activities as an encroachment on their personal time and space. Women might also feel that men's increased time at home creates new forms of domestic work for them. Due to the multiple changes in their daily routines and activities, couples need some time to adjust after retirement, so they can adapt to the new situation and renegotiate and reorganize their roles at home and beyond.

In spite of the stress that retirement can bring to the marriage of older adults, most married couples at this age report high levels of satisfaction with their relationships. Satisfaction with the marital relationship usually contributes more to general well-being than satisfaction with any other relationship. The benefits of marriage are similar for men and women, but women benefit more from relationships with friends than do men, and men tend to depend more on their marriages for their overall life satisfaction than on any other relationship. This is congruent with the fact that men become more isolated than women when they lose

their spouse, and that they tend to remarry more often than women after the death of a spouse.

Women and men report similar levels of marital satisfaction, but women who are the caregivers in the relationship tend to express more ambivalent feelings, especially if the care they provide does not seem enough or is not appreciated. Then, being the caregiver might be experienced as a burden, create conflicts, and decrease satisfaction. In general, a stable and satisfactory marital relationship in late life offers a buffer to multiple life stressors.

Given its importance in the overall health and well-being of married couples, marital satisfaction is a concept that has received much attention from researchers and health providers. Marital satisfaction is a subjective concept developed by the married partners within a social context that defines their ideals and expectations. Older adults are usually more satisfied with their marriages than couples of any other age. Marital satisfaction tends to be high for young adults, decreases for the middle aged, and increases again later in life. Older adults often feel that their marriage has improved over time. Some believe that this observed higher marital satisfaction among older adults is the result of the current divorce rate; those couples who were dissatisfied with their marriages have already divorced before they reach retirement, so those who remain married are the ones with satisfying marriages.

Men's and women's priorities to determine their marital satisfaction are different; and it is commonly believed that men tend to feel more satisfied with their marriages than do women, whereas the relationship between marital satisfaction and overall happiness is stronger for women.

There are several theories that attempt to explain what factors contribute to marital satisfaction. One of these theories looks at the role of equity, equality, and reward level. Equity is defined as the subjective perception of balance between what a spouse contributes to and gains from the relationship. Older couples tend to perceive more equity in their marriages than younger couples. Equality is defined as the subjective perception that there is a balance in the benefits that both partners obtain from the relationship. Men tend to value equity more than women, whereas women prefer equality over equity. Reward level is the subjective perception of what a spouse gains from the relationship in terms of love, status, money, and assistance regardless of what the other spouse receives. Among the three factors, reward level is the one with

the highest association to marital satisfaction in later life. Equity, however, becomes less important to older couples than to younger ones. Older couples are not so interested in keeping a balance of their contributions and gains in the relationship, maybe because they feel that with older age they have less to contribute to the relationship due to loss in income and physical attractiveness. As long as they experience a high reward level from the relationship, they feel satisfied with their marriage and equity and equality become irrelevant. As people grow old in marriage, men's and women's priorities for their marital satisfaction become more similar compared to younger couples.

Health is another major factor that has a strong influence on the couple's marital satisfaction. Struggling with poor health lowers the spouses' psychological well-being. However for men, the relationship has been observed to be inverse; men who experience more health problems report greater satisfaction with their marriages. This could be explained by the fact that men who are frail tend to value more the care provided by their wives, and see their marriage as a protective factor in their lives. Women have lesser expectations of being cared for by men, given that men tend to die before women, so they expect adult daughters or daughters-in-law to care for them. This could also explain why men tend to report higher marital satisfaction than women. Men tend to overlook marital problems and hold on to the perception that their marriage is more positive than it really is. This mechanism has been called self-deception.

It has been observed that self-deception is a strategy commonly practiced by both partners to maintain satisfaction with their marriage. Older adults tend to have a positively biased perception of their marriage; they tend to hold on to positive memories of their life together as a way to cope with the stress of growing old. Couples use this strategy to minimize conflicts or tensions and to maintain a positive view of their relationship. However, this mechanism has been observed to work only for couples who express marital satisfaction, so it does not help a seriously troubled marriage. It is a protective, adaptive mechanism, especially helpful when the couple is enduring health or financial challenges.

In conclusion, marriage continues to be a strong positive influence in the lives of older adults and to contribute to their health and overall well-being. However, some adults, especially men, might neglect other relationships in favor of marriage, which makes them

more vulnerable if they lose their spouse. It is important then to encourage older couples to foster and maintain their lifelong friendships as a protective factor in the event of losing their spouse.

Related Topics

[Divorce](#), [Domestic partnerships](#), [Early retirement](#), [Empty nest syndrome](#), [Family relationships](#), [Gender role](#), [Informal caregiving](#), [Isolation](#), [Loneliness](#), [Loss](#), [Marital satisfaction](#), [Marital status](#), [Retirement](#), [Social support](#), [Widowhood](#)

Suggested Readings

- Antonucci TC, Lansford JE, Akiyama H (2001) Impact of positive and negative aspects of marital relationships and friendships on well-being of older adults. *Appl Developmental Sci* 5:68–75
- Lai H, Lai S, Krongrad A, Trapido E, Page JB, McCoy CB (1999) The effect of marital status on survival in late-stage cancer patients: an analysis based on surveillance, epidemiology, and end results (SEER) data, in the United States. *Int J Behav Med* 6:150–176
- O'Rourke N, Cappeliez P (2005) Marital satisfaction and self-deception: Reconstruction of relationship histories among older adults. *Soc Behav Personal* 33:273–282
- Phillipson C (1997) Social relationships in later life: A review of the research literature. *Int J Geriatr Psychiatry* 12:505–512
- Reynolds W, Remer R (1995) Marital satisfaction in later life: An examination of equity, equality, and reward theories. *Int J Aging Hum Dev* 40:155–173

Masculinity

Angela Pattatucci Aragón

Masculinity defies a simple definition. It is typically represented as a set of stereotypical characteristics that constitute an energy, an essence, or a state of being. But in this case the whole would appear to be greater than the sum of its parts. Furthermore, masculinity is historically and culturally specific, and varies between individuals. So, although we recognize masculinity when it is encountered, it is impossible to distill the interacting components into a single, unifying definition that can be applied in all situations.

The most commonly encountered representation of masculinity is best described by sex-role theory, which proposes that humans unconsciously integrate archetypal ways of behaving that are appropriate to their assigned sex from society's institutions (see "Femininity"). Sex-role theory characterizes masculinity as aggressive, rational, dominant, and objective, and organizes it as the polar opposite of femininity. However, life is not so simple. Instead, a majority of men and women in a given society at a particular point in time will endorse a hegemonic masculinity. This means that social processes are organized in cultures to maintain masculine power by ensuring that subordinate groups view male dominance as fair, reasonable, and in the best interests of society.

Despite varying standards of masculinity throughout history, it has always tended to define itself as different from and superior to femininity. In contemporary US culture, hegemonic masculinity is exemplified by physical strength and bravado, suppression of vulnerability, economic independence, authority over women and other men, and exclusive heterosexuality with associated objectification of women. The fact that few men actually embody all these qualities is of no consequence. US society supports hegemonic masculinity in its institutions.

Societies tend to value masculinity over femininity. This is exemplified by the extraordinary efforts in which couples engage throughout the world to ensure that they produce at least one son. Furthermore, societies expend tremendous amounts of energy to guarantee that most males do not stray into the feminine realm and will idolize hegemonic masculinity. Additionally, the stereotypical traits embodied within hegemonic masculinity also are not valued equally. For example, gay men may exemplify all the qualities of hegemonic masculinity, but because they fail on the most valued trait—exclusive heterosexuality—they are not considered *real men*.

Hegemonic masculinity reinforces the division of labor between males and females. Perhaps the most graphic example of this is that when men enter occupations dominated by women, such as nursing and elementary school teaching, they receive better salaries, get promoted faster, and are afforded more respect than their female colleagues. This disparity continues into old age, as men are typically better positioned to reap the benefits of a lifetime of wage-work. Therefore, despite all of the advances achieved through hard work

and dedication of feminists, power is still solidly within the realm of masculinity.

There is a growing body of academic scholarship on the study of masculinity, some of which suggests that masculinity, or the attempt to conform rigidly to hegemonic masculinity, can be unhealthy for men. Trying to be strong, unemotional, and independent can reduce health-seeking behaviors, such as cancer screenings and preventative health measures. Additionally, hegemonic masculinity is particularly invested in phallic authority, represented by the erect penis; therefore, normal variations and natural declines (with age) in penile control and responsiveness become anxiety-ridden deviations. Men are encouraged to take medications to correct this loss of “masculinity.”

The aging process presents a number of adjustments to masculinity that may be stressful for men. Physical factors such as decreased strength, endurance, and impotence require psychological adjustment. Similarly, role changes, such as retirement and the subsequent reduction or loss of income, can negatively impact a man’s self-image. Reconciliation between aging and masculinity may be easier, however, in cultures which revere and value older men.

Contemporary scholarship on men and masculinity also looks at how masculinity, as a gendered or sexed identity, is “performed” by subjects. Influenced by postmodern theory, this scholarship tends to emphasize agency and resistance, or the ways in which men and women can change the meaning and impact of masculinity. There is also an increasing awareness that hegemonic masculinity and “whiteness” (as in race or ethnicity) are related, and perhaps, constitute each other. These theorists argue that nonwhite men are typically excluded from hegemonic masculinity. Many traits that are considered “masculine” are also frequently used to describe “whiteness” (e.g., rational, civilized, dominant).

New movements have recently emerged that attempt to reject hegemonic masculinity in lieu of moving toward a more inclusive social framework. A notable example is the Mankind Project Network. This framework defines a mature masculinity as one that integrates archetypal representations of king, warrior, magician, and lover, and seeks to confront the destructive shadow side of each. For example, the warrior archetype consists of two opposite and equally destructive poles—the sadist and the masochist. A mature masculinity seeks to integrate the opposite

poles for each of the four archetypes and find a center between them. The Mankind Project Network relies on the use of ritual and rights of passage as a means of connecting men to their growth process and the expression of moral and ethical behavior within society.

It remains to be seen if these new masculine movements represent a true reform of hegemonic masculinity or if they merely are a new form of accommodation to women that will result in consolidating male dominance.

Related Topics

- ▶ [Femininity](#), ▶ [Feminism](#), ▶ [Gender](#), ▶ [Gender role](#), ▶ [Homosexuality](#)

Suggested Readings

- Calasanti T, King N (2005) Firming the floppy penis: Age, class, and gender relations in the lives of old men. *Men and Masculinities* 8(1):3–23
- Connell RW (1999) *Masculinities*. University of California Press, Berkeley, CA
- Di Piero T (2002) *White men aren't*. Duke University Press, Durham, NC
- Eng D (2001) *Racial castration: Managing masculinity in Asian America*. Duke University Press, Durham, NC
- Moore RL, Gillette D (1991) *King, warrior, magician, lover: Rediscovering the archetypes of the mature masculine*. Harper, San Francisco, CA
- Pattatucci AM (1998) *Women in science: Meeting career challenges*. Sage Publications, Thousand Oaks, CA
- West C, Zimmerman DH (2000) *Doing gender*. In: Kimmel MS (ed) *The gendered society reader*. Oxford University Press, New York, pp 131–149

Massage

Susan Paparella-Pitzel · Ellen Z. Anderson

“Massage” is derived from the Arabic word “mass” meaning “to press” and has been defined by Westland (1993) as “the aware and conscience manipulation of soft tissues of the body for therapeutic purposes.” Many ancient cultures developed various systems of

massage to promote health and healing. Contemporary approaches of massage have included bodywork techniques such as strain–counterstrain, myofascial release, craniosacral therapy, shiatsu, acupressure, Rolfing, and applied kinesiology.

Some may consider massage to be a luxury, a form of self-indulgence to deal with tension and feel more relaxed. Others may think of massage as a way to manage more specific conditions such as pain, swelling, scar tissue adherence, and muscle or tendon tightness. Whether recreational or therapeutic, knowing and distinguishing between the different benefits that can be derived from various massage approaches can help consumers to determine the best intervention for their given condition or goal. Persons will also find it helpful to be familiar with the wide range of practitioners who are skillful in applying massage for a variety of different purposes and conditions. Examples of such practitioners include physical therapists, nurses, chiropractors, osteopaths, athletic trainers, and massage therapists.

For the purposes of this review, massage will be limited to classical western massage, which includes techniques that have ancient roots, but have been used traditionally in Europe and the United States since the nineteenth century. The application of massage may produce multiple or simultaneous effects. The benefits of massage and the effects of massage have been well described in the scientific literature, and are summarized in [Table 1](#).

Persons should be aware that the effects depicted in [Table 1](#) do not necessarily occur with every massage session and individual results may vary based on age, health status, and receptivity. Consumers, therefore, should be clear about the benefits they are hoping to achieve through massage. It is recommended that a person choose a practitioner who can not only examine a client's status and is skillful in applying massage techniques, but also able to determine if massage will help the client achieve his or her goals.

The most reported benefit of massage is in the area of stress reduction and health promotion. Stress can be defined as a general feeling of fatigue and tension. Psychological consequences of stress can include decreased coping behaviors and alteration of mood patterns. Physiological changes associated with stress include high blood pressure, increased respiratory rate and heart rate, changes in levels of glucose, cortisol, adrenaline/noradrenaline, and alterations in blood flow rates to muscle.

Table 1

Effects and benefits of massage

Effect	Description	Benefits/Outcomes
Mechanical	Movement of body fluids such as blood and lymph; movement of soft tissue such as muscle, scar, tendons	↓Edema ↓Swelling ↓Pain ↑Flexibility of tissues ↑Mobility
Physiological	At the cellular level, increase flow of nutrients and removal of waste products	↑Mobility ↓Edema ↓Swelling ↓Pain ↓Muscle spasm
Psychological and emotional	Promotion of relaxation, decreased anxiety, decreased depression	Relief of pain Relief of stress Release of tension Increased body awareness
Immunological	Enhance immune function and improved cell function	↑Relaxation ↓Anxiety ↓Pain ↓Cortisol

In addition to cognitive and behavioral therapies, effective stress management often includes massage as a strategy to promote relaxation by heightening body awareness and increasing sensory feedback. In several studies, massage was demonstrated to be effective in reducing both hypertension and rapid respiration.

Anxiety and depression are conditions that are distinct from stress, but frequently accompany stressful situations. Symptoms common to anxiety are muscle tension, palpitation, sweating, and insomnia. Symptoms common to depression include decreased concentration, irritability, and insomnia. Often a combination of symptoms is presented. As anxiety, depression, or stress become chronic, men and women are likely to respond to muscle tension, pain, and fatigue with abnormal sitting and standing postures as well as changes in movement patterns. Massage would then be used as a tool to produce the additional changes needed for proper body alignment as well as the necessary physiological and psychological changes.

Researchers have investigated massage as an intervention for depression, sleep disorder, and abnormal

behavior in adults with dementia and Alzheimer's disease (AD). In these studies, massage appears to be helpful in reducing depression and anxiety and improving relaxation. Reduction in agitation and disruptive behaviors during activities of daily living is also noted. The research suggests that massage for adults with dementia and AD can be administered by a trained practitioner, a family member, or a caregiver.

Older adults can suffer from reoccurring tension and migraine headaches, which may or may not be associated with stress. Several researchers have demonstrated that massage, when administered as part of a pain management regimen, is beneficial for reducing the severity and duration of headaches. Although the mechanism of how massage can affect headaches requires additional investigation, researchers suggest that massage can directly affect the soft tissue impairments that lead to abnormal muscular tension and irregular blood flow patterns commonly found with headaches and migraines.

A comprehensive pain management treatment program for conditions such as rheumatoid arthritis, joint and back pain in older adults often includes rest, exercise, massage, heat, cold, patient and family education, prescribed medications, and psychosocial supports. Researchers suggest that clients achieve the best results when a combination of medication, exercise, and massage is implemented. Clients should outline their desired effects (▶ [Table 1](#)) and seek practitioners who can integrate various strategies and explore appropriate options for reducing pain and improving function.

The management of scar tissue also requires a comprehensive treatment plan. Whether the scar is from surgery, traumatic injury, or the consequence of a burn the scar will benefit from mobilization through massage. It is believed that massaging scar tissue will encourage improved alignment of collagen fibers, allowing the scar to soften in appearance and become more flexible. Scar tissue can bind down and limit the range of other tissues or underlying organs. For example, massage to a postsurgical scar from a knee replacement surgery can facilitate increased mobility of the tissues over the knee cap and promote increased range of motion at the knee. Unfortunately, massage does not appear to produce changes in subcutaneous fat distribution, cellulite, or change in body contours. To maximize the benefits realized through scar tissue mobilization, exercise, proper stretching, and thermal modalities may also be necessary.

For active older adults seeking an enhanced sense of well-being and general wellness, recreational massage can be complement to a healthy lifestyle. Although a massage after heavy work or intense exercise may bring relief, researchers are still uncertain about the specific mechanisms involved and possible long-term benefits. Nevertheless many recipients will often report a sense of calm and relaxation following a massage. This feeling may be due in part to the massage and in part due to the time spent away from one's hectic day or life. Regardless, a regular or occasional recreational massage can be helpful in promoting a healthy lifestyle.

The benefits of massage have been well documented in the scientific literature. To reduce stress and improve overall health, men and women should consider working with a practitioner who can administer therapeutic massage as part of a health and wellness program. Regardless of one's condition, however, it is important to find a practitioner who can examine your condition and assist you in determining if massage will help you to reach your desired outcome or goal.

Related Topics

▶ [Anxiety disorder](#), ▶ [Depression](#), ▶ [Pain](#), ▶ [Pain management](#), ▶ [Stress](#)

Suggested Readings

- Freeman LW, Lawlis GF (2001) *Mosby's complementary & alternative medicine: A research-based approach*. Mosby, St. Louis, MO
- Giovanni DD, Wood E (1997) *Beard's massage*. W.B. Saunders Company, Pennsylvania, PA
- Holey E, Cook E (1997) *Therapeutic massage*. The Bath Press, Great Britain

Mastectomy

Elizabeth Cogbill · Carol Wood · Edith Burns

The term "mastectomy" is defined as the surgical removal of all or part of a breast, sometimes including excision of the underlying pectoral muscles and regional lymph nodes; it is usually performed as a treatment for

breast cancer. Surgical diagnostic evaluation, staging, and treatment have evolved as imperative parts of breast cancer management over the past several decades.

Surgical Options

At one time, radical mastectomy was the primary form of surgical treatment if a breast tissue abnormality was detected. This procedure involves removal of the breast, overlying skin, pectoralis major and minor muscles, and the axillary contents. The modified radical mastectomy is a less extensive surgery than the radical mastectomy, involving complete removal of the breast tissue and underlying fascia of the pectoralis muscle, and some of the axillary nodes.

Another type of mastectomy is called a segmental mastectomy, in which the cancerous breast tissue and a larger area of normal breast tissue around it are removed. Lymph nodes under the arm and the lining over the chest muscles below the tumor may also be removed. The least invasive approach is breast-conserving surgery (BCS), which involves removal of the tumor along with surrounding noncancerous skin. Excision of the least amount of breast tissue that can be spared is the goal of this procedure. The goal of these surgical procedures is excision of a breast mass to remove all cancerous tissue, as well as circumferential noncancerous tissue, or “margins.”

Recommended Treatments

Recommendations for a particular surgical approach and subsequent adjuvant therapy depend in part on the histological type of cancer, with the type of adjuvant therapy also dependent on the success of the surgical excision. For example, ductal carcinoma in situ (DCIS) is the early, precancerous condition in which abnormal cells are found in the lining of a breast duct and have not yet spread outside the duct. In the treatment of DCIS, current guidelines include radical mastectomy or modified mastectomy as a surgical option. However, in recent years, the use of mastectomy to treat DCIS is being replaced by breast-conserving treatment plus irradiation. There are no randomized studies comparing the two approaches. Separate trials of each approach have yielded comparable results for recurrence and mortality. Recurrence of invasive DCIS is reduced from 13.4% to 8.2% with either

surgical approach alone, and to 3.9% with addition of radiation. This benefit was seen for all subgroups of patients, including women over 70. The long-term studies demonstrated a 1% death rate from breast cancer after 8 years. The combination of BCS and hormonal treatment with tamoxifen, a nonsteroidal estrogen antagonist, has shown similar benefits.

Treatment recommendations for Stage I, II, IIIA, and operable IIIC breast cancer also include mastectomy. In the case of invasive disease, separate procedures are advised for diagnosis/staging and treatment. The presence of certain characteristics such as positive axillary nodes (cancer cells in the lymph nodes of the armpit), extensive intraductal involvement, a palpable lesion (i.e., a lump large enough to feel on examination), and lobular histology (cancer cells arising in the milk-producing glands) are less likely to result in residual malignancy or to recur if more extensive excision is performed. Current recommendations have yielded similar results for recurrence rates and mortality, and are comprised of the following options:

1. BCS plus radiation
2. Mastectomy or modified mastectomy
3. Mastectomy with reconstruction (immediate or delayed)

BCS is inadvisable for multifocal disease (breast cancers in which there are multiple tumors arising from the original cancer) or for individuals with collagen–vascular disease (a group of conditions in which the immune system reacts against collagen, a component of connective tissues, such as tendons, bone, and vascular structures). In other cases, the procedure ultimately chosen is a function of patient preference. Recent meta-analyses comparing radiation therapy after surgery to surgery alone have revealed no clear differences in overall survival at 20 years. The decrease in breast cancer deaths in the radiation group may have been counterbalanced by an excess of deaths from other causes. Women with node-positive breast cancer who receive radiation therapy appear to have a better survival rate.

Breast Cancer Recurrence

The rate of local breast cancer recurrence or residual disease following surgery alone is significant, with an average as high as 15% in some studies. Postsurgical radiation therapy significantly delays and reduces the

risk of local recurrence when combined with any of the described surgical procedures. Postsurgical hormone therapy also reduces recurrence rates, both with and without radiation treatment. The more conservative surgical approaches have yielded comparable or superior survival rates especially when combined with adjuvant therapies.

Risk

Mastectomy is not without risk, though most women recover with no complications. The risks of mastectomy are the same as the risks of any surgery, including bleeding, infection, and reactions to anesthesia or medications used during the surgery. Some women experience a condition called lymphedema following mastectomy, in which the arm on the mastectomy side swells. This occurs rarely and only after a mastectomy involving lymph node removal.

Women at high risk of developing breast cancer (those with known breast cancer-related genes such as BRCA1 or BRCA2) can opt to undergo a prophylactic mastectomy, or removal of the breasts, before detection of suspicious lesions. Women found to have certain types of breast tissue abnormalities are also at high risk for developing breast cancer, and should be given the option of prophylactic mastectomy as well. The two types of abnormal breast tissue findings for which this treatment option is considered are called atypical hyperplasia and lobular carcinoma in situ (LCIS). The decision to undergo a prophylactic mastectomy should be made by the individual at risk. The patient should be given information about all of her options as well as sufficient time and counseling before making a decision. Women contemplating a prophylactic mastectomy should know that breast cancer can still possibly occur following the procedure, despite apparent complete removal of breast tissue. This information should be presented to the patient before her decision.

Mastectomy and the Elderly

Overall, surgical treatment of breast cancer should be more dependent on tumor characteristics and staging than on patient characteristics such as age. Survival and freedom-from-recurrence rates are similar in women aged above 65 compared to those younger

than 65. In older women with breast cancer, mastectomy options should be discussed and selected on an individual basis. Recovery time and pain, as well as cosmetic results, are all important variables for women to consider when mastectomy is presented as the primary treatment option.

Related Topics

- ▶ Breast cancer, ▶ Breast examination, ▶ Cancer, ▶ Cancer screening, ▶ Mammography

Suggested Readings

- Early Breast Cancer Trialists' Collaborative Group (2000) Favourable and unfavourable effects on long-term survival of radiotherapy for early breast cancer: An overview of the randomized trials. *Lancet* 355(9217):1757–1770
- Liljegren G, Holmberg L, Bergh J et al (1999) 10-year results after sector resection with or without postoperative radiotherapy for Stage I breast cancer: A randomized trial *J Clin Oncol* 17(8):2326–2333
- Veronesi U, Cascinelli N, Mariani L et al (2002) Twenty-year follow-up of a randomized study comparing breast-conserving surgery with radical mastectomy for early breast cancer *N Engl J Med* (347):1227–1232

Suggested Resources

- American Cancer Society, "Surgical procedures for breast cancer;" www.cancer.org.
- Breast Cancer Online; www.breastcancer.org/
- National Cancer Institute, Breast Cancer Treatment; <http://www.cancer.gov/cancertopics/pdq/treatment/breast/HealthProfessional/>

Masturbation

Sana Loue

Masturbation refers to the manual excitation by oneself or by another person of an individual's sexual organs, often to orgasm. Masturbation activities can include only manual stimulation, or may be augmented by viewing pornography or by using any of various

forms of autoeroticism, such as sex toys or costumes. Some individuals are able to achieve orgasm only through masturbation. Masturbation of oneself or one's partner can be a healthy component of a sexual relationship.

Masturbation often begins in adolescence or earlier and is believed to decrease in frequency with advancing age. This decrease may be due to any of several factors including the availability of a regular sexual partner who is willing and able to engage in intercourse, the effect of various medications on sexual functioning, and/or the development of physical disabilities that limit the ability to engage in sexual activity.

Masturbation has been found to relieve stress and depression. Claims have been made that masturbation is responsible for any number of human ailments including "madness," blurred vision or blindness, headaches, unattractiveness, nymphomania, and an inability to feel desire for members of the opposite sex, but there is no medical or scientific evidence for these assertions. In past eras, however, such beliefs provided the basis for medical "treatment" of masturbation, which included clitoridectomy (the removal of the clitoris) or clitoral cauterization (a procedure to eliminate sensation in the clitoris) in women or the use of certain drugs in men to prevent sexual arousal. Individuals raised in conservative traditions that prohibit masturbation may, however, experience feelings of guilt. Additionally, frequent masturbation may result in temporary soreness and, in men, a temporary reduction of the volume of ejaculate.

Masturbation is also the safest of all sexual practices, apart from complete abstinence from any sexual activity, because it involves the least risk of pregnancy and of transmitting disease, such as syphilis, gonorrhea, HIV, or other sexually transmitted diseases. It is important when sharing toys for masturbation that the toys be cleaned properly to avoid sharing infections. The sheathing of sex toys with a condom or dental dam has also been recommended in order to reduce the absorption of bodily fluids into the material in order to reduce further the risk of transmitting disease between users of the toys and to reduce the possibility that an individual who had a sexually transmitted disease will unknowingly reinfect himself or herself. Fingers and toys should not be moved between the mouth, vagina, or rectum without first cleaning them.

Many religious faiths maintain that masturbation is sinful. In some faiths, this belief stems from the use of coitus interruptus by Onan in Genesis:

- ▶ And Onan knew that the seed should not be his; and it came to pass, when he went unto his brother's wife, that he spilled it on the ground, lest that he should give his seed to his brother. And the thing which he did displeased the Lord: wherefore he slew him also (Genesis 38: 7–9).

The term "onanism," once used to refer to the practice of masturbation, derives from this passage. Thomas Aquinas, a theologian of the Catholic Church, classified masturbation as an "unnatural vice," placing it the same category as zoophilia, masturbation, pedophilia, and nonprocreative sex.

A significant amount of slang has developed around masturbation. A new slang term arose following the forced resignation of the former Surgeon General of the United States, Dr. Jocelyn Elders. Because she lost her position after mentioning the possibility of including masturbation in school curricula, the act of male masturbation has become known as *firing the surgeon general*.

Related Topics

- [Sexual behavior](#), • [Sexuality](#)

Suggested Readings

Lacqueur TW (2003) *Solitary sex: A cultural history of masturbation*. Zone Books, New York

Medicaid

Beth E. Quill

Medicaid was established in 1965 through the Title XIX of the Social Security Act. This federal–state program was developed to finance health care for low-income persons, specifically *the categorically needy and the medically needy*. Categorically needy are those receiving Aid to Families with Dependent Children (AFDC) (now Temporary Assistance for Needy Families) and those who receive Supplemental Security Income (SSI) because they are aged, blind, or disabled.

All states must cover categorically needy. The medically needy are those who have enough money to live on, but not enough to pay for medical care. The link to cash assistance is a defining characteristic of the program and makes this an entitlement program.

Financed by general tax revenues, the Medicaid program is a cost sharing program between the states and the federal government. The federal government contributes roughly 57% of the cost and states pay the balance. The eligibility and benefit structures are determined by each state. In particular, the state defines the scope, amount, and duration of services. Each state defines the eligibility for classification as medically needy, for example. A state Medicaid program must provide the minimum services: (a) inpatient and outpatient hospital services; (b) skilled nursing facilities; (c) physician services; (d) home health care; and (e) early and periodic screening, diagnosis, and treatment (EPSDT) of children under age 21 who are eligible. Pregnant women and children must be provided at no cost to the beneficiary. Dental services, prescribed drugs, eyeglasses, intermediate care facilities, and other services are optional services and states may offer any or all of these. Deductibles (a set amount the patient must pay before Medicaid pays) are not permitted and co-pays (a percentage of charges paid by the patient) generally do not apply. Eligibility for cash assistance is also defined by the state and determines which parents in families can enroll in Medicaid, although most recipients do not receive cash assistance.

Medicaid provides coverage to many of the sick and disadvantaged in the society. Children and their parents constitute the majority of the program's beneficiaries (73%) but account for only a quarter of the spending. Individuals with disabilities and older people who are poor (or the dually Medicare and Medicaid eligible) also receive services through Medicaid. This group of beneficiaries incur the highest per-capita expenditures, and consume disproportionate amounts of Medicaid dollars. Medicaid covers 40% of all poor individuals, 50% of all low-income children, and one in six Medicare beneficiaries. Medicaid's role as a primary source of long-term care, gap coverage for Medicare, and major source of coverage for the disabled is likely to continue with the increasing growth of the elderly population.

The costs of Medicaid have risen through a combination of increased enrollment (from 4 million in 1966 to 47 million in 2002) and medical inflation. Total health care expenditures have had the fastest growth

since 1991 and have created significant challenges for the federal and state governments in delivering Medicaid services. State-funded Medicaid spending increased by 11% from fiscal year (FY) FY2000 to FY2001. Thirty-eight states reported that Medicaid spending exceeded budgeted amounts (FY2001). Declining Medicaid revenue and increased Medicaid spending created budget gaps in 43 states. State Medicaid expenditure increases are most notably due to prescription drugs, enrollment increases, increased cost, and use of medical services and provider fees and long-term care expenses. Selected actions by government intended to address these concerns have influenced the benefits available to Medicaid beneficiaries. In the early 1990s, states concerned about the growing uninsured in their states, submitted applications for waivers under Section 1115 of the Social Security Act. This allowed states flexibility in modifying eligibility, payment methods, and other program characteristics, including enrollment of beneficiaries in managed care plans, as an attempt to reduce costs and accommodate increasing enrollment. Managed care, with its focus on cost containment and provision of services, was an attractive approach for the Medicaid program. Most states developed Medicaid Managed Care Programs for their beneficiaries. In 2002, more than 50% of Medicaid beneficiaries were enrolled in managed care arrangements with 40% enrolled in health maintenance organizations (HMOs) and prepaid health plans.

Access to health care through the Medicaid program is comparable to private insurance for low-income populations. Further, Medicaid has been a "gap" insurance, and a safety net program for the sickest and the frailest in the society. Medicaid provides coverage for mental health and substance abuse services, expensive drugs for treatment of AIDS, and rehabilitation services not covered by private insurance. Medicaid pays for 44% of nursing home expenditures, one sixth of drug costs, and one half of state mental health services. Almost all nursing home, intermediate care facilities, mental and home health care expenditures are on behalf of the elderly and disabled. This group accounts for 85% of drug expenses and more than one half of inpatient and outpatient services and one half of physician expenses. While Medicare is an essentially universal program for people above age 65, it has substantial gaps in coverage: the near absence of long-term care; the limitation of drug coverage; and the existence of cost-sharing provisions place burdens on low-income elderly.

The Medicaid program fills the gaps for those with dual coverage (Medicare and Medicaid eligible). Beneficiaries have full Medicaid services as a supplement to Medicare and therefore have long-term care and prescription drug coverage. As the population ages, long-term care is expected to quadruple by 2050. Medicaid is currently the largest payer of long-term care, and increasingly, elders become eligible by “spending down” their resources to qualify for the Medicaid long-term care provisions. While most of the expenditures are for nursing home services, high costs and preference for many individuals to stay in their homes have led states to expand their coverage for home and community-based services. A recent federal action, The Medicare Prescription Drug Improvement and Modernization Act of 2003, provides a transition from Medicaid prescription drug program to Medicare Part D effective January 1, 2006. Medicaid beneficiaries will then have their drug expenses, as well as assistance with Medicare costs covered. Despite these changes, the process of eligibility and documentation requirements poses administrative barriers for many elderly. Such barriers are considered to have been responsible for low rates of participation of low-income elderly individuals in the Medicaid program.

Medicaid is noted to be a successful program for the poor and the elderly. Yet the reliance upon the state and federal economy creates vulnerability for the beneficiaries. In more prosperous times, benefits across states may vary less and individual programs may begin to address the needs of beneficiaries. In times of economic distress, however, benefits may be restricted through eligibility, cash assistance, and scope of services or duration of benefits. Public health challenges include sustaining critical health services for the elderly, controlling expenditures, and creating a fit between Medicaid and other health plans. Reform of Medicaid and minimizing the state-to-state variability of services have been a focus of public policy debate for the last decade and will be on the health care agenda for the foreseeable future.

Related Topics

- [Access to health care](#), ➤ [Federal poverty level](#),
- [Health insurance](#), ➤ [Health maintenance organizations](#),
- [Long-term care](#), ➤ [Managed care](#), ➤ [Medicare](#),
- [Nursing home](#)

Suggested Readings

- Kovner AR (1990) *Health care delivery in the United States*. Springer, New York
- Medicaid Comes of Age (2003) *Health Affairs* 22(1):7–277
- Novick LF, Mays GP (2001) *Public health administration: Principles for population-based management*. Aspen Publishers, Gaithersburg
- Raffel MW, Raffel NK (1994) *The U.S. health care system: Origins and functions*. Delmar Publishers, Albany, NY

Medical Imaging

Jyoti Aneja · Ashish Aneja

Medical imaging underwent a revolution in the twentieth century and is rapidly becoming more patient-friendly and efficient. In general, two types of medical imaging exist and from the layperson’s perspective, the differences are important to know. Medical imaging can be x-ray-based, which is a powerful beam that penetrates the body and can be associated with side-effects if the exposure is sustained over long periods of time. Most people (except pregnant women) need not be concerned about this aspect because radiation exposure from a single x-ray film is not sufficient to result in any damage. X-ray-based medical imaging consists of plain x-rays, special x-rays including tomograms, contrast-based x-rays, fluoroscopy, computerized axial tomography (CAT/CT) scans, and bone-density measurements. Non-x-ray or nonradiation-based imaging techniques consist of ultrasonography and magnetic resonance imaging (MRI) scanning. Positron emission tomography (PET) and other nuclear imaging techniques that utilize radioactive substances also pose some radiation exposure.

Ultrasonography

Ultrasound is a technique that utilizes very high frequency sound waves (beyond the audible limit) to create images from inside the human body. This involves no radiation, is noninvasive, painless and widely available. The preparation is minimal and depends on the purpose of the scan. For upper abdominal scanning

(liver, spleen, pancreas, gallbladder) patients are instructed to fast (eating and drinking) for about 12 h. For lower abdominal scans, patients are required to drink plenty of water for 1 to 2 h before the procedure in order to have a full bladder, thereby displacing the air-filled intestinal loops out of the way and creating a clearer image. Ultrasound is most commonly utilized for imaging organs within the abdomen such as the liver, the gallbladder, the pancreas, the kidneys, the urinary bladder, the uterus, and the ovaries. Ultrasound can help a physician determine the source of pain or infection in the abdominal cavity and also in the evaluation of superficial structures like the thyroid gland and the scrotum (testicles) for any abnormal growths or cysts.

To start the procedure, a clear gel is applied to the skin surface for better sound conduction and therefore better quality images. A transducer, which acts as a generator and detector of sound is pressed firmly against the skin, is used to send high-frequency sound waves through body tissues, which are reflected back as echoes. Once the transducer receives the reflected sound waves, they are processed into pictures by a computer. The examination usually takes less than 30 min.

The scan that produces images of the heart is called an echocardiogram. It helps to determine the thickness and movements of the heart wall. It also assesses the function of the heart valves and blood flow across these valves. Another major ultrasound type is the Doppler examination that examines blood flow through major arteries and veins. It can identify blood clots in leg veins (deep vein thrombosis) and blood flow through arteries of the legs, neck, and the brain. A Doppler examination requires the patient to abstain from cigarettes and tobacco for 2 h before the test since nicotine can constrict blood vessels. Ultrasound is often utilized as an aid to invasive procedures such as removal of fluid from around the lungs, the heart, and in the abdomen. It can also be used to guide biopsies of suspicious areas and to remove abnormal collections such as pus from organs like the liver and kidneys.

CT Scanning

CT scan is a widely available and highly specialized technique that uses a computer to combine several x-ray images producing pictures resembling “slices” of the human body, much akin to slices of a loaf of bread. Newer CT scans termed “spiral” or “helical” are superfast, can produce detailed three-dimensional

images, and are significantly more accurate than their recent counterparts. They are used primarily to detect problems such as tumors, bleeding, trauma, or infection within most body organs including the brain, chest, and abdomen, and are especially useful in patients who cannot undergo an MRI. The machine itself is a large ringlike device with a table in its center, where the patient lies. CT scans are especially accurate in the detection of bony fractures and infections, and are now being used for the diagnosis of blood clots in lung arteries (pulmonary embolism) and the detection of blockages in arteries to the heart.

From the patient’s perspective, an ordinary CT scan by itself produces no pain or discomfort but may require fasting, especially with scans of the abdomen that often necessitate drinking a contrast material to obtain better picture quality. Some people occasionally find the ring too small and may feel “claustrophobic,” but this can usually be overcome with sedating or anti-anxiety medication. An iodine-based contrast material is often injected into the patient’s vein to define organs, tumors, and infections with significantly enhanced accuracy. This contrast material can occasionally cause itching, a rash, hives, or a feeling of warmth throughout the body. In rare instances, the reaction can be severe and life threatening by interfering with breathing and may require treatment with epinephrine, steroids, and antihistamines such as Benadryl and even artificial breathing support. Intravenous contrast can occasionally damage the kidneys, and this risk is higher in patients with dehydration, diabetes, diuretics, and those with previously damaged kidneys.

In addition to their diagnostic utility, CT scan images can be used as a guide by specialized radiologists to accurately detect biopsy-suspected tumors, drain pus from body structures and cavities, and remove bodily fluids for analysis and cultures, with a significantly reduced risk of complications compared with open surgical technique.

MRI Scanning

MRI uses a very powerful magnetic field and pulses of radio wave energy to produce detailed and accurate images of body structures and organs, which are then processed by a computer. It does not pose any radiation hazard. Being expensive, it is most often performed in cases where x-ray, sonography, and CT scanning are considered inadequate. MRI is most

useful in imaging of the brain and can provide invaluable information about stroke, tumors, aneurysms, infections, demyelination (seen in multiple sclerosis), and bleeding that often cannot be obtained accurately from a CT scan. It is the most accurate test for diagnosing structural problems such as infections and tumors within the spinal cord and vertebrae. MRI is currently being used to create accurate images of the heart especially when echocardiography is limited. It can also be used to accurately diagnose tears or aneurysms of the largest artery in the body, the aorta, which can be serious and often life-threatening conditions. In the abdomen, MRI is often used for safe and accurate imaging of the liver, pancreas, and the gallbladder. It is the most accurate test for diagnosing problems with joints such as the knee, hip, ankle, wrist, and shoulder. The results help to determine whether the patients need to undergo arthroscopic or open surgical treatment. It also helps with the accurate diagnosis of bone infections, especially common in diabetics with open leg wounds.

MRI does not require fasting but does require removal of all metallic objects such as hearing aids, jewelry, dentures, and watches before entering the suite. Credit card magnetic strips can be erased of their information if brought into the MRI suite. Anyone with metallic devices in their body including metal pins or fragments, pacemaker, artificial limb, metal clips in the brain, metallic tattoos, or medication infusion pumps should notify their health-care provider. Those in professions involving working with metal should also notify their health-care provider. Since the MRI machine is usually a narrow tubelike structure, claustrophobia or feeling confined is common. This problem can often be addressed with the newer open MRI machines, which have a wider tube, but are not commonly available. Once on the table, a device called the coil may be wrapped over the part of the body to be scanned. The MRI apparatus produces tapping and whirring sounds like a fan and requires the patient to be still for 30–45 min while images are being acquired. Earplugs are usually provided. The patient is often alone in the scanner suite but can communicate with the technician through intercom. Sometimes, MRI requires the administration of contrast material that is not iodine-based but can occasionally cause allergies, hives, and precipitate asthma. Patients with severe kidney problems and sickle cell disease usually cannot get this contrast material.

MRI can also be used to look at blood vessels and blood flow through them. This technique is called MR angiography (MRA) and is especially useful in defining blood flow to the brain.

X-Ray

An x-ray is the most commonly performed diagnostic examination. Almost 50% of all x-rays ordered routinely are chest x-rays to evaluate the chest for conditions like pneumonia, heart failure, cancer, and emphysema. An x-ray is also used to produce a picture of the legs, arms, and spine to evaluate any fracture, dislocation, infection, tumors, and diseases like osteoporosis.

Patients are required to use an x-ray gown and remove all metallic objects such as hearing aids, jewelry, dentures, and watches. The body part to be imaged is then pressed against a photographic plate. The technologist then activates the equipment, which sends a beam of x-rays through. For chest or abdomen x-rays, the patient is required to take a deep breath and hold it in order to decrease the chances of a blurred image. The procedure is painless, though the recording plate may feel cold. Special care is always taken to ensure maximum safety for the patient by using the correct x-ray beam energies. If an abnormality is found, additional tests like CT/MRI may be needed, which are helpful in creating a more detailed picture of tissues, organs, and joints.

Examples of specialized x-rays include angiograms, barium x-rays, and fluoroscopy. Angiograms are performed by injecting a dye (opaque to x-rays) into an artery or vein of the patient and the subsequent visualization of blood flow and vessel lumen by continuous x-ray imaging. Barium x-rays utilize either oral or rectal administration of a contrast material that clearly outlines the lining of the food pipe, the stomach, the small and the large intestines. It is useful in evaluating a patient's ability to swallow properly and to detect ulcers or blockages in the small intestine. In the large intestine, it can be used to detect polyps and cancerous growths. Fluoroscopy consists of the continuous or real-time imaging of a patient's bones or soft tissues to enable the physician in performance of specialized procedures. An enhanced form of x-ray technology called dual-energy x-ray absorptiometry (DEXA) is used to detect osteoporosis accurately. Mammography uses a low-dose x-ray system to examine the breasts. This is used as a screening tool to detect early cancer in

women and also to diagnose breast disease in women with symptoms like lump, pain, and discharge.

Related Topics

➤ Abdominal pain, ➤ Bone strength, ➤ Cancer, ➤ Multiple sclerosis, ➤ Pneumonia

Suggested Resources

www.medicinenet.com
www.radiologyinfo.org
www.webmd.com

Medical Malpractice

Marshall B. Kapp

Medical practice and its practitioners are regulated in a variety of ways. One of the most significant mechanisms for regulating health care provider behavior in the United States is the private civil tort system that encompasses individual professional liability and medical malpractice lawsuits brought by, or on behalf of, patients against their professional caregivers.

A comparatively small number of medical malpractice claims are predicated on a theory of breach of contract. In such litigation, the patient/plaintiff claims that express promise made by the physician about the outcome or method of treatment has not been fulfilled.

The overwhelming majority of malpractice lawsuits are based instead on a theory of tort, which means a civil wrong (as contrasted with a crime) caused by the violation of a duty stemming from something other than a contract. Within the provider–patient relationship, a tort is committed by a violation of the provider’s fiduciary or trust obligations to always act in the patient’s best interests.

A small percentage of the tort actions brought against health care providers allege intentional wrongdoing, such as battery for physically invading the patient’s bodily integrity by doing some procedure without appropriate permission. However, the majority of malpractice cases are predicated on a theory of

negligence or unintentional (albeit legally blameworthy) deviation from accepted professional standards. Medical negligence may occur through the failure to supply an individual (or the proxy decision-maker for a decisionally incapable person) with the information necessary to make a truly informed, voluntary choice about a particular intervention. Negligence also may take place through poor quality, professionally unacceptable provision of patient care. Most plaintiffs’ complaints in professional liability cases allege both lack of adequate informed consent and the substandard performance of medical services.

In any negligence action, the plaintiff must prove the presence of four elements to obtain a favorable verdict. An inability to meet the burden of proof—convincing the jury by a preponderance of the evidence—regarding any of these elements warrants dismissal of the case.

First, the plaintiff must show the professional owed the plaintiff a duty of due care; this responsibility is established by virtue of the existence of a professional–patient relationship. The duty or standard of care owed is that degree of knowledge and skill generally possessed and practiced by competent, prudent professional peers under similar circumstances. Second, because the American malpractice system is based on the concept of fault, the plaintiff must show the health care provider breached or violated the acceptable standard of care.

The third thing a successful malpractice plaintiff must establish is that physical, financial, or emotional injury or damage was suffered. One main purpose of awarding monetary damages in a tort action is to attempt to make the injured victim whole again, or returned to the position or condition existing before the negligence, to the extent that money can achieve that objective.

Finally, proof of the element of causation is essential. The plaintiff must convince the jury, to a reasonable degree of medical certainty, that the injury was directly (proximately) brought about by the defendant’s violation of duty. That is, either “but for” (*sine qua non*) the defendant’s negligence the plaintiff’s injury would not have happened or the negligence was one substantial factor in bringing about the injury and, moreover, there were no intervening, superceding factors that would explain the injury.

In many medical malpractice cases, there are multiple defendants. Depending on the facts, individual professionals and the institutions or agencies that employ them or grant them practice privileges may

all be named in a lawsuit. Health care institutions and agencies might be held liable, solely or jointly, for malpractice under theories of vicarious liability for employing (in fact or in appearance) the negligent professional or direct liability for negligence in credentialing or supervising affiliated professionals, or otherwise failing to fulfill independent fiduciary responsibilities toward the patient.

Related Topics

[Informed consent](#)

Suggested Readings

- Boumil MM, Elias CE, Moes DB (2003) *Medical liability in a nutshell*, 2nd ed. West Group, St. Paul, MN
- Editorial Committee (2004) *Medical malpractice overview*. In: Sanbar SS (ed) *Legal medicine*. Mosby, PA
- Furrow BR, Greaney TL, Johnson SH, Jost TS, Schwartz RL (eds) (2004) *Liability and quality issues in health care*, 5th ed. West Group, St. Paul, MN

Medicare

Beth E. Quill

Medicare (Title XVIII) of the Social Security Act is a federal health insurance program inaugurated in July 1, 1966. The program is the major health insurance for those above 65 years of age, who are covered by the Social Security system, regardless of income. Amendments to the Social Security Act in 1972 extended the benefits to those who do not meet the criteria for the regular Social Security Program, but who are willing to pay a premium for coverage. Further amendments in 1973 extended benefits to those entitled to Social Security disability benefits or those who suffer from chronic renal disease requiring a kidney transplant or routine dialysis. Since 1966, the number of enrollees has expanded, and the medical expenditures increased, making Medicare a major budget item for the federal government. In 2004, the Medicare program had 42 million enrollees (expected to grow to 70 million by

2030) and spent more than \$309 billion a year (expected to nearly double by 2030). About 10% of Medicare beneficiaries, almost all of them are chronically ill, account for three fourths of the Medicare program expenditures each year. While enrollees increase about 1% each year, expenses increase by 7% and this is likely to expand with a growing elderly population, an extended life span, and evolving drug and medical technologies for primary, secondary, and tertiary care.

Medicare is comprised of two primary parts: Part A and Part B and recent expansion of benefits in Part D. Part A of Medicare is the hospital insurance part, funded by Social Security taxes. Coverage includes hospitalization, care in a skilled nursing facility, home health care, or hospice care. The Medicare program has deductibles (set amount the patient must pay before Medicare begins to pay) and co-pays (a percentage of charges paid by the patient). Benefits may also have time limitations on the amount of coverage. Hospital care expenses and skilled nursing home expenses are not paid by Medicare beyond specified number of days, for example. Hospital care accounts for 55% of Medicare expenses. Medicare's share of nursing home expenditures has risen from 3% (1990) to 12% (2003). Expenditures for home health care are 12% and expenditures for hospice have doubled. Medicaid, which is another source of payment after Medicare expires, covers 50% of nursing home expenditures (2004).

Part B of Medicare is Supplemental Medical Insurance. While it is optional and must be paid for as a Social Security deduction, most elderly enroll in Part B. This part of Medicare pays for reasonable physician charges, inpatient and outpatient medical and surgical services, supplies, physical and speech therapy, ambulance and diagnostic tests, clinical laboratory tests, blood, home health care, and outpatient diagnosis and treatment. Similar to Part A, limitations on the amount of payments and deductibles apply. Physician services, for example, are partially covered after the deductible has been met.

Managed care, a planned approach to control health care costs, has been enrolling Medicare beneficiaries since the 1990s. A primary incentive is that the Medicare program allows beneficiaries to opt out of the traditional fee-for-service program and voluntarily enroll in a Medicare-approved health maintenance organization (HMO), provided that the beneficiaries reside in an area that is served by one or more

Medicare-approved HMOs. Medicare HMOs typically offer more comprehensive benefits than traditional Medicare Parts A and B, are less costly than additional private insurance, and have a lower average out-of-pocket spending than Medicare beneficiaries overall. Approximately 18% of the nation's 42 million beneficiaries are enrolled in managed care plans. Recently, however, a number of HMOs have declined to participate in the Medicare program or narrowed their service areas and the availability of HMOs is variable by geographic area. Access to Medicare providers and facilities continues to be a challenge for elderly citizens. About one in seven Medicare beneficiaries do not have a usual source of care or have not seen a physician when they needed medical care.

Persons over the age of 65 years use 23% of the ambulatory care visits, 48% of hospital days, and 69% of home health services. With increasing availability of community-based services, nursing home utilization has decreased. Recently, Medicare has expanded benefits for community services (adult day care) and assistive devices to support elderly in their homes and community. Three preventative services for immunizations and seven services for health screenings are now covered. Whereas most elderly are covered by Medicare, it does not provide complete coverage. Gaps in coverage create significant personal out-of-pocket expenses for vulnerable elderly beneficiaries.

Supplemental insurance, purchased by the majority of Medicare beneficiaries, has emerged as an option for the elderly to lower copayments, cover more services and decrease out-of-pocket expenses. The transferral of private insurance into an insurance that covers what Medicare does not is called Medigap insurance. Private insurance may require premiums, deductibles, and copays for beneficiaries. Medicaid, a second option (10% of those who have supplemental insurance), providing some assistance for the poor and vulnerable, also offered prescription drug benefits for those eligible until January 2006, at which point such coverage became available through Medicare Part D. The Medicare Savings Plan (Qualified Medicare Beneficiary Program) that generates cost savings to low-income beneficiaries in the Medicaid program is another option, although participation in this program has been low.

Despite these advances, drug benefits and long-term care costs top the list of uncovered services. While most adults indicate they have a health problem that requires medication on a regular basis, only 55%

of those 50 to 64 years of age and 49% of those 65 to 70 years of age noted that their insurance covered prescription costs. The elderly, in particular, report high out-of-pocket drug costs that often compete with other expenses of daily living. The Medicare Prescription Drug Improvement and Modernization Act of 2003 represents the most substantial expansion of Medicare since the program was enacted. Beginning in 2006, beneficiaries will have access to a prescription drug benefit (Part D) subsidized through Medicare and available through private plans. Medicaid beneficiaries will be transferred to this program December 31, 2005. The plan, however, has a deductible and benefit gap that may leave some elderly, especially those with chronic conditions such as those with diabetes or chronic lung disease, paying full price or experiencing interruptions in benefits.

Long-term care of elderly beneficiaries presents several challenges. With advancing age, nursing home residency increases to more than 20% of the elderly above the age of 85 residing in nursing homes compared to 1% of those 65 to 74 years. Medicaid and personal resources become the primary financial resources used for nursing home care when Medicare covered days is exhausted. While most nonnursing home elderly live with family members, nearly one third of the elderly live alone and are more likely to be women. Elderly women frequently live longer than men, have more chronic diseases, and are more likely to live alone (except for those above 85 years). Seventy-nine percent of elderly report at least one of seven chronic diseases, 31% of persons 85 and older reported visual impairment, and 26% reported hearing impairments. Thus, financing for home and community health services, chronic disease management, and skilled nursing and custodial care continue to be major programmatic areas of priority.

The challenge for program officials is to keep Medicare program efficient, effective, and equitable in providing coverage for a broad scope of services, while containing costs. The public health challenge is to maximize the functioning of a growing elderly population, who will likely continue to be large consumers of health care through preventive and treatment services. Notably, quality of life and end of life issues will influence the public policy discussions. Therefore, it is expected that Medicare, a major federal financier of health care programs, will continue to be at the heart of public policy debates.

Related Topics

[▶ Access to health care](#),
 [▶ Disability](#),
 [▶ Health insurance](#),
 [▶ Health Maintenance Organizations](#),
 [▶ Medicaid](#),
 [▶ Social Security](#)

Suggested Resources

Commonwealth Fund (2002) *Counting on medicare: Perspectives and concerns of Americans ages 50–70*

Kovner AR (1990) *Health care delivery in the United States*. Springer, New York

Novick LF, Mays GP (2001) *Public health administration: Principles for population-based managements*. Aspen Publishers, Gaithersburg

Raffel MW, Raffel NK (1994) *The U.S. health care system: Origins and functions*. Delmar Publishers, Albany, NY

Suggested Resources

National Center for Health Statistics (2005) *Health United States, 2005 with chartbook on trends in the health of Americans*. <http://www.cdc.gov/nchs/data/hus/hus05.pdf>

Medicare Supplemental Insurance

Brandy L. Johnson

Medicare supplemental insurance, also known as Medigap, is private insurance that provides supplemental health care insurance to Medicare beneficiaries. Individuals over the age of 65 are qualified to receive Medicare. Therefore, only individuals 65 and older qualify for Medigap policies.

Medicare provides two different types of coverage: Medicare Part A and Medicare Part B. Medicare Part A provides beneficiaries with coverage for inpatient hospital care, inpatient skilled nursing facility care, home health care, and hospice services. However, Medicare Part A does not cover certain expenses. For example, beneficiaries are still responsible for the hospital deductible. Medicare Part A also does not cover the hospital coinsurance payments that begin after a beneficiary is in

the hospital for over 60 days. In 2005, the daily co-pay for days 61 to 90 was \$228.00 for a benefit period. Starting on the 91st day, beneficiaries can choose to begin to draw on a “lifetime reserve,” which is a 60-day, nonrenewable buffer. While using this reserve, beneficiaries must pay a daily co-pay of \$456.00. Beneficiaries do not have to use their lifetime reserve, but they would become responsible for all payments in full. Medicare Part A does not cover any hospital services beyond 150 days. It should be noted that a benefit period ends, and a new one begins, when the beneficiary has not received hospital or skilled nursing care for 60 days in a row and there is no limit on the number of benefit periods.

Medicare Part B provides coverage for outpatient and physician services. Medicare Part B also provides coverage for durable medical equipment, prosthetic devices, supplies incident to a physician’s services, and ambulance transportation. Like Medicare Part A, Medicare Part B does not relieve beneficiaries of all expenses. Medicare Part B, for instance, has an annual deductible. Medicare Part B also has a 20% coinsurance payment and beneficiaries may be responsible for any charges above Medicare’s approved charge.

Medigap insurance is meant to help policyholders by providing coverage for services and equipment not covered by Medicare Part A or Medicare Part B. As stated earlier, Medigap policies are only available to individuals who are 65 years of age or older. An additional qualification is that the individual must be enrolled in Medicare Part A and Medicare Part B. Thus, in addition to the monthly premium for Medicare Part B, \$88.50 in 2006, the beneficiary will have to pay the premium for the Medigap policy. If a beneficiary pays the Medigap premium, the Medigap policy is guaranteed to be automatically renewed each year. A Medigap policy only provides insurance coverage for the policyholder and, accordingly, cannot be applied toward the medical costs of the spouse of a policyholder.

In 2000, Jennifer Weiss, a Policy Analyst for Medicare Rights Center, reported that the Congressional Budget Office had found that being covered by Medigap insurance increases a person’s use of health services by 24%. Thus, access to Medigap equates to increased access to health care. However, a study performed in 2003, revealed that beneficiaries with a Medigap had the highest out-of-pocket spending on health care. While those with only Medicare, on average, paid \$2,560.00 on health care, those with Medigap policies

paid \$5,130.00 in out-of-pocket expenses. In considering these numbers, it must be remembered those beneficiaries who only have Medicare did not have to pay supplemental insurance premiums.

Medigap policies are sold by private insurance companies. However, insurance companies are only allowed to sell a beneficiary one policy and all of the Medigap policies are required to comply with state and federal law. Beginning in 2006, there will be 12 Medigap policies available to Medicare beneficiaries. These policies are referred to as Plans A through L. Each plan offers a different combination of benefits, but the plans are standardized. Therefore, benefits under a Plan A Medigap policy will be the same despite the identity of the insurance company selling the policy. As a result, the only difference between Medigap policies sold by different insurance companies is the cost.

Medigap policies A through J all contain the basic benefits. The basic benefits apply to both Medicare Part A and Medicare Part B coverage. As applied to Medicare Part A, the basic benefits include the following: (1) coinsurance for days 61 through 90 of a hospital stay; (2) coinsurance for days 90 through 150 of a hospital stay; and (3) up to 365 more days of a hospital stay during the beneficiary's lifetime, once all Medicare hospital benefits had been exhausted. As applied to Medicare Part B, the basic benefits consist of coverage for all coinsurance or copayments amounts after the beneficiary pays the Medicare Part B yearly deductible. If a beneficiary needs blood, the basic benefits of Medigap plans will cover the first three pints of blood.

Other benefits offered in Medigap policies include:

- *Payment of the skilled nursing facility coinsurance.* Medicare Part A provides coverage for the first 20 days in a skilled nursing facility. Beneficiaries are required to pay daily coinsurance payments for days 21 through 100. In 2005, the coinsurance payment was \$114.00 a day. A Medigap policy that includes coverage for the skilled nursing facility coinsurance will pay for the beneficiary's coinsurance payment for days 21 through 100.
- *Foreign travel emergency coverage.* This coverage provides coverage for 80% of the emergency medical costs the beneficiary receives while outside of the United States. There is a yearly deductible but the policy will provide up to \$50,000.00 of coverage during the beneficiary's lifetime.
- *At-home recovery coverage.* The policy will provide coverage for help with activities of daily living if the beneficiary is already receiving skilled home care covered by Medicare. Activities of daily living include tasks such as bathing and dressing. A Medigap policy that includes at-home recovery will provide coverage for at-home help for up to 8 weeks after the beneficiary no longer needs skilled care. However, coverage is limited to \$40.00 a day, seven visits per week, or a total of \$1,600.00 a year.
- *Preventative care that is not covered by Medicare.* Medigap policies that provide for preventative care will cover preventive services ordered by a doctor, such as routine annual check-ups or hearing tests. The coverage is limited to \$120.00 a year.
- *Coverage for Medicare Part B excess charges.* Medigap policies that include Medicare Part B excess charges provide coverage for the difference between the amounts that the doctor charges and Medicare's approved charge.

Before purchasing a Medigap policy, Medicare beneficiaries must decide what combination of benefits best fits their needs. The benefits offered under each plan are as follows:

1. *Plan A.* Plan A includes the basic benefits.
2. *Plan B.* Plan B includes both the basic benefits and the Medicare Part A hospital deductible.
3. *Plan C.* Plan C includes (1) the basic benefits; (2) the Medicare Part A hospital deductible; (3) the skilled nursing coinsurance; (4) the Medicare Part B deductible; and (5) foreign travel emergency coverage.
4. *Plan D.* Plan D includes (1) the basic benefits; (2) the Medicare Part A hospital deductible; (3) the skilled nursing coinsurance; (4) foreign travel emergency coverage; and (5) at-home recovery coverage.
5. *Plan E.* Plan E includes (1) the basic benefits; (2) the Medicare Part A hospital deductible; (3) the skilled nursing coinsurance; (4) foreign travel emergency coverage; and (5) preventative care coverage.
6. *Plan F.* Plan F includes (1) the basic benefits; (2) the Medicare Part A hospital deductible; (3) the skilled nursing coinsurance; (4) foreign travel emergency coverage; (5) the Medicare Part B deductible; and (6) 100% coverage for Medicare Part B excess charges.
7. *Plan G.* Plan G includes (1) the basic benefits; (2) the Medicare Part A hospital deductible; (3) the skilled nursing coinsurance; (4) foreign travel emergency coverage; (5) coverage for 80% of a beneficiary's Medicare Part B excess charges; and (6) at-home recovery coverage.

8. *Plan H.* Plan H includes (1) the basic benefits; (2) the Medicare Part A hospital deductible; (3) the skilled nursing coinsurance; and (4) foreign travel emergency coverage.
9. *Plan I.* Plan I includes (1) the basic benefits; (2) the Medicare Part A hospital deductible; (3) the skilled nursing coinsurance; (4) foreign travel emergency coverage; (5) 100% coverage of a beneficiary's Medicare Part B excess charges; and (6) at-home recovery coverage.
10. *Plan J.* Plan J includes (1) the basic benefits; (2) the Medicare Part A hospital deductible; (3) the skilled nursing coinsurance; (4) foreign travel emergency coverage; (5) 100% coverage of a beneficiary's Medicare Part B excess charges; (6) the Medicare Part B deductible; (7) preventative care coverage; and (8) at-home recovery coverage.
11. *Plan K.* Plan K includes (1) coinsurance for days 61 through 90 of a hospital stay; (2) coinsurance for days 90 through 150 of a hospital stay; and (3) up to 365 more days of a hospital stay during the beneficiary's lifetime, once all Medicare hospital benefits had been exhausted; (4) 50% of the Medicare Part B coinsurance after the beneficiary pays the Medicare Part B yearly deductible; (5) 100% of the coinsurance for preventative services; (6) 50% of hospice cost sharing for all Medicare Part A covered expenses and respite care; and (7) 50% of the first three pints of blood or equal amounts of packed red blood cells per calendar year. Additionally, the beneficiary must meet a \$4,000.00 out-of-pocket limit before the policy provides coverage for the beneficiary's coinsurance under Medicare Part A or co-payments under Medicare Part B.
12. *Plan L.* Plan L includes (1) coinsurance for days 61 through 90 of a hospital stay; (2) coinsurance for days 90 through 150 of a hospital stay; and (3) up to 365 more days of a hospital stay during the beneficiary's lifetime, once all Medicare hospital benefits had been exhausted; (4) 75% of the Medicare Part B coinsurance after the beneficiary pays the Medicare Part B yearly deductible; (5) 100% of the coinsurance for preventative services; (6) 75% of hospice cost sharing for all Medicare Part A covered expenses and respite care; and (7) 75% of the first three pints of blood or equal amounts of packed red blood cells per calendar year. The beneficiary must meet a \$2,000 out-of-pocket limit before the policy provides coverage for the

beneficiary's coinsurance under Medicare Part A or co-payments under Medicare Part B.

Prior to 2006, Plans H through J provided prescription drug coverage. However, Medicare began providing prescription drug coverage in 2006. As a result, Medigap plans will no longer be offering prescription drug coverage. If a policyholder bought one of the Medigap plans that offer prescription drug coverage before January 1, 2006, the policyholder will be given the opportunity to decide whether the plan or the new federal prescription drug program will best meet their needs.

Medigap policies are not right for every Medicare beneficiary. For example, if a beneficiary also qualifies for Medicaid, there is no need to purchase a Medigap policy. Medicaid typically covers all the gaps in Medicare coverage. Medigap policies are often not appropriate for beneficiaries that qualify for the Qualified Medicare Beneficiary Program or for those who are dually Medicare and Medicaid eligible.

The best time to purchase a Medigap policy is during the beneficiary's open enrollment period. The open enrollment period begins once a beneficiary signs up for Medicare Part B. The open enrollment period lasts for 6 months. During the open enrollment period, an insurance company cannot turn the beneficiary down or charge more due to a past or present health condition. Once the open enrollment period ends, however, insurance companies are free to turn a beneficiary down, refuse to issue a policy under the beneficiary's desired plan, or charge a higher premium.

Related Topics

- [Long-term care](#), ➤ [Long-term care insurance](#), ➤ [Medicaid](#), ➤ [Medicare](#), ➤ [Social Security](#)

Suggested Readings

- AARP (2004) Out of pocket spending on health care by Medicare beneficiaries age 65 and older in 2003. AARP, AARP Public Policy Institute, Washington, DC
- Bern M (1987) A guide to choosing Medicare supplemental insurance. United States Health Cooperative, Washington, DC
- Center for Medicare Advocacy, Inc (2005) Medicare supplemental insurance: Medigap. Centers for Medicare Advocacy, Inc., Willimantic, CT, available at http://www.medicareadvocacy.org/FAQ_Medigap.htm

Centers for Medicare and Medicaid Services (2005) Medicare & you 2006. U.S. Department of Health and Human Services, Baltimore, available at http://www.medicareadvocacy.org/FAQ_Medigap.htm

Centers for Medicare & Medicaid Services and National Association of Insurance Commissioners (2005) Choosing a Medigap policy: A guide to health insurance for people with Medicare. U.S. Department of Health and Human Services, Baltimore, Maryland, available at <http://www.medicare.gov/publications/pubs/pdf/02110.pdf>

U.S. Department of Health and Human Services (1999) Medicare supplemental insurance (Medigap) policies and protections. Health Care Financing Administration, Baltimore

Suggested Resources

AARP; <http://www.AARP.org>

Center for Medicare Advocacy; <http://www.medicareadvocacy.org>
Medicare; <http://www.medicare.gov/>

Medication Management

Deborah J. Gould

As scientific research has advanced in identifying causes and risk factors for numerous diseases, the pharmaceutical industry has been able to develop medications to treat these causes and risk factors. For instance, when research established that elevated cholesterol increases the risk of developing cardiovascular disease, a whole new class of drugs was developed to lower cholesterol level. In the United States, the Food and Drug Administration (FDA) is the government agency responsible for approving the use of new medication. The protocol for testing new drugs involves three stages of clinical trials, with the final stage not occurring until after the new medication has been in use for several months to several years. For example, the drug Celebrex^(TM) was found to be effective for the treatment of arthritis but later found to significantly increase the risk of cardiovascular disease. The atypical antipsychotics were found to be an effective treatment for schizophrenia and other psychotic disorders, but were then found to affect lipid metabolism and were implicated in the development of diabetes mellitus. The prolonged review process is designed to ensure the safety and efficacy of new medications.

Perhaps the largest group of individuals at risk for developing complications from medication management of their illnesses is the elderly. People aged 65 and older accounted for 12.4% of the population of the United States in the year 2000, and by 2030 they will account for almost 20% of the population. During the twentieth century the life expectancy in developed countries increased by 71% for women and 66% for men. The average life expectancy in developed countries is now 76 to 80 years of age. The leading causes of death in developed countries have changed from infectious diseases and acute illnesses to chronic and degenerative diseases. Thus, people are living longer but with chronic illnesses that require the use of medication. As the number of illnesses increase with age, so does the number of medications an individual may be prescribed. Although individuals aged 65 and over currently constitute 12% of the population in the United States, they account for 32% of the prescriptions used. For older adults, the average number of medications used is two to six prescription drugs and one to three over-the-counter drugs.

Drug interactions are more common as the number of drugs being used increases, and the risk of complications is exponential rather than additive each time a new drug is added. It is estimated that medication-related deaths are greater than 100,000 people per year with a cost of more than \$85 billion. If medication-related deaths were considered illnesses they would rank as the fifth leading cause of death.

There are several reasons why older adults are more susceptible to developing complications from medications. As stated earlier, they are more likely to be on multiple medications because of the increased number of chronic illnesses such as arthritis, cardiovascular disease, bladder dysfunction, and dementia. In addition, older adults metabolize drugs more slowly than younger adults. Most medications are broken down (metabolized) by the liver and then excreted by the kidneys. The presence of multiple drugs decreases the ability of the liver to metabolize each separate drug because there is a limited availability of the enzymes required to perform this function. A normal physiologic change occurs in the ability of the liver and kidneys to perform these functions as people age. By the age of 65, kidney function has decreased by 50%. The liver decreases in size, decreasing the rate of metabolism of drugs in preparation for renal excretion. The percent body fat increases, lean body mass decreases, and plasma volume decreases. All of these changes that

are associated with aging can affect the distribution of drugs in the body and how long medications remain in the system. It is the accumulation of drugs in the system that causes complications, and in older adults the problem is increased.

In an attempt to decrease morbidity and mortality from adverse drug reactions, several organizations have conducted studies to elucidate the problem, especially in the older adult population. Some of these organizations include the Institute of Medicine (IOM), the Centers for Medicare and Medicaid Services (CMS), and the Agency for Healthcare Research and Quality (AHRQ). The “Beers criteria” is a list of medications that are problematic for the elderly and has been used by nursing home facilities and geriatricians in the past decade. The list is periodically revised as new medications enter the marketplace. This list mentions individual medications to avoid in the elderly because of the increased risk of falls, hip fractures, confusion, and gastrointestinal disorders. It does not, however, address the issue of medication combinations.

There are several resources available to ascertain the potential harm of certain drug combinations (see “Suggested Readings”). The most accessible is the information printout provided by pharmacists when prescriptions are obtained. However, there is no such information provided for over-the-counter medications or for herbal medicines. The FDA does not oversee herbal medications and therefore quality control and information on drug interactions are lacking. Individuals often do not perceive these agents as medication and fail to inform physicians of their use. In the United States, the use of herbal medicines both to treat acute illnesses and to prevent future health problems has increased over the past decade. An estimated 20% of the population uses or has used herbal medicines. The use of herbal medicines may increase the risk of adverse drug reactions. Adverse reactions may occur as a result of the effects of the herbal medicine itself or by increasing blood levels of prescribed medications. For instance, St. John’s Wort is an herbal medicine used for depression. Alone, it can prolong the effect of some agents used in anesthesia and when combined with other antidepressants can cause what is known as “serotonin syndrome.” Serotonin syndrome consists of restlessness, confusion, and headaches caused by an excess amount of serotonin in the system. Another example is *Ginkgo biloba*, a herb used to improve memory.

When used by individuals taking anticoagulants, *Ginkgo biloba* can increase bleeding.

Despite the potential harm that medications can cause, their use has increased longevity and improved the quality of life for countless individuals. Some of the dangers posed by the use of medications can be averted with the implementation of simple guidelines. For example, before adding a new drug to counteract the side effects of another drug, a drug without those side effects might be substituted. Individuals need to inform their primary care physicians of all drugs they are taking, including prescription medications, herbal medicines, over-the-counter medications, and alcohol. With this knowledge the physician can be aware of potential drug interactions. Adverse drug reactions need to be reported to the FDA and added to existing databases. This is particularly true for new medications and for medications in the postmarketing phase of FDA approval. Families and physicians need to be especially aware of the increased risk of drug interactions in the elderly. In the elderly, much lower doses of most medications are needed than in the younger population.

In summary, the knowledge of diseases and the number of medications to treat them have increased substantially over the past few decades. With an understanding of how drugs are metabolized and an awareness of potential drug interactions, the number of adverse drug reactions can be reduced. Focusing on the older adult population is important because of the increased vulnerability to adverse drug reactions and drug interactions. From a public health perspective reducing the incidence of complications from drug therapy would decrease morbidity and mortality for individuals and would significantly impact on the public cost of treating these complications.

Related Topics

▶ [Delirium](#), ▶ [Drug interactions](#), ▶ [Geriatric medicine](#)

Suggested Readings

Fick DM, Cooper JW, Wade WE, Waller JL, Maclean JR, Beers MH (2003) Updating the Beers criteria for potentially inappropriate medication use in older adults. *Arch Intern Med* 163:2716–2724
Fuller MA, Sajatovic M (2002) Psychotropic drug information handbook, 3rd edn. LeComp, Hudson, OH

Suggested Resources

Institute for Traditional Medicine, Portland, Oregon. Sept. 2003.
Dharmananda, S. Checking for possible herb-drug interactions;
<http://www.itmonline.org/arts/herbdrug2.htm>

Meditation

Dahlia Fuentes

According to the Meditation Society of America, meditation is a process involving concentration, unbroken attention on the object of meditation, and contemplation, which leads to a state of consciousness that brings serenity, clarity, and bliss. Almost three-quarters of adults aged 50 and older now use some form of alternative healing, including meditation.

Although drawn from Buddhist and Hindu teachings, the variety of meditation disciplines and techniques can be practiced concurrently with other religious traditions. Awareness of breathing and posture are important components of meditation, where the meditator is to maintain a vertical spine to the best of their ability. A simple and common meditation technique entails focusing the mind on an object of choice, preferably a meaningful word or object, and repeating the word silently, while having awareness of where this focus takes the mind, heart, and breath. The practice of meditation involves the ability to bring the mind back to the object, as the mind wanders. Over time, the meditator experiences an increase in self-awareness, as the mind wanders less and becomes calmer.

There are mental, spiritual, and health benefits associated with meditation. Studies have shown that regular meditation practice can reduce mental health symptoms such as depression and anxiety, and can improve a person's functional status and quality of life. The acknowledgment of feelings, hopes, thoughts, and fears provides a context where anxieties about physical and mental functioning may be faced, felt, and understood. Regular meditation has also been shown to lower blood pressure, reduce stress levels, and reduce somatic symptoms of persons with medical diagnoses. For older adults, meditation has the potential to improve memory, attention span, and release them from stereotypes such as them being ill and frail.

According to the founder of Integrative Yoga Therapy, meditation increases the level of enzymes that slow the aging process. Furthermore, a study of Transcendental Meditation practitioners found that long-term meditators, who had meditated regularly for at least 5 years, were physiologically 12 years younger than their chronological age, as measured by a reduction of blood pressure. Other tests, such as auditory threshold and near-point vision, have also been utilized by scientists to distinguish a person's biological age from his or her actual chronological age.

Although some argue that much research still needs to be conducted to substantiate the connection between meditation and health benefits, meditation seems to have earned its place as a popular complementary approach to better health and longevity. Recent polls and studies have shown that many US medical schools now offer complementary and alternative medicine course work, managed care organizations are providing some coverage for such therapies, and health care teachers and professionals are learning relaxation techniques and trying nonconventional treatments at about the same rate as the general public. The 2000 Health and Retirement Survey found that 71% of older adults aged 50 and above used some form of alternative medicine in 2000, including chiropractor, acupuncture, massage therapy, breathing exercises, herbal medicine, and meditation.

Related Topics

➤ [Acupuncture](#), ➤ [Complementary and alternative health practices](#), ➤ [Massage](#), ➤ [Yoga](#)

Suggested Readings

- Alexander CN, Langer EJ, Newman RI, Chandler HM, Davies JL (1989) Transcendental meditation, mindfulness, and longevity: An experimental study with the elderly. *J Pers Soc Psychol* 57:950–964
- Schneider RH, Alexander ChN, Salereno JW, Robinson DK, Fields JZ, Nidich SI (2002) Disease prevention and health promotion in the aging with a traditional system of natural medicine: Maharishi Vedic Medicine. *J Aging Health* 14:57–78
- Schneider RH, Nidich SI, Salerno JW, Sharma HM, Robinson ChE, Nidich RJ, Alexander ChN (1998) Lower lipid peroxide levels in practitioners of the transcendental meditation program. *Psychosom Med* 60:38–41

Suggested Resources

The Meditation Society of America; www.meditationsociety.com
National Center for Complementary and Alternative Medicine;
<http://nccam.nih.gov/>

Melanoma

Leslie K. Dennis

Melanoma of the skin is increasing faster than any other cancer in the United States. The mean age at diagnosis of melanoma is 57 years. However, melanoma increases with age, so is a common development as people age. Melanoma is a cancer of the skin that occurs when pigmented skin cells begin to grow out of control. Since it begins in the cells that produce skin color, dark-skinned people are naturally at much lower risk of melanoma compared to fair-skinned individuals. Thus, melanoma is a disease primarily found in whites and is less common among people with darker skin. Melanoma is often deadly, unlike basal cell and squamous cell skin cancers, which are usually curable. However, if found at an early stage, melanoma can usually be cured. Melanoma often appears as a brown or black spot on the skin, sometimes developing from a mole that has been present for a long time. Melanoma rarely causes obvious symptoms such as pain.

In 2005, an estimated 59,580 people were diagnosed with melanoma in the United States with an estimated 7,770 deaths due to melanoma. Thus, melanoma accounts for about 5% of all new cancers in 2005. The incidence rate over age 65 is more than four times the incidence rate below age 65. In fact, nearly 40% of all new melanoma cases are diagnosed in individuals 65 years of age or older. The rate of new melanomas is 20 times higher in whites than in blacks and is highest in white populations living near the equator. More than 80% of melanomas are found at an early, curable stage. Over 95% of patients diagnosed with early stage melanoma, and only 16% of those diagnosed at advanced stage melanoma are alive after 5 years—hence the importance of early detection. The 5-year survival rate is slightly lower among those 65 years of age or older, however, with 60% of all melanoma-related deaths occurring to individuals in that

age group. This compares with 14% and 17% for those, respectively, in the 45 to 54 and 55 to 64 age groups.

People with sun-sensitive skin are at increased risk of melanoma. Measures of an individual's sun sensitivity include light skin color, light hair color, light eye color, tendency to sunburn, inability to tan, and presence of freckles. Studies have also shown melanoma to be related to an increased number of common moles and especially, abnormal or dysplastic moles (typically moles with a diameter greater than 6 mm). Both studies of total body mole counts and of mole counts on the arms have shown that an increased number of moles are related to a higher risk of developing melanoma. Early sun exposure, such as childhood sunburns, may cause moles to develop. While other risk factors for melanoma, including adult sun exposure, may help change moles into melanoma.

Ultraviolet (UV) radiation is the main environmental factor responsible for the development of skin melanoma, as well as precursor lesions such as common moles. Sunlight is the major source of UV radiation. Various types of sun exposure are associated with melanoma, ranging from severe sunburns, occupational activities, vacation sun exposure, beach activities, other recreational activities, cumulative or chronic sun exposure, and early migration to sunny places. The most consistent risk factor for melanoma has been sunburns. The damage from sunburns can cause an increase in melanoma in the area that was burned, but sunburns also appear to suppress the skin's immune system. This allows melanomas to occur in nonsun-exposed skin. While dark-skinned people are naturally at lower risk of melanoma, recent studies suggest there is a higher risk of melanoma with prolonged sun exposure after developing a tan. Growing up in a sunny location or spending a large amount of time in the sun also appear to be important. This is important because as people age, they accumulate more chronic sun exposure. Studies show that both intermittent sun exposure (sunburns and sunny vacations) and total sun exposure (over many years) are risk factors for melanoma.

A second source of UV radiation is from artificial exposures including tanning salons, tanning beds, or sunlamps. Prior to the 1980s, sunlamps only irradiated a localized area of skin and emitted primarily lower spectrum UV light. Tanning units now available at home or at tanning salons can irradiate nearly 100% of exposed skin. Such units may provide up to 30 times the exposure level of similar time spent in the sun.

There appears to be more than a 50% increase in melanoma risk among sunlamp or tanning bed users, with a greater risk associated with more use.

Sunscreens are thought to protect skin from sunburns and many other harmful effects of the sun. Consequently, some professionals suggest that the use of sunscreen can reduce the risk of developing skin cancers by preventing sunburns. However, recent studies have suggested an increased risk of melanoma among sunscreen users. Skin sensitivity to the sun may distort the association between sunscreen use and melanoma, since sun-sensitive individuals are more likely to use sunscreens. Studies that have accounted for sun sensitivity, suggest no association between sunscreen use and melanoma. The lack of a protective effect of sunscreen use may represent the failure of people who use sunscreen to apply enough sunscreen needed for protection, or may reflect a long period of time between protection from sun exposure and development of melanoma. If so, it may be necessary to wait several decades to see if proper application of high sun protection factor (SPF) sunscreen (SPF > 15) is truly protective against melanoma. Additionally, the lack of a protective effect of sunscreen use may represent prolonged sun exposure among individuals who use sunscreen. Using sunscreen to prolong sun exposure likely increases one's risk of melanoma.

The use of sunless chemical tanners or bronzers has increased dramatically in recent years. The tanning effects of sunless tanning products can last 5 to 7 days. However, the UV protection is shorter lived than the color change. Some dermatologists suggest that using sunless tanning products prior to sun exposure only in conjunction with using sunscreens while outdoors may reduce UV damage. Many dermatologists recommend use of sunless tanning products over intentional sun exposure or tanning bed use for their patients that insist on tanning.

Risk of melanoma can be reduced by following these tips: (1) reduce your sun exposure, particularly between 10 a.m. and 2 p.m.; (2) wear protective clothing while in the sun or use a sunscreen with an SPF of greater than 15; (3) when applying sunscreen use a palm-full of sunscreen and then reapply it every two hours; (4) wear protective clothing or use sunscreen even on hazy days or days with light cloud cover; (5) do not use sunscreen to prolong your time in the sun. If you have a strong desire for a tan, use a sunless tanning product and combine it with sunscreen while in the sun. Avoidance of sun exposure and tanning

beds is the only way to reduce melanoma risk and aging of the skin. Additionally, it is important that people examine their skin regularly and become familiar with their skin variations and moles. Seeking medical attention for any changes in skin variations or suspicious moles is important since (1) melanoma can be a deadly disease with few or no symptoms or pain, but (2) melanoma is also easily curable if identified early and removed.

Related Topics

[Cancer](#), [Cancer screening](#), [Moles](#), [Skin care](#), [Skin disorders](#)

Suggested Readings

- Jemal A, Murray T, Ward E, Samuels A, Tiwari RC, Ghafoor A, Feuer EJ, Thun MJ (2005) Cancer statistics. *CA Cancer J Clin* 55:10–30
- Langley RG, Sober AJ (1997) A clinical review of the evidence for the role of ultraviolet radiation in the etiology of cutaneous melanoma. *Cancer Invest* 15(6):561–567
- Levy SB (2000) Tanning preparations. *Dermatol Clin* 18:591–596
- Westerdahl J, Ingvar C, Masback A, Jonsson N, Olsson H (2000) Risk of cutaneous malignant melanoma in relation to use of sunbeds: Further evidence for UV-A carcinogenicity. *Br J Cancer* 82:1593–1599

Suggested Resources

American Cancer Society Website; www.cancer.org
 National Cancer Institute; <http://www.cancer.gov/cancertopics/pdq/prevention/skin/patient>
 Surveillance, Epidemiology, and End Results Fast Facts; <http://seer.cancer.gov/statfacts/html/skin.html>

Memory

Mustafa K. Warsi · Mark Lyubkin · Helen C. Kales

The human ability to recall faces, names, learning skills, bring up events from the past, and reexperience emotions would not be possible without memory. These processes, as well as many other cognitive and

behavioral functions, are dependent on intact memory function. Memory function is vulnerable to a variety of insults including brain diseases, strokes, head trauma, malnutrition, depression, anxiety, medication side effects, and aging. Memory loss is a disabling feature common to a number of medical disorders that impairs normal daily activities for affected individuals and in turn, impacts their families.

Memory Classification

Concepts of memory such as “short-term” (the ability to recall material soon after it is presented) and “long-term” (the ability to remember information later) have given way to more sophisticated and advanced classification systems through progress in research and a better understanding of the functional anatomy of the brain. Memory systems are brain structures that allow the brain to process information that will be available for use at a later time with or without the individual’s awareness. There are several classification systems for memory. A commonly used classification system divides memory systems into four major categories: (1) episodic, (2) semantic, (3) working, and (4) procedural (● [Table 1](#)).

Episodic memory refers to the memory system that records, retains, and retrieves personal experiences framed within an individual context. This type of memory is linked to a particular place and time. Examples of this include recalling what you had for dinner last night or what you did on your last birthday. People with impairment of episodic memory, such as those with amnesia due to brain injury to the medial temporal lobes, cannot recall past experiences that healthy people can remember. Past events closest to the time of injury are most vulnerable, whereas remote memories are the most resistant. Thus, within episodic memory there are short- and long-term memories; people with Alzheimer’s disease may not have trouble with distant episodic memories, but may have trouble with something done more recently (e.g., what they had for breakfast). The medial temporal lobes of the brain form the core of the episodic memory system, though other brain regions such as the frontal lobes are necessary for episodic memory to function correctly. This memory system has been compared to a “file cabinet” where the frontal lobes are the “file clerk,” the medial temporal lobes are the “recent memory file,” and other cortical

■ **Table 1**

Memory systems and examples of diseases and disorders that impair them (Adapted from Budson and Price 2005)

<i>Episodic Memory (e.g., remembering what you had for dinner last night)</i>
Alzheimer’s disease
Dementia with Lewy bodies
Frontal variant of frontotemporal dementia
Vascular dementia (dementia due to stroke)
Encephalitis
Transient global amnesia
Concussion
Traumatic brain injury
Seizure
Side effects of medication
Vitamin B ₁₂ deficiency
Hypoglycemia
Multiple sclerosis
Cardiopulmonary bypass surgery
Anxiety
<i>Semantic memory (e.g., knowing who was the first President of the United States)</i>
Alzheimer’s disease
Temporal variant of frontotemporal dementia
Traumatic brain injury
Encephalitis
<i>Procedural memory (e.g., driving a car with a standard transmission)</i>
Parkinson’s disease
Huntington’s disease
Progressive supranuclear palsy (rare disorder with features of Parkinson’s disease)
Depression
Obsessive–compulsive disorder
<i>Working memory (e.g., keeping a phone number in your head before dialing)</i>
Normal aging
Vascular dementia
Frontal variant of frontotemporal dementia
Alzheimer’s disease
Dementia with Lewy bodies
Multiple sclerosis
Traumatic brain injury
Medication side effects
Obsessive–compulsive disorder
Depression
Schizophrenia
Parkinson’s disease
Huntington’s disease
Progressive supranuclear palsy
Vitamin B ₁₂ deficiency
Cardiopulmonary bypass surgery

Note: Tumors, strokes, brain hemorrhages, and other disease processes may also affect any of the above memory systems depending on the brain area affected.

regions are the “remote memory file.” If the frontal lobes are impaired, the information cannot get in or out of storage, or can get distorted due to “improper filing.” If the medial temporal lobes are damaged, there will be difficulty retaining recent memory, but older information will still remain available as it will have been “filed” in other brain regions. Disorders where episodic memory impairment is present include those where difficulty with memory is temporary (e.g., concussion, seizure), due to an event causing injury (e.g., head trauma, stroke), or progressive (e.g., Alzheimer’s disease). Episodic memory can be screened for in a doctor’s office using tests of recall. If such testing indicates problems, formal cognitive assessment (neuropsychological testing) is indicated.

In contrast to episodic memory, the semantic memory system stores general, conceptual, and factual knowledge that is not related to any specific time or place (such as knowing who was the first President of the United States). Recall of this type of information can be achieved without processing where or when this information was first learned. This system appears distinct from episodic memory as evidenced on brain imaging studies, and the fact that this type of memory can be spared in individuals with severe episodic memory impairment. The inferior lateral temporal lobes of the brain are important to the semantic memory system. Causes of semantic memory impairment include Alzheimer’s (the most common cause, where episodic and semantic memory decline independently of each other) and almost any disorder disrupting the inferior lateral temporal lobes (head injury, stroke, brain infection, tumors). Disorders of semantic memory are suspected when individuals have trouble naming items whose names they previously knew. Semantic memory impairment can be screened in the doctor’s office by asking the individual to name as many different animals as possible in 1 minute (“category fluency”). As with episodic memory impairment, if such testing indicates problems, formal neuropsychological testing is indicated.

Procedural memory is “how to” memory, or the ability to learn certain skills and sequences that become automatic (can be performed “without thinking”) with practice or repetition. Examples include learning to drive a car with a standard transmission or learning the sequence of numbers on a touch-tone phone. Procedural memory is a separate system from episodic and semantic memory; the basal ganglia,

cerebellum, and supplemental motor area of the brain are important to the function of this brain system. Patients with Alzheimer’s disease (which early on spares the basal ganglia and cerebellum) do not lose the ability to acquire and maintain procedural skills until much later in the disease process; this is illustrated by patients who have difficulty finding their words but can still sing fairly well. The intact procedural system can be used to teach Alzheimer’s patients new skills such as how to find their room. Diseases affecting the basal ganglia such as Parkinson’s or Huntington’s disrupt procedural memory; thus, patients with these disorders may perform normally on episodic memory tests but show an impaired ability to learn new skills. Impairment of procedural memory is suspected when patients show evidence of losing previously acquired skills (e.g., playing an instrument) or difficulty with acquiring new skills. Further evaluation with neuropsychological testing is then needed.

Working memory refers to the ability to maintain and use information, and includes attention, concentration, and short-term memory. An example of this type of memory is keeping a phone number in your head before dialing. The prefrontal cortical region of the brain is active in working memory tasks; because working memory depends on an extensive network including many parts of the brain, many different diseases can impair this system. These include degenerative brain diseases (Alzheimer’s, Parkinson’s, Huntington’s, dementia with Lewy bodies), strokes, tumors, head injury, multiple sclerosis, and others. Psychiatric disorders such as depression, obsessive-compulsive disorder, and schizophrenia can also impair working memory; the cause of memory impairment in these disorders is not as yet well-understood, however, these disorders all decrease attention. Individuals with working memory impairment have difficulty with attention and concentration, and in performing new tasks with multistep instructions. In these cases, further evaluation with neuropsychological testing is then needed.

Memory Loss: What is “Normal”?

Older adults often complain that their memory is no longer reliable; they may worry about forgetfulness (“I lost my keys again!” “I had a senior moment!”), or slowing in recall of names, dates, or events. A common

question posed is whether memory loss with aging is “normal.” The relationship between aging and memory depends on many different factors, and there is a great deal of variability in individuals. Some aspects of cognition such as an individual’s general fund of knowledge can continue to improve throughout the life span. Memory problems associated with normal aging reflect a generalized decrease in speed and efficiency in the way in which information is processed and retrieved. In experimental tests of learning and memory, normal older adults typically perform as well as younger adults in tests of recall (e.g., repeating strings of numbers read aloud by an examiner) but have greater difficulty than younger adults in manipulating the information (e.g., repeating the numbers back in reverse order). Age-related memory problems also may include difficulty with retrieval processes for longer-held memories; studies show that when structure is provided such as cues, age-related differences decrease.

The most important question at hand is whether the memory loss displayed by an older adult is a normal phenomena or part of a disease process. Clinicians need to distinguish the mild forgetfulness of aging from mild cognitive impairment (MCI), which can be the precursor of Alzheimer’s dementia. Such detection is important because it is in the early stages of Alzheimer’s when medical interventions are most likely to be effective. Although it is often difficult to differentiate the memory changes of normal aging from MCI or early Alzheimer’s during casual observation or even with screening tests during a physician visit, the pattern of memory test results on neuropsychological testing studies can be of significant benefit to early diagnosis. Specifically, individuals with MCI and Alzheimer’s typically demonstrate poor retention and rapid forgetting of newly learned information; the latter picture differs from the problems with retrieval associated with normal aging. Other factors that impair memory that should be considered during a formal cognitive evaluation are as follows: (1) the presence of depression; (2) the use of any prescription or over-the-counter medications that impair memory (such as benzodiazepines like diazepam or Valium; or medications with anticholinergic properties such as amitriptyline or Elavil, and over-the-counter sleep and cold preparations like Benadryl, Tylenol PM, Unisom); and (3) the excessive use of alcohol, which can lead to memory syndromes.

Maintaining Normal Memory Function: “Use it or Lose it!”

There are ways to enhance and improve memory, and perhaps even stave off some memory changes of aging. These include the following:

- Regular stimulation of the brain with intellectually challenging activities (e.g., crossword puzzles, word games such as scrabble, learning something new such as studying a foreign language)
- A healthy diet and lifestyle (exercise, no smoking, avoiding excess alcohol, and a balanced diet)
- Control of vascular risk factors (diet, blood pressure, cholesterol, smoking, diabetes) to prevent small stroke damage to the brain
- Learning to focus attention better to improve later recall to remember something, the individual must first pay attention to the event such that it actually gets stored in their memory
- Maximize sensory systems including seeing and hearing (update glasses prescription and get hearing aids if needed) so as not to contribute to memory problems with sensory errors such as visual or auditory misperceptions
- Minimize stress that leads to poor attention and concentration
- Regular social interaction and support
- Adequate rest and sleep

Mild Cognitive Impairment

There are many different definitions of MCI and as yet, no agreement among experts as to a common definition. There is still active debate about whether MCI is an inevitable precursor to dementia, whether it is the earliest stage of dementia or whether there are forms that are benign (e.g., do not progress to dementia). The prevalence of MCI is not well-understood due to difficulties in how MCI is defined, though researchers have estimated a prevalence of 3% of research participants aged 60 or older and 15% of research participants aged 75 or older. Other research indicates that individuals who meet criteria for MCI progress to Alzheimer’s dementia at a rate of 10–15% per year.

A recent expert consensus definition of MCI was as follows: (1) individuals with MCI have neither dementia nor age-associated memory problems; (2) there is

self or informant report of cognitive decline, with evidence for this impairment found on objective tasks; (3) there is decline in cognition over time; and (4) function is mostly preserved with minimal impact on day-to-day activities. In other words, individuals with MCI may present with isolated memory complaints, but other cognitive functions such as language, planning, sequencing, and attention are not affected. These individuals are well-functioning and can complete activities of daily living without problems. In terms of risk factors, there is growing evidence that vascular factors may contribute to the development of MCI, and suggestions have been made of a link between high cholesterol levels and elevated blood pressure and the development of MCI.

The assessment of MCI requires a detailed history, interview of a family member or other informant, medical and neurological evaluation, physician administering cognitive screening (Mini Mental State Exam, MMSE) in the office, and a formal cognitive assessment (neuropsychological testing). The neuropsychological examination includes a clinical interview and the administration of objective standardized tests of cognition and mood. There are no recommended or approved treatment options for MCI. Acetyl cholinesterase medications that are approved for mild to moderate dementia may be helpful. Several long-term studies are now underway with various medications like statins, antioxidants, and anti-inflammatory medications.

Related Topics

▶ Alzheimer's disease, ▶ Anxiety disorder, ▶ Delirium, ▶ Dementia, ▶ Parkinson's disease

Suggested Reading

- Budson AE, Price BH (2005) Memory dysfunction. *N Engl J Med* 352:692–699
- Budson AE, Price BH (2005) Memory dysfunction in clinical practice. *Discov Med* 5:135–141
- Feldman HH, Jacova C (2005) Mild cognitive impairment. *Am J Geriatr Psychiatry* 13:645–655
- Lucas JA (2005) Disorders of memory. *Psychiatr Clin North Am* 28:581–597
- Panza F, D'Introno A, Colacicco A, Capurso C, Del Parigi A, Caselli RJ, Pilotto A, Argentieri G, Scapicchio PL, Scafato E, Capurso A, Solfrizzi V (2005) Current epidemiology of mild cognitive

impairment and other predementia syndromes. *Am J Geriatr Psychiatry* 13:633–644

Ravdin LD, Mattis PJ, Lachs MS (2004) Assessment of cognition in primary care: Neuropsychological evaluation of the geriatric patient. *Geriatrics* 59:37–44

Schacter DL, Tulving E (1994) *Memory systems*. MIT Press, Cambridge, MA, pp 1–38

Schneider LS (2005) Mild cognitive impairment. *Am J Geriatr Psychiatry* 13:629–632

Winblad B, Palmer K, Kivipelto M et al (2004) Mild cognitive impairment: Beyond controversies, toward a consensus Report of the International Workgroup on Mild Cognitive Impairment. *J Intern Med* 256:240–246

Suggested Resources

Alzheimer's Caregiver Support Online; <http://alzonline.net>

Virtual Hospital: Memory in the Aging Brain; <http://www.vh.org/adult/provider/neurology/memory/>

Menopausal Health

James Carter

In beginning a discussion about menopausal health, the first goal is to inform patients of the facts of this transition in their lives. If this can be accomplished then their individual decisions will be based on knowledge and hopefully the “fear” of the word “menopause” and this time of their lives will be eliminated. We are fortunate in the United States that now women are experiencing active lives well past 50 years of age. Indeed, fully one third of their lives (and some up to one half) are spent after the menopause. Women should not stop living just because they have “arrived” in this time.

There is much confusion in even defining this transition. Essentially, the transition is when women's menstrual cycles begin to become more irregular and then gradually ceasing. Only about 10% of women abruptly stop menstruating with no gradual time of prolonged menstruation. These women are usually in their early forties (the average time of this onset is 47+ years) and when women are generally leading active and fulfilling lives. So, the question is, how can patients be helped to continue to live healthy and comfortably during this transition (about 4 years) and beyond?

First, the hormone changes need to be understood. As noted, women in their forties begin to experience more anovulation (cycles where they do not ovulate) and before that menstrual cycles lengthen beginning anywhere from 2 to 8 years before menopause. In this short discussion there is not enough time to go into the physiology of what the ovary is doing other than to say it is ovulating less frequently. The physician and patient are alerted to this problem often when the patient is having irregular bleeding. The patient may still be having anovulation (not ovulating) but not have irregular bleeding. For the patient who is having dysfunctional uterine bleeding (DUB) and is not smoking there is a number of treatment options that she may choose. First, the oral contraceptive pill, which can be used in this transition period, fulfills a need for contraception, allows a more regular period, increases bone density whereas decreasing the risk of endometrial and ovarian cancer. For the patient who does not need or want the contraception option, cyclic progesterone therapy can regulate her menses and reduce her risk of the lining of the womb being thickened because of the irregular bleeding. The progesterone cycling works quite well, but will not help the bone density or decrease the cancer risk as noted above. Ten percent of women experience hot flashes during this time before the menopause and the oral contraceptive treatment can alleviate this symptom as well.

Once the menopause has begun, there are continued options. The use of hormone therapy has been well documented and, of course, remains a continued source of confusion as many physicians are intimidated and may rely on the media for their information. There has been less emphasis on menopausal symptoms that can impair quality of life, such as the hot flashes, sleep disorders, sexual dysfunction, and alteration of mood. There has been great agreement in the prevention of osteoporosis with estrogen therapy.

After the initial fright of the Women Health Initiative (WHI) in July 2002 when many women stopped using their hormones, there was another large group of women that returned to their physicians' offices with complaints of hot flashes, painful intercourse due to vaginal dryness, and the many symptoms from irritability from lack of sleep.

In dealing with the hot flashes and vaginal dryness, estrogen therapy will successfully treat these symptoms. If a patient has an intact uterus she will need to be given estrogen and also the progesterone. The fear of giving Provera that the WHI raised can be

eliminated by simply adding either the norethindrone (the progesterone in many birth control pills) or micronized progesterone (Prometrium) instead of Provera (which also has many unwanted side effects). Many patients come in with complaints of vaginal dryness and pain on intercourse. It is well documented that the lack of estrogen thins out the lining of the vagina (especially the outer one third), changes the bacterial ecosystem and, in so doing, both increases the incidence of burning on intercourse and increases the incidence of urinary tract infections. These changes will occur in less than a year of having the estrogen withdrawn. It is a rather simple approach to either giving patients oral or transdermal estrogen or estrogen and progesterone combination for those women who have a uterus. For many women, one needs to give them an additional local estrogen cream or in some cases patients will improve with only the local estrogen cream. This is generally beneficial to the local symptoms of vaginal dryness and coital pain, but does not generally help the hot flashes or the sleep and mood disturbances. There can be generalized aches and pains that are difficult to dissect out from the aging process. This must be addressed with the gynecologist along with perhaps another physician that can investigate if the cause of the pain is arthritis or other musculoskeletal causes. Clearly not all aches and pains can be eliminated with estrogen replacement or hormonal replacement therapy. That said, many of the patient's complaints have been helped by hormone replacement. The use of the alternative treatments has been and continues to be studied. The use of soy in treating hot flashes and vaginal dryness along with preventing osteoporosis and heart disease has been advocated by many. Soy is perfectly good in the diet as long as one remembers to decrease the increase of calories that whole soy brings by decreasing other dietary products. It has only been shown to be strongest in improving lipid profiles (especially in decreasing the low-density lipoproteins—the bad lipids) and helping with hot flashes. There is no evidence that it improves vaginal dryness or significantly helps in osteoporosis. Similar statements and investigations have been undergone for black and red kohash with placebo equaling their success rates.

In regards to bone health, it is the least of the controversies, with estrogen clearly slowing bone loss and in the compounds of the estrogen and progesterone pills and patches there is some evidence that in certain doses there is a gain in bone. For the women

who do not want estrogen treatment, there are many alternatives available in the bisphosphonate category from the weekly to the monthly dosing. There continues to be much research to improve the gastrointestinal side effects. The selective estrogen receptor modulators (SERMs) like raloxifene (Evista) are also helpful in helping bone density, though in some women, they may exacerbate the hot flashes. As always, diet (including calcium supplementation) and exercise to maintain that healthy lifestyle or begin a healthy lifestyle can not be emphasized enough in any discussion on health.

Many discussions on menopausal health leave out the very difficult subject of mood alterations or generally good feelings about oneself. Clearly, this is a difficult subject to tackle as there are many issues involved. Exercise can release the body's endorphins that will allow one to feel better. It is also understood that estrogen improves cognition in many studies while in some cases progesterone causes more problems like bloating. We also know that testosterone (androgen therapy) may also improve quality of life by enhancing sexual desire, function, and general well being, but it is difficult to quantitate the doses and the ideal doses of testosterone and combination hormones. The various doses must and should be determined on an individual basis, taking into consideration the benefits, risks and simply the other interactions of the different regimens and the patients' status.

For some women who have strong family histories of colon cancer, one must emphasize that in all of the studies for the last 50 years estrogen has been shown to decrease the risk of colon cancer by about 50%. This fact seems to be forgotten as the number one fear of women is breast cancer. The number one killer of women remains cardiovascular disease, but colon cancer kills more women than breast cancer and we have a treatment that will decrease the risk and a procedure (colonoscopy) that can look into this area. Women have long since accepted the yearly mammogram (whether or not they are checking their breasts on a monthly basis or not), but a few patients just fear or refuse to get a screening colonoscopy at 50 years of age. Many physicians just do not even bring it up which adds to the conundrum.

In managing the cardiovascular dilemma that the WHI began, it should be noted that one must always be aware of the individual's lipid profile and treatment with lipid lowering medications are clearly available.

In addition, treating individual patients with hormone replacement therapy in conjunction with this therapy is quite appropriate.

One could not finish a discussion on menopausal health without discussing the fear of estrogen therapy and the fear of breast cancer or women with breast cancer not taking estrogen who are having vaginal dryness, hot flashes, and sleep disturbances; their internal medicine physicians that add to their fear by telling them they cannot take hormones. Many of the gynecologic cancer experts in this country, including Dr. Phil DiSaia in California and Dr. William Creasman in South Carolina, among others, continue to prescribe estrogen in many of their patients with breast cancer. The data on these patients show that there is a better five-year survival in these women on the hormone than those off the hormones. The data is just the opposite of what people believe and what physicians are telling their patients. This is an individual's decision but it should be made from information and not fear.

Just like so many issues in life, the answers may be in our own good common sense and remembering moderation. If one has reached the menopausal years, overeating, overdrinking, and not taking care of oneself, including working too hard and not getting enough rest, a few tablets or creams are not going to miraculously reverse this poor lifestyle. On the other hand, if one has been trying to eat right or getting exercise now and again, keeping up with reading and seeing a good doctor regularly, then some "refinements" of eating better can be quite helpful. By exercising more (both our minds and our bodies) along with individualizing a treatment regimen for our individual symptoms, there is no reason that we cannot extend our life with continued good quality for many years to come. If a physician will not listen to you or gets angry when you suggest an alternative plan, then run (do not walk) out of his or her office and find another physician. There is an increasing number of physicians that feel that your health is a partnership and the more you work together the more comfortable and hopefully more enjoyable your menopausal years and life can be.

Related Topics

- ▶ Breast examination, ▶ Cancer screening, ▶ Coitus and vaginal dryness, ▶ Gender, ▶ Menopause, ▶ Ovarian cancer, ▶ Postmenopausal bleeding, ▶ Vaginal bleeding, ▶ Vaginismus***

Suggested Readings

- Creasman WT, Hoel D, DiSaia PJ (2003) The WHI: Now that the dust has settled. *Am J Obstet Gynecol* 189(3):621–626
- Forsberg J (1995) A morphologist's approach to the vagina—age related changes and estrogen sensitivity. *Maturitas* 22:57–515
- Freedman MA (2002) Female sexual dysfunction. *Int J Fertil Women's Med* 47(1):18–21
- Freedman MA (2002) Quality of life and menopause: The role of estrogen. *J Women's Health* 11(8):703–718
- Kravitz HM, Janssen I, Santoro N, Bromberger JT, Schocken M, Everson-Rose SA, Karavolos K, Powell LH (2005) Relationship of day to day reproductive hormone levels to sleep in midlife women. *Arch Intern Med* 165(20):2370–2376
- Speroff L (2000) Management of the perimenopausal transition. *Contemp Obstet Gynecol* 10:14–37
- Writing group for Women's Health Initiative (2002) Risks and benefits of estrogen plus progestin in healthy postmenopausal women: Principal results from the Women's Health Initiative randomized controlled trial. *JAMA* 288:321–333
- Writing group for Women's Health Initiative (2004) The effects of conjugated equine estrogen in postmenopausal women with hysterectomy: Women's Health Initiative Randomized Control Trial. *JAMA* 291:1701–1712

Menopause

Kathy A. King

Menopause is a natural event experienced by all women as a part of the aging process. By definition, menopause is the cessation of menses, diagnosed retrospectively after 12 months have passed without menstruation. The age at which natural menopause occurs is genetically predetermined and has increased slightly over the past 150 years with the dramatic increase of average life expectancy.

There are currently over 29 million menopausal aged women in the United States and that number is expected to increase over the next 10 years. The average woman can expect to spend over one third of her life in the postmenopausal period. The average age of natural menopause in the Western world occurs at 51.4 years of age, with a normal age range of 45 to 55 years (95% confidence limits). The only environmental factor known to alter the age of menopause is cigarette smoking, which reduces the age of onset of menopause by about 2 years. Menopause can also be induced following bilateral oophorectomy or iatrogenic ablation of

ovarian function by chemotherapy or pelvic radiation. Approximately 1% of women enter menopause naturally before the age of 40 and, by definition, have premature ovarian failure that requires evaluation.

Perimenopause

Perimenopause is the transitional period that begins with the first signs and symptoms of endocrinologic change, the hallmark of which is irregular menses, and ends 1 year after the last menstrual cycle. On average, perimenopause begins at age 47.5 years and lasts an average of 4 years. Symptoms may begin as early as the late thirties for some women. About 10% of women do not experience perimenopause and will have regular menses until menstruation abruptly stops.

Physiologic Changes

The physiologic changes leading up to menopause begin long before the cessation of menses and the development of menopausal symptoms. The number of ovarian follicles decreases from 1 to 2 million at birth to approximately 1000 at menopause. Menopause results from two key physiologic events: the loss of primordial follicles and the resulting decline in ovarian production of progesterone, estradiol, and testosterone, in that order chronologically. Most follicles are lost due to atresia and not ovulation. Menstrual irregularity is the most reliable sign of the menopausal transition. Shorter cycle length is one of the first signs of the climacteric. In the past, it was believed that lack of estrogen production by the ovaries resulted in elevated follicle-stimulating hormone (FSH) levels and cessation of menses.

More recent evidence suggests inhibin B, a glycoprotein synthesized by granulosa cells in the ovary plays a major role in triggering menopause. FSH normally stimulates inhibin B production by granulosa cells which then suppresses FSH through a negative feedback loop. After age 45, inhibin B levels fall, possibly due to the decreased number of ovarian follicles resulting in a rise of FSH. The rapid increased FSH levels stimulate increased and more rapid estradiol secretion from the remaining ovarian follicles resulting in shorter follicular phase of cycles. The pattern of ovarian response is not predictable from month to month, so there may be extreme variability in cycle

length. Estrogen levels in this phase may be normal, lower than, or higher than normal.

Because of wide variability from month to month and even day to day, neither estradiol nor FSH levels measured during this phase are helpful in predicting the onset of menopause. Symptoms such as night sweats or hot flashes, which occur in about 75% of North American women, are poor predictors of menopause given that these symptoms may begin many years before the onset of menopause. A recent study found that the best predictor of time to menopause was lack of menses for 60 to 90 days. Sixty plus days of amenorrhea had a positive predictive value of 89% for menopause within 4 years.

Symptoms of Menopause

Menopause-related symptoms can be divided into three categories: vasomotor, genitourinary, and other systemic symptoms. Vasomotor symptoms include hot flashes, night sweats, sleep disturbances, and palpitations. Genitourinary symptoms include vaginal dryness, dyspareunia, vaginal irritation or pruritus, and urinary frequency or dysuria. Other systemic symptoms may include fatigue, irritability, cognitive difficulties, reduced sexual desire, and arousal.

The most commonly reported effect of menopause is vasomotor symptoms. The prevalence of vasomotor symptoms is about 10% at baseline in premenopause, increases to 50% to 80% immediately postmenopause, and tapers off to 20% to 40% 4 years after the last menses. In the heart and estrogen/progestin replacement study (HERS), which studied the effect of hormone therapy on 2763 postmenopausal women with coronary artery disease whose mean age was 67, fully 70% of women reported no hot flashes at baseline. Hot flashes are described as an intense sensation of warmth, which begins in the upper body and spreads to the face. There may be associated reddening of the skin and sweating which lasts from a few seconds to a few minutes. The average hot flash lasts 4 min and typically ends in a cold or sweating sensation. Some women also experience palpitations with racing or skipping heart beats. Frequency of hot flashes varies greatly. About one third of women are bothered enough to seek medical attention. About 10% of women describe the episodes as severe enough to interfere with their daily functioning. For some women hot flashes may occur almost hourly. Nocturnal hot flashes are often the most

bothersome to women because of the disturbance of sleep, which can lead to chronic fatigue, irritability, and decreased memory. Some night sweats are severe enough to necessitate changing of clothing and bedding. Precipitants of hot flashes include hot weather, stress, caffeine, alcohol, and spicy foods.

A University of California Davis study of 16,000 women found that vasomotor symptoms do differ by ethnicity, lifestyle factors, and socioeconomic status. African American women were more likely to have hot flashes than other ethnic groups. Forty-five percent of African American women reported hot flashes in 2 weeks before the study compared to 31% of Caucasians. Asian and Hispanic women reported hot flashes less frequently than other groups. Japanese women in Japan report very few hot flashes and Mayan women in Mexico do not report any menopausal symptoms other than menstrual irregularity. This lower prevalence of hot flashes may be due to increased intake of dietary phytoestrogens and decreased meat consumption. Japanese women on a traditional low fat diet have been found to have urinary phytoestrogens up to 10 times higher than omnivorous American women.

Medical Risks for Postmenopausal Women

Menopause increases the risk of several medical conditions. The incidence of osteoporosis increases after menopause. There is an increase in osteoclastic activity, resulting in an increased rate of bone resorption. By the age of 60, one in four Caucasian women not on hormone therapy will develop spinal compression fractures. By the age of 80, one in five Caucasian women not on hormone therapy will develop hip fractures. Fifteen percent of these elderly women will die within 6 months from complications directly resulting from their hip fracture. In the United States, there are approximately 300,000 hip fractures and 500,000 other fractures annually in postmenopausal women.

The risk of cardiovascular disease increases after menopause. Before age 50, men have myocardial infarction at a rate three times that of women. After age 50, the gender gap narrows. By age 65, the incidence of myocardial infarction in men is two times that of women. By age 80, the incidence of myocardial infarction in men and women is the same. The changes that are thought to contribute to atherosclerosis after menopause are complex, but appear to include

increased levels of total cholesterol, low-density lipoprotein (LDL), and triglycerides; and decreased levels of high-density lipoprotein (HDL). Cardiovascular disease remains the leading cause of death for both men and women.

Conclusion

Menopause is not a disease, but a normal phase in a woman's life marked by physiologic change. It can serve as an ideal marker for women and their health-care providers to identify symptoms and disease risk factors. It is an opportunity for health-care providers to advise women about healthful living and lifestyle adjustments. Treatment options include no intervention, lifestyle modification, nonprescription remedies, complementary and alternative medicine, and prescription medication. Lifestyle modifications may include cessation of smoking, adopting a nutritionally sound diet, regular exercise, achieving and maintaining a healthy weight, avoiding excess alcohol, and reducing stress. A Gallup Survey found that 75% of postmenopausal women report having made a lifestyle change to benefit their health at menopause.

Related Topics

▶ Menopausal health, ▶ Midlife crisis, ▶ Perimenopause, ▶ Postmenopausal bleeding, ▶ Women

Suggested Readings

- Nevian JE, Pharr ME (2002) Preventive care for the menopausal woman. *Prim Care* 29(3):583–597
- Paoletti R, Wegner NK (2003) Review of the International Position Paper of Women's Health and Menopause: A comprehensive approach. *Circulation* 107(9):1336–1339
- Soules MR, Sherman S, Parrot E et al (2001) Executive summary: Stages of reproductive aging workshop (STRAW) *Fertil Steril* 76:874–878
- Utian WH, Boggs PP (1999) The North American Menopause Society 1998 Menopause Survey. Part I: Postmenopausal women's perceptions about menopause and midlife. *Menopause* 6(2):122–128

Suggested Resources

The North American Menopause Society, Menopause Curriculum Study Guide; <http://www.menopause.org>

Mental Illness

Tira Stebbins

Mental, or psychiatric, illness can affect older adults and their caregivers as significantly as physical illness. Often, physical illness affects mental illness and vice versa. Many mental disorders and psychiatric symptoms are related to physical disorders or to the medications used to treat physical disorders. The cause of mental disorders is generally unclear, although it is believed that when not related to a medical condition, mental illness is related to factors such as brain chemistry and neurotransmitters, genetics, life stressors, and drug and alcohol abuse. Psychiatric disorders are diagnosed by symptoms and are treatable in most people.

Mental disorders are classified into the following categories: disorders usually first diagnosed in infancy, childhood, or adolescence; delirium, dementia, and amnesic and other cognitive disorders; mental disorders due to a general medical condition not elsewhere classified; substance-related disorders; schizophrenia and other psychotic disorders; mood disorders; anxiety disorders; somatoform disorders; factitious disorders; dissociative disorders; sexual and gender identity disorders; eating disorders; sleep disorders; impulse-control disorders not elsewhere classified; adjustment disorders; personality disorders; and other conditions that may be a focus of clinical attention.

Although disorders in all categories can affect older adults, this article will focus on those disorders most common in older adults: delirium and dementia; schizophrenia and psychotic disorders; mood disorders; and anxiety disorders.

Delirium is defined by confusion that begins suddenly and varies in intensity over the course of a few hours. The person experiencing delirium has difficulty paying attention and thinking clearly, becomes disoriented, and has difficulty remembering over the span of a few hours or a few days, and often symptoms become worse at night. Sometimes the person becomes anxious and agitated; however, older adults often become more quiet and withdrawn. There is often slurred speech and the individual is incoherent. There may be abnormal sleep patterns such as sleeping during the day and being awake at night. If the delirium is severe, the person may hallucinate.

Delirium is common among older adults and is often the reason that caregivers seek medical attention.

About 10–20% of older people admitted to the hospital already have delirium, while as many as 60% of nursing home residents aged 75 and older experience delirium at any given time; people above age 85 are most susceptible. Men are more likely to experience delirium than women as older adults.

There are different diagnoses for delirium, based on cause. Delirium in older adults can be caused by stressful situations such as surgery or being in an intensive care unit (ICU). Older adults are also more sensitive to medications such as antihistamines, which may cause delirium. The withdrawal of sedatives (substance withdrawal delirium) can cause delirium, for example when a long-term alcoholic stops drinking. Physical disorders such as urinary tract infection, dehydration, and vitamin deficiency can also cause delirium in older people (delirium due to a general medical condition). Substance intoxication delirium may be due to alcohol, amphetamines, cannabis, cocaine, hallucinogens, inhalants, opioids, sedatives, anxiolytics, or other related substances. Delirium due to multiple etiologies involves more than one cause, and delirium not otherwise specified includes other causes not accounted for by the other diagnoses.

When an individual is being assessed for delirium, he or she may be hospitalized to determine the cause and begin treatment. Caregivers and family members can give important information about the person's normal cognitive functioning, medications being taken, and the onset of symptoms. A person experiencing delirium needs immediate attention; if the cause is identified and addressed quickly, delirium can be cured.

Dementia is a condition that affects cognitive functions such as memory and language/communication. People suffering from dementia often have changes in their personality, are disoriented, have problems with daily activities, are sometimes disruptive and engage in inappropriate behavior, and sometimes experience psychotic symptoms such as hallucinations, delusions, or paranoia. This disorder usually progresses, and is generally not curable, although some treatments may minimize symptoms. Many individuals diagnosed with dementia lose ability to care for basic needs such as bathing or self-care. Although it can occur at any age, it is more common in older adults. It is estimated that 6–8% of those aged above 65 and 35% of those aged above 85 have dementia.

There are many disorders included under the category of dementia. These disorders are named by the cause of dementia, such as dementia due to HIV

disease, dementia due to head trauma, dementia due to Parkinson's disease, and the like. The most common type of dementia is Alzheimer's disease. Dementia is often diagnosed when family members or a doctor notice forgetfulness and further assessment is conducted through a mental status examination, information from family members, physical examination, and sometimes neuropsychological testing. It is important to remember that forgetfulness later in life does not necessarily indicate that the person has or will develop dementia or Alzheimer's disease.

While there is no cure for most types of dementia, there are actions taken to improve functioning. Providing a supportive environment that is familiar, safety includes reminders and a predictable daily routine is helpful to a person with dementia. Generally, a person with dementia should not drive anymore, and eventually long-term care facilities may be necessary. Some medications may slow the progression of dementia, and treating disorders causing dementia can help. Treating depression, not drinking alcohol, and discontinuing medications that make dementia worse are also important steps to take. In order to manage disruptive behaviors it is important to understand the world in which a person with dementia lives so that accommodations can be made and the environment can be modified as necessary.

Psychotic disorders involve a loss of contact with reality including delusions (false beliefs), hallucinations (false sensory experiences), and paranoia (false beliefs of being targeted by others). Psychosis can develop gradually or suddenly and symptoms may fluctuate in severity. Older people with psychotic disorder may have developed the disorder in adolescence or early adulthood, or they may have developed symptoms for the first time later in life. Psychosis is quite distressing to the person experiencing it, as well as those around the person.

Psychotic disorders may occur as part of other mental disorders such as depression, as a result of severe physical illness, in relation to drug or alcohol use or abuse, or due to certain medications. The exact cause of psychosis is unknown, though it is believed that brain chemicals called neurotransmitters are involved in psychosis. There is a genetic component to these disorders as well.

Psychotic disorders include the following: schizophrenia (delusions, hallucinations, disorganized speech, disorganized or catatonic behavior), schizophreniform disorder (symptoms of schizophrenia but shorter

time period), schizoaffective disorder (mood disorder episode and schizophrenia symptoms occur together), delusional disorder (nonbizarre delusions or false beliefs without symptoms of schizophrenia), brief psychotic disorder (psychotic symptoms that last more than 1 day and less than 1 month), shared psychotic disorder (delusion in one individual who is influenced by another person who has had that delusion for a longer period of time), psychotic disorder due to a general medical condition, substance-induced psychotic disorder, and psychotic disorder not otherwise specified. Medication therapy can be effective in treating psychotic disorders, though antipsychotic medications often have undesirable side effects. The prognosis of treatment often depends on the cause of the psychotic symptoms.

Mood disorders are characterized by disturbance of mood that impairs daily functioning. Disorders in this category include major depressive disorder (2 weeks or more of depressed mood with at least four other symptoms), dysthymic disorder (2 years or more of depressed mood but not meeting criteria for major depressive disorder), depressive disorder not otherwise specified, bipolar I disorder (one or more manic episodes accompanied by depressive episodes), bipolar II disorder (one or more major depressive episodes accompanied by at least one hypomanic episode), cyclothymic disorder (at least 2 years of numerous periods of hypomanic episodes and numerous periods of depressive symptoms), bipolar disorder not otherwise specified, mood disorder due to a general medical condition, substance-induced mood disorder, and mood disorder not otherwise specified.

Major depressive episode is characterized by extreme sadness that interferes with daily living. Other symptoms of depression include a lack of interest or pleasure in activities, hopelessness, appetite or weight changes, sleep problems, emptiness, and sometimes thoughts about dying or suicide. People who are depressed sometimes experience a lack or “numbing” of emotions, difficulty in concentrating, memory problems, and feelings of guilt. Some people are restless and agitated while others (and often older adults) are withdrawn and lethargic symptoms may be worse in the morning. Cognitive symptoms such as disorientation, memory loss, and distractibility may be prominent in older adults experiencing a depressive episode. A manic episode is characterized by elevated, expansive, or irritable mood that may include inflated self-esteem or grandiosity, decreased need for sleep,

pressured speech, flight of ideas, or distractibility. A mixed episode involves criteria are met for both a manic episode and a depressive episode. Mixed episodes appear to be more common in individuals above 60 years with bipolar disorder.

Treatment of mood disorders usually involves medication such as antidepressants or mood stabilizers. Antidepressants are effective in treating approximately two thirds of older adults. Counseling and psychotherapy, which are also effective, are usually used in conjunction with medication. Electroconvulsive therapy, which involves passing an electrical current through the brain to release neurotransmitters, is still occasionally used and is generally very safe and effective. Phototherapy, or the use of bright light, as well as exercise, have been reportedly effective as well.

One out of 6 older adults experience depression; some first develop symptoms earlier in life whereas others experience it for the first time later in life. Depression may be triggered by a sad life event, though often the onset is not connected to an identifiable stressor. As with most mental disorders, the exact cause of depression is unknown, though neurotransmitters, chronic life stress, physical disorders such as cancer or heart attack, medications, or drug and alcohol abuse may contribute.

Anxiety disorders involve nervousness or worry that interferes with daily functioning. Disorders in this category include panic disorder (recurrent unexpected panic attacks), specific phobia (anxiety provoked by a feared object or situation), social phobia (significant anxiety provoked by social or performance situations), obsessive-compulsive disorder (obsessions and compulsions), posttraumatic stress disorder (reexperiencing and avoidance of a traumatic event), acute stress disorders (symptoms similar to posttraumatic stress disorder that occur directly after a stressful event), generalized anxiety disorder (6 months or more of persistent and excessive worry and anxiety), anxiety disorder due to a general medical condition, substance-induced anxiety disorder, and anxiety disorder not otherwise specified.

Anxiety disorders, particularly generalized anxiety disorder which affects 1 out of 30 older people, are common in older people. Obsessive-compulsive disorder and phobic disorder are more common in older people than posttraumatic stress disorder and panic disorder. The onset of an anxiety disorder may occur early in life, or may occur for the first time later in life.

Again, the cause of anxiety disorders is often unclear; however, physical disorders, other mental

disorders (particularly dementia or delirium), neurotransmitters, or life stressors are often other factors. Treatment usually involves medication including antidepressants or benzodiazepines, as well as counseling. Counseling may involve cognitive-behavioral techniques such as systematic desensitization or exposure-based therapy.

As the size of the older adult population continues to grow, access to and availability of health care for those with mental illnesses becomes even more important. Nursing homes and other long-care facilities must adapt and be able to treat mental illnesses as well as physical illnesses, and understand the influence disorders have on one another and the individual.

Related Topics

▶ Alzheimer's disease, ▶ Anxiety disorder, ▶ Bipolar disorder, ▶ Cognitive behavioral therapy, ▶ Delirium, ▶ Dementia, ▶ Depression, ▶ Dysthymia, ▶ Mood disorders, ▶ Psychotherapy, ▶ Schizophrenia

Suggested Readings

American Psychiatric Association (2000) *Diagnostic and statistical manual of mental disorders, 4th edn, Text Revision (DSM-IV-TR)*. Washington, DC

Beers MH (ed) (2004) *The Merck manual of health & aging*. Simon and Schuster, New York

Suggested Resources

Depression and Related Affective Disorders Association (DRADA); www.drada.org

National Alliance for the Mentally Ill; www.nami.org

National Institute of Mental Health; www.nimh.nih.org

Mental Retardation

Ashish Aneja · Kuldeep Vaghela

Mental retardation is traditionally viewed as a problem confined solely to children and young adults. To some extent, this perception is well-founded. However, with

advancements in medical care, a greater number of people diagnosed with mental retardation in their youth are now living longer and reaching the middle and elderly age groups. In addition, family members of those with special needs are often the elderly and indirectly, the most affected by this condition. People with mental retardation in the United States, currently estimated to number between 6.2 and 7.5 million, have historically been victimized both by their disability and by public prejudice and ignorance. In recent decades, there have been significant gains in understanding the condition and the provision of education and other support services that meet the unique needs of those who are mentally retarded. Consequently, there has been a gradual willingness on part of the public to accord individuals with mental retardation the respect and rights they deserve as human beings and citizens. Nevertheless, significant misunderstanding of the unique nature and implications of mental retardation remains widespread.

Mental retardation is defined classically by the presence of three important components. First, the person's intellectual functioning is below average. Second, the "deficit" results from an injury, a disease or an abnormality that existed below 18 years. Third, the ability to adapt to the environment is impaired. Mental retardation is also defined by an intelligence quotient (IQ) that is significantly below the mean (2 standard deviations in scientific parlance). Persons with mental retardation have limitations in mental functioning, social and communication skills, and caring for themselves.

The American Association on Mental Retardation (AAMR) describes mental retardation to be characterized by significantly subaverage intellectual functioning, existing concurrently with related limitations in two or more of the following applicable adaptive skill areas: communication, self-care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure, and work. DSM-IV (i.e., 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* published by the American Psychiatric Association) takes this definition of AAMR and further emphasizes that mental retardation refers to more than just the innate intelligence of a person in that it is more an interaction between a person's intellectual capacity and his environment. Moreover, it includes other features such as below average intelligence of 70 or less and a decreased adaptive ability to function namely impaired adaptive behavior. Adaptive behavior is the collection of conceptual, social, and

practical skills that have been learned by people in order to function in their everyday lives. Significant limitations in adaptive behavior affect a person's daily life and the ability to respond to a particular situation or to the environment. Limitations such as the following can be determined by using standardized tests:

Conceptual skills: Receptive and expressive language, reading and writing, money concepts, and self-direction.

Social skills: Interpersonal, responsibility, self-esteem, is not gullible or naïve, follows rules, obeys laws, and avoids victimization.

Practical skills: Personal activities of daily living such as eating, dressing, mobility and toileting; instrumental activities of daily living such as preparing meals, taking medication, using the telephone, managing money, using transportation, and doing house-keeping activities; occupational skills; and maintaining a safe environment.

Mental retardation is classified in different classes to differentiate the degree of severity. The four classes are classified as follows: (a) mild (IQ level 50–55 to approximately 70), (b) moderate (IQ level 35–40 to 50–55), (c) severe (IQ level 20–25 to 35–40), and (d) profound (IQ level below 20 or 25).

Individuals with mental retardation are several times more likely than the general population to experience psychiatric disorders such as hyperactivity, autism, developmental disabilities, depression, and bipolar disorder. In instances where another disorder does occur, the concomitant existence of mental retardation modulates the clinical presentation of the second disorder, occasionally making it almost unrecognizable. Depression may present merely with lack of sleep, weight loss, and withdrawal and lack of interest in otherwise enjoyable activity. Mania may present as agitation, irritability, and an absence of sleep. If schizophrenia coexists, it may manifest only by mannerisms or bizarre affect. Since mental retardation masks or even precludes symptom recognition, more reliance is usually paid to signs in approaching the diagnosis of these concurrent conditions.

Caregivers of individuals with mental retardation must be cognizant of subtle behavior changes that may be a harbinger of an additional mental disorder. Many adults with mental retardation are institutionalized and their medical care is often provided by physicians associated with these facilities. Since the 1970s, however, an increased number of mentally retarded adults

have moved into the community to live with relatives, with foster families, or in community residential facilities. These individuals often seek medical care from family physicians in their community. In addition, while children with mental retardation and developmental disabilities may be followed by pediatricians, medical care usually must be found elsewhere when these patients reach adulthood. Providing care for adults with mental retardation poses several challenges because of a general lack of awareness and specific training among adult primary care providers.

Diagnosis and Treatment of Mentally Retarded Adults

Diagnosing mental disorders in mentally retarded adults presents with several difficulties. First, the diagnostic criteria for most mental disorders use subjective criteria, such as reporting mood, loss of energy, grandiose thoughts, delusions, and hallucinations. Mentally retarded individuals, however, often cannot report their subjective experiences accurately. Some of these patients even have little or no ability to speak. Second, the differentiation of developmental behavior and thinking from psychopathology presents difficulties. For example, a normal 6-year-old child may have an imaginary friend. In a mentally retarded adult with a mental age of 6, it is important to distinguish a normal imaginary friend from hallucinations indicative of a psychotic disorder. Similarly, judging the quality of social relationships, which is used as one of the major features of autistic disorder, requires that the patient's relationships seem abnormal compared to what is expected from someone with that degree of intellectual disability and social development. Aggression, which is rarely a diagnostic symptom of most mental disorders as defined in the DSM, constitutes the most common symptom that brings mentally retarded individuals to psychiatric attention. Individuals with schizophrenia, substance abuse disorders, or depression may show excessive aggressiveness, yet this symptom is not used to define the disorder. Other more important symptoms are required to establish these diagnoses. In the diagnostic assessment of a typical mentally retarded adult, one must put aside the prominent aggression—the symptom causing the most concern to the family and caregivers—and seek concomitant symptoms to reach a diagnosis.

Many adults with mental retardation live under unpleasant circumstances. They have much less autonomy than other adults. Most have family members or caregivers constantly telling them what to do. They observe that nonretarded adults around them have many more privileges than they do. Their desire for physical intimacy is usually thwarted. To some extent, anger and frustration seem appropriate and normal. The patient's intellectual disability may make it difficult to express that frustration in nonaggressive ways, such as putting it into words, seeking out other companions, or moving to a different living situation or location. These individuals are vulnerable to abuse. Moreover, they often lack the ability to complain and seek correction of the problem. An examining treatment provider may have difficulty eliciting from the caregivers what is pathological about the patient's environment. Some of these patients' aggressiveness and socially inappropriate behavior would tax the ability of any caregiver to maintain equanimity. On the other hand, the aggressiveness may in some cases be a reaction to physical and mental abuse.

Many medical problems are more prevalent among individuals with mental retardation than in the general population. Some of these conditions, such as severe seizure disorder or epilepsy, have traditionally been managed by subspecialists. To make care more challenging, accurate histories may not be available, and patients may be unable to cooperate with examination or testing. Because of these and other issues, primary care physicians may be reluctant to assume the care of mentally retarded adults. Payment sources also can create barriers to care in the community. Most adults with mental retardation are covered by Medicaid, which in most states has historically paid low rates for primary care services. As states increasingly move toward capitated arrangements for Medicaid recipients, barriers to care could increase. Despite evidence to the contrary, mentally retarded patients are generally perceived as being difficult to evaluate and treat in managed care settings. Mental retardation can be caused by any condition that impairs development of the brain before birth, during birth, or in the childhood years. Several hundred causes have been discovered, but in about one third of the people affected, the cause remains unknown. The three major known causes of mental retardation are Down syndrome, fetal alcohol syndrome, and fragile X syndrome. Other major causes can be categorized as follows:

Genetic conditions: These result from abnormalities of genes inherited from parents, errors when genes combine, or from other disorders of the genes caused during pregnancy by infections, overexposure to x-rays, and other factors. There are many genetic diseases associated with mental retardation. Some examples include phenylketonuria (PKU), a single gene disorder. Due to a missing or defective enzyme, children with PKU cannot process a part of a protein called phenylalanine. Without treatment, phenylalanine builds up in the blood and causes mental retardation. Down syndrome is an example of a chromosomal disorder. Chromosomal disorders occur sporadically and are caused by too many or too few chromosomes, or by a change in structure of a chromosome. Fragile X syndrome is a single gene disorder located on the X chromosome and is the leading inherited cause of mental retardation.

Problems during pregnancy: Use of alcohol or drugs by the pregnant mother can cause mental retardation. In fact, alcohol is known to be the leading preventable cause of mental retardation. Recent research has implicated smoking in increasing the risk of mental retardation. Other risks include malnutrition, certain environmental toxins, and illnesses of the mother during pregnancy, such as toxoplasmosis, cytomegalovirus, rubella, and syphilis.

Problems at birth: Prematurity and low birth weight predict serious problems more often than any other conditions. Difficulties in the birth process such as temporary oxygen deprivation or birth injuries may cause mental retardation.

Problems after birth: Childhood diseases such as whooping cough, chicken pox, measles, and *Hemophilus influenzae* infection (a common bacterial childhood infection) may lead to meningitis, encephalitis, and damage the brain. Injuries such as a blow to the head or near drowning are also common causes. Lead, mercury, and other environmental toxins can cause irreparable damage to the brain and nervous system.

Poverty and cultural deprivation: Children growing up in poverty are at higher risk for malnutrition, childhood diseases, and exposure to environmental health hazards and often receive inadequate health care. These factors increase the risk of mental retardation. In addition, children in disadvantaged areas may be deprived of many common cultural and educational experiences provided to other youngsters. Research suggests that such understimulation can result in irreversible damage and can serve as a cause of mental retardation.

General Considerations in Caring for Mentally Retarded Adults

Medical providers need to know if the patient lives alone, with relatives, or in a community residential facility. Effective evaluation and treatment often require verbal or written communication with caregivers, who may provide information that is useful in putting the patient's symptoms or complaints in context. For instance, small changes in a mentally retarded individual's daily routine can produce great anxiety, which may then cause myriad symptoms. The individual in question should be involved in discussions of health or illness at a level appropriate to his or her mental functioning. A clear-cut determination of guardianship status must also be made. Many adults with mental retardation living in the community are their own guardian either because of deceased caregivers or caregiver burnout. Not infrequently, however, parents or other relatives have medical guardianship. In the latter case, the patient's physician should obtain documentation of the guardianship, and the medical guardian should be present when decisions are made. Even for mentally retarded patients who serve as their own guardian, third parties may place limitations on treatment. Many states have human rights committees that monitor the treatment of individuals who are living in community residential facilities or with foster families to ensure, for example, that sedation is not used to control behavior. Each State's Office for Developmental Disabilities can provide information on regulations concerning the treatment of disabled individuals.

Screening and Confirmatory Tests for Medical Illnesses

Disease prevalence may be a factor in determining the screening tests that are performed for a mentally retarded individual. Some illnesses, such as hepatitis B, are much more common in adults with mental retardation than in the general population. Other diseases, such as cervical cancer in adults who have not had sexual relations, may be much less common. In deciding which screening tests to recommend, the physician should consider the risk factors in the individual patient. The performance of confirmatory tests such as colonoscopy or colposcopy is relatively

straightforward in the general population. However, general anesthesia is usually required when these tests are performed in patients with profound mental retardation. This possibility, as well as other factors, must be considered before being faced with the situation of abnormal results from a screening test in a patient who is mentally retarded. Health supervision guidelines for children with genetic disorders, including Down syndrome and fragile X syndrome, have been published by the American Academy of Pediatrics Committee on Genetics. While these guidelines are geared to children and adolescents, they may be useful to physicians who provide health services to adults with mental retardation. In general, the physician must consider each case individually and must not discriminate based on prejudices about the disabled population as a whole.

Educational and Adult Programs

Numerous educational and vocational programs exist in the community to address the special needs of children with mental retardation. As this population ages, the emphasis on education must persist. However, special education is not always tailored to the educational, emotional, and vocational needs of the special adult patient presenting even greater challenges and difficulties with optimal management to meet the ultimate goal of integration into society to the fullest extent possible. In general, as these individuals move to secondary education settings, the curriculum should take on a stronger career preparation and life skills emphasis. With appropriate preparations, even individuals with severe intellectual disabilities can acquire vocational skills, and as adults can move into productive roles in the workplace. It is increasingly expected that adults with mental retardation will work in inclusive work settings alongside typical workers with supports provided there as needed, and that these individuals will live in residential programs that represent the sorts of homes that most people live in.

Related Topics

➤ [Adult Protective Services](#), ➤ [Anger](#), ➤ [Caregiving and caregiver burden](#), ➤ [Down syndrome](#), ➤ [Elder abuse and neglect](#), ➤ [Mental illness](#)

Suggested Readings

- Rifkin A (2002) Diagnosing and treating mentally retarded adults. *Psychiatr Times* 17(12)
- Silka VR, Hauser MJ (1997) Psychiatric assessment of the person with mental retardation. *Psychiatr Ann* 27:3

Suggested Resources

www.thearc.org

Midlife Crisis

Nancy Mendez

A common myth in US culture is that midlife crisis is an inevitable part of life that we all experience. In fact, researchers estimate that only 10% to 20% of Americans actually experience a midlife crisis. It is important to distinguish between midlife transition and midlife crisis. A midlife transition generally begins in our forties and fifties. It is a period of reflection, reassessment, and redefinition. It is also a time when many of us realize our own mortality and begin to set new personal goals. However, these feelings themselves do not signal a midlife crisis. It is important for the individual to understand the difference between making a life change and a crisis. The psychologist Carl Jung identified five phases of midlife:

1. *Accommodation*—meeting the expectations of others. (This phase actually occurs throughout the first part of our life).
2. *Separation*—rejecting expectations, the individual begins to ask if their outward personality is who they really are.
3. *Liminality*—a period of uncertainty, where life seems directionless.
4. *Reintegration*—reexamining your individuality and coming to terms with that identity.
5. *Individuation*—the final stage in the process involves accepting the unfavorable aspects of one's one character.

The phases are a guide through midlife transition but each individual person experiences these phases differently. For instance, some individuals enter and reenter the stages. Others may stay in one particular stage for decades whereas others work through the phases in a short period of time. By recognizing the natural stages of midlife one can make sense of feelings of change and confusion; midlife transition need not be a crisis.

A midlife crisis is an emotional state of doubt and anxiety in which a person becomes uncomfortable with the realization that life is half over. It commonly involves reflection on what the individual has done with his or her life up to that point, often with feelings that not enough has been accomplished. The individual may feel bored with his or her life, job, or partner, and may feel a strong desire to make changes in these areas.

Midlife crisis usually affects individuals between the ages of 40 to 60 years, although individuals in their thirties and seventies have been known to experience a midlife crisis. A crisis is characterized by destructive behaviors, such as increased debt, having an affair, gambling, substance abuse, irresponsible behavior at work, or other damaging behavior. A midlife crisis can sometimes feel very painful and cause people to make drastic lifestyle changes. It can also produce an explosion of adolescent behavior, throwing life priorities into chaos. To control the damage it is important to recognize the warning signs of midlife crisis and learn to process the powerful emotions that come with it. Individuals going through midlife crisis might experience a wide range of feelings such as:

- Discontent with life and/or the lifestyle that may have provided happiness for many years
- Boredom with things and people that up until now held great interest or dominated one's life
- Feeling adventurous and wanting to do something completely different
- Questioning the meaning of life, and the validity of decisions made years before
- Confusion about who one is or where one's life is going

A midlife crisis can come naturally or can be brought on by external factors. Losing a family member such as a parent can generate an overwhelming fear of growing old and dying. Adult children leaving home can produce feelings of isolation. Physical signs of

aging have also been known to trigger midlife crisis. With this physical evidence the aging process can no longer be avoided and with it the loss of one's youthful self-image. Divorce is yet another factor that can exacerbate midlife crisis. Divorce can lead to feelings of inadequacy and depression.

Experts suggest the following coping strategies for individuals who believe that they are in the midst of a midlife crisis. The first step is to pay attention to one's feelings. Trying to block out internal emotions can intensify the crisis, which can then lead to damaging behavior like drug and alcohol abuse. As the crisis builds suppressed feelings can turn into misdirected anger toward family and friends. If one suppresses his or her emotions, chances are they will continue to resurface. Secondly, many in the throes of a midlife crisis instinctively move to end their marriages or long-term relationships because of overwhelming feelings of restlessness, boredom, and overall discontentment with life. Experts suggest that individuals first try to repair or strengthen their relationships by talking to their partner about the changes they are undergoing. If an individual is afraid of being misjudged by his or her partner, he or she can consider sharing those feelings with a counselor. It is suggested that individuals try to avoid making sudden life-changing decisions and instead ask themselves what goals are appropriate now. If someone is unable to work through his or her feelings, the individual can seek professional counseling or a support group. Finally, one can try to approach midlife as an opportunity for growth and development. Midlife can be a time of self-reflection. It is important for the individual to understand the difference between making a life change and a crisis.

Many emerge from midlife with a new sense of meaning and direction that can guide them through the rest of their life. The transition of midlife is an opportunity to deepen relationships with family and friends and create a richer life. Individuals who feel overwhelmed can ask their physician for referrals to counselors or support groups that specialize in midlife transition.

Related Topics

[Coping](#), [Divorce](#), [Empty nest syndrome](#), [Marital satisfaction](#), [Self-esteem](#), [Stress](#)

Suggested Readings

- Kruger A (1994) The mid-life transition: Crisis or chimera? *Psychol Rep* 75:1299–1305
- Lachman ME, James JB (1997) Multiple paths of midlife development. University of Chicago Press, Chicago
- Myers DG (1998) Adulthood's ages and stages. *Psychology* 5:196–197
- Rosenberg SD, Rosenberg HJ, Farrell MP (1999) The midlife crisis revisited. In: Willis SL, Reid JD (eds) *Life in the middle*. Academic Press, San Diego

Migration

Sana Loue

In general, rural areas of the United States have a higher proportion of older individuals in their total population than do urban areas. Rural areas are aging rapidly due to the out-migration of younger persons to urban areas, the in-migration of older persons from urban areas, and the large numbers of aging individuals who choose to remain in their rural residences. Women, in particular, comprise a growing proportion of older Americans residing in rural areas as they age. In nonmetropolitan areas, women account for 51.8% of the population between the ages of 65 and 74, and 65.9% of the population aged 85 and older. As an example, various areas in Michigan have reported the recent and increasing movement of established families and older adults from central metropolitan counties to outlying communities.

Nevertheless, older adults are less likely to move to a different community than are younger adults. When they do relocate, it is often to seek a housing situation that is more responsive to their health needs or a change in life circumstances. Fulfillment of health needs may entail relocation to a warmer climate or to be closer to family members or close friends who can provide support and/or assistance with their care. Individuals may wish to relocate, as well, following a divorce, death of a spouse or partner, or the departure of growing children from the family home. Growing limitations in physical abilities may also prompt a desire to relocate to a more maintenance-free living situation.

Related Topics

➤ [Housing](#), ➤ [Rural health](#)

Suggested Resources

Economic Research Service, United States Department of Agriculture; <http://www.ers.usda.gov/>

Mini Mental State Examination

Nimish J. Thakore

The Mini Mental State Examination (MMSE) is the most widely used screening tool for dementia in the United States. This brief cognitive assessment instrument was originally developed, validated, and reported by Folstein and others in 1975 for the bedside diagnosis of dementia. It consists of the following parts: (1) orientation questions, five each for time and place (10 points); (2) three-word registration and 1-min recall (3 points each); (3) attention and calculation, assessed either by (a) serial subtraction of 7 from 100 or by (b) spelling “WORLD” backwards (5 points); (4) language, assessed by a three-stage command, repetition, naming, reading comprehension, and writing (8 points); and (5) copying two intersecting pentagons (1 point). The maximum score is 30, which is normal. Scores of less than 24 are indicative of dementia. The test–retest and interrater reliability, internal consistency, and external validity of the MMSE are high. MMSE is administered by psychologists, physicians, nurses, or other trained health-care personnel. It takes 5 to 10 min to administer.

The primary purpose of the MMSE is to screen individuals at risk for dementia. With availability of treatment, early detection of dementia, particularly Alzheimer’s disease (AD), has assumed increased importance in the past decade. An abnormal MMSE alone is insufficient for the diagnosis of dementia; a comprehensive medical and social history and physical examination are also necessary. The MMSE can be

used to assess severity of dementia. The MMSE score declines in AD at the rate of about 3 points annually.

Age- and education-specific population norms for the MMSE have been reported in the United States. As would be expected, younger individuals and those with higher educational attainment have higher cutoff values for normal than older individuals and those with less education. The MMSE has been translated into numerous languages, and has been validated in other cultures.

The MMSE has some weaknesses. There is varying accuracy with age, education, and ethnicity. MMSE may not detect early dementia in highly educated individuals (ceiling effect), and progression may not be discerned in advanced dementia (floor effect). There is substantial weight on orientation, but little weight on constructional praxis (the ability to draw or copy figures). The language section of the MMSE is quite insensitive except in advanced dementia. Individuals often do worse on serial subtraction than on the alternative procedure of spelling WORLD backwards. In practice, substantial variation is seen in the way this section is scored. Although appropriate for Alzheimer’s disease, the MMSE is a poor screen for other dementing processes that predominantly affect frontal or subcortical function, such as frontal lobe dementia, or dementia from HIV infection or multiple sclerosis. Because of substantial variability, MMSE is a suboptimal instrument to assess rate of progression of dementia. MMSE may not be administered over the telephone.

Numerous alternative brief cognitive instruments, such as the Modified MMSE (3MS), Blessed Information Memory Concentration (BIMC), Blessed Orientation Memory Concentration (BOMC), Functional Activities Questionnaire (FAQ), Short Test of Mental Status (STMS), Short Portable Mental Status Questionnaire, Clock Drawing Test, Mini-Cog, and 7-Minute Screen have been published, but none is as well studied or as widely used as the MMSE.

Contrary to popular belief, the MMSE is not in the public domain. The copyright belongs to the publisher, Psychological Assessment Resources, Inc., Lutz, Florida. The test and instructions can be purchased from their Web site www.parinc.com (accessed November 2005).

Related Topics

➤ [Alzheimer’s disease](#), ➤ [Dementia](#)

Suggested Readings

- Boustani M, Peterson B, Hanson L, Harris R, Lohr K (2003) Screening for dementia in primary care: A summary of the evidence for the U.S. Preventive Services Task Force. *Ann Int Med* 138:927–937. (The full report is found on the Agency for Healthcare Research and Quality website www.ahrq.gov/clinic/serfiles.htm, accessed November, 2005)
- Clark CM, Sheppard L, Fillenbaum GG, Galasko D, Morris JC, Koss E, Mohs R, Heyman A, and the CERAD Investigators (1999) Variability in annual Mini-Mental State Examination score in patients with probable Alzheimer disease: A clinical perspective of data from the Consortium to Establish a Registry for Alzheimer's disease. *Arch Neurol* 56:857–862
- Crum RM, Anthony JC, Bassett SS, Folstein MF (1993) Population-based norms for the mini-mental state examination by age and educational level. *JAMA* 18:2386–2391
- Folstein MF, Folstein SE, McHugh PR (1975) "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 12:189–198
- McDowell I, Kristjansson B, Hill GB, Hebert R (1997) Community screening for dementia: The Mini Mental State Exam (MMSE) and Modified Mini-Mental State Exam (3MS) compared. *J Clin Epidemiol* 50:377–383

Minimum Data Set

Deborah J. Gould

Minimum data set (MDS) is a term that denotes a body of information compiled from various sources using a standard set of definitions and collection procedures to form an integrated knowledge base concerning a particular subject. In the field of medicine and health-related industries a MDS requires input from practitioners, health agencies, and hospitals. MDSs are now being employed to establish and maintain the quality and uniformity of care in hospitals, nursing homes, and health care agencies.

A MDS generally includes standard demographic information, treatments, outcomes, morbidity, mortality, and general health status of individuals. Each area of health care or research can employ its own MDS. The various data sets can then be integrated to provide a comprehensive view of a health care issue and can be used to improve medical care on an individual, institutional, or societal level.

For instance, in an effort to improve quality medical care across ethnic and socioeconomic lines, the federal government has now required nursing homes certified by Medicare or Medicaid to participate in clinical assessment of residents using a specific MDS as the assessment tool. Assessment items for documentation include 18 different areas of patient care and status, including information about cognitive functioning, medical conditions, potential for rehabilitation, current ability for independent functioning, and demographics. Using the information gathered in this MDS, researchers are able to investigate various aspects of care delivery by nursing homes, such as monitoring medication use and documenting over- and under-treatment among subgroups of nursing home residents, and determining factors that are important in providing quality medical care in the nursing home setting. MDS data have also been used to set payment amounts to nursing homes based on the level of functioning and care demands of patients residing at a given nursing home.

The ultimate goal would be to form a National Minimum Data Set (NMDS) to identify health problems, document the health status of subgroups of the population, monitor health delivery systems, and document other important aspects of the health care system. It would consist of multiple MDSs that would be linked by an information infrastructure that could be easily accessed by the public, including researchers, practitioners, health care agencies, and individuals. The federal Department of Health and Human Services has made some progress toward forming this link, which it has termed the National Health Information Infrastructure (NHII).

Related Topics

- [Nursing home](#), ➤ [Quality indicators](#)

Suggested Readings

- Mor V (2004) A comprehensive clinical assessment tool to inform policy and practice. Applications of the minimum data set. *Med Care* 42:III-50–III-59
- Zimmerman DR (2003) Improving nursing home quality of care through outcomes data: The MDS quality indicators. *Int J Geriatr Psychiatry* 18:250–257

Suggested Resources

Center for Medicare and Medicaid Services (CMS) (2005) MDS quality indicator and resident reports. <http://www.cms.hhs.gov>
National Committee on Vital and Health Statistics. Toward a national health information infrastructure, interim report. June 2000. <http://www.ncvhs.gov/NHII2kReport.htm>

Minority Seniors

Dahlia Fuentes

The four most recognized racial and ethnic minority groups in the United States are American Indians and Alaska Natives, African Americans, Asian Americans and Pacific Islanders, and Hispanic Americans (Latinos). Consistent with the 2001 Supplement to the Surgeon General's Report on Mental Health, the term "minority" is used to signify the groups' limited political power and social resources, as well as their unequal access to opportunities, social rewards, and social status in the United States. The term is not meant to suggest inferiority or indicate small demographic size. In fact, some minority groups, such as Latinos and Asian Americans and Pacific Islanders, have grown at higher rates than the "majority," or non-Hispanic white population.

According to the US Census, the four minority groups accounted for approximately 30% of the total US population in 2000 and 16.4% of the elderly population aged 65 and older. Eight percent of persons aged 65 and older were African American, 2.4% were Asian or Pacific Islander, 5.6% were Latino, and less than 1% were American Indian or Alaska Native. While the non-Hispanic white population of older adults is projected to increase by 81% between 2000 and 2050, the older adult minority population will increase by 410% and account for an estimated 35.8% of the US population aged 65+ (AoA, 2004). The increase in minority seniors is not due solely to immigration, but is largely attributed to the aging of the ethnic minority groups that over the years have experienced lower mortality rates, higher fertility rates, and longer life expectancy.

Despite the fact that Americans are living longer and a greater proportion are reaching older adulthood

than ever before, minority seniors are not necessarily living healthier lives compared to the non-Hispanic white older adult population. Most older persons have at least one chronic condition and many have multiple conditions. Areas of special concern to minority elders are diabetes, hypertension, cancer, and mental health. According to the Agency for Healthcare Research and Quality, the four ethnic minority groups have higher rates of diabetes compared to non-Hispanic whites. American Indian and Alaska Natives have nearly three times the rate of diabetes compared to the overall population, and Latinos have 2.5 times the overall rate. African American diabetics are seven times more likely to have amputations and develop kidney failure than non-Hispanic white diabetics. In 1997, diabetes was the third leading cause of death among American Indian or Alaska Native population aged 65 and older and the fourth leading cause of death among Hispanic elderly, while ranking sixth among older non-Hispanic white men and women. Hypertension is also of great concern to the African American population, as they experience an 80% higher rate of stroke-related deaths and a 50% higher rate of mortality due to heart disease than the overall population. African American men are also more likely to die of prostate, lung, and bronchial cancer than are non-Hispanic white men. African American women are more likely to die of breast cancer. Cancer death rates are increasing among Latinos and Native Americans despite an overall decrease among other groups. Mental health is of great importance, as the 2001 Supplement to the Surgeon General's Report on Mental Health revealed that "racial and ethnic minorities bear a greater burden from unmet mental health needs and thus suffer a greater loss to their overall health and productivity." Despite having similar community rates of mental disorders, minority groups are less likely than non-Hispanic whites to utilize services and receive poorer quality mental health care.

Access to quality health care is a common challenge among minority populations. A recent report of the Institute of Medicine concluded that racial and ethnic minorities in the United States receive a lower quality of care than non-Hispanic whites, even after accounting for differential access to care (IOM, 2002). Barriers in receiving adequate care include, but are not limited to, difficulties with language and communication, feelings of isolation, mistrust of treatment, encounters with service providers lacking knowledge of the

person's culture, and challenges related to their socioeconomic status. In a survey of Medicare beneficiaries aged 65 and older, African American and Latino elderly had the highest prevalence of reported delay in getting health care due to cost. Additional barriers for older adults include the shortage of health-care professionals trained in gerontology, and the fragmented organization of services.

There are many efforts underway to address the issues of health care disparities at the national and local levels. The National Institute on Aging has developed a strategic plan that includes research goals to reduce or eliminate health disparities, as well as goals for public information, outreach, and education. The Administration on Aging has been responding to the needs of the growing diverse elderly population by making information and services accessible to limited English-speaking older adults, and tracking the characteristics of minority clients served by all the local Agencies on Aging. Increasing numbers of health care delivery systems are taking action toward becoming more culturally competent organizations by providing diversity training to the health care workforce and developing and implementing model programs that result in positive outcomes for ethnic minorities and older adults. Universities and other teaching institutions are increasingly integrating cultural competence into their curriculum, and some professional associations have published guidelines on how to provide services to ethnic, linguistic, and culturally diverse populations. The American Society on Aging has implemented a variety of special initiatives, including the New Ventures in Leadership program, to develop leadership in the field of aging that is representative of the racial, ethnic, and cultural diversity of the populations served.

Although race and ethnicity are commonly thought to be dominant elements of culture, a true definition of culture is much broader and includes elements such as shared values, traditions, beliefs, symbols, norms, attitudes, language, religion, arts, customs, history, folklore, and institutions of a group. Hence, even within the federal classifications of race and ethnicity, there exists a vast array of diversity.

Related Topics

➤ [African American](#), ➤ [Ageism](#), ➤ [American Indian and Alaska Native](#), ➤ [Asians and Pacific Islanders](#),

➤ [Diabetes](#), ➤ [Discrimination](#), ➤ [Ethnicity](#), ➤ [Immigrant health](#), ➤ [Latino](#), ➤ [Race](#)

Suggested Readings

- Agency for Healthcare Research and Quality (2004) National Healthcare Disparities Report: Summary. Agency for Healthcare Research and Quality. Rockville, MD. <http://www.ahrq.gov/qual/nhdr03/nhdrsum03.htm>
- Institute of Medicine (2002) Unequal treatment: Confronting racial and ethnic disparities in healthcare. National Academy Press, Washington, D.C.
- U.S. Department of Health and Human Services (2001) Mental health: Culture, race, and ethnicity—A supplement to mental health: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services

Suggested Resources

- Administration on Aging (AoA) (2004) Facts and figures: Statistics on minority aging in the U.S.; http://www.aoa.gov/prof/Statistics/minority_aging/facts_minority_aging.asp#Self-RatedHealthStatus
- American Society on Aging; www.asaging.org
- U.S. Census 2000; <http://www.census.gov/population/www/cen2000/briefs.html>
- U.S. Department of Health and Human Services. Office of Disease Prevention and Health Promotion, Healthy people 2010; <http://www.healthypeople.gov/>

Moles

Leslie K. Dennis

Moles (sometimes called beauty marks or birthmarks) are clinically referred to as nevi. They are one of the many types of benign tumors of the skin. Moles can be present at birth but typically develop during childhood or adulthood. A normal mole can be flat or raised and is generally an evenly colored brown, tan, or black spot on the skin. It can be round or oval. Moles are generally less than 1/4 in. or 6 mm in diameter (less than a pencil eraser). Once a mole has developed, it will usually stay the same size, shape, and color for many years.

The number of moles increases with age, especially during childhood and adolescence. Boys tend to have more moles than girls do. Individuals with a family history of skin cancer tend to have more moles. Both children and adults who are sun-sensitive (red or blond hair, light or fair skin color, tend to burn, tend to freckle, or cannot tan) are at increased risk of having or developing moles. Thus, benign moles occur more often in people with a lighter complexion.

Moles that are irregular in shape, size, or color may be referred to as atypical or dysplastic moles. These moles tend to be large. They form a continuum between the common mole and skin melanoma. Dysplastic moles may occur as multiple moles distributed over the body, a condition known as dysplastic nevus syndrome. People with multiple moles often have a family history of multiple moles and melanoma, and are at higher risk for developing melanoma themselves. Such people need to be closely monitored by a dermatologist. The association of increasing numbers of moles with melanoma suggests that moles are either markers of some exposure that leads to melanoma, or potential precursors of melanoma or both.

Sun exposure is the major risk factor leading to the development of skin melanoma and precursor lesions such as moles. Childhood sun exposure may promote the development of melanoma by increasing the number of moles that develop. Several studies have found more moles on sun-exposed areas of the body compared to sun-protected areas. After early sun exposure causes moles to develop, other risk factors for melanoma may cause the moles to progress to melanoma. Sunburns are related to both sun exposure and the skin's sensitivity to the sun. Various studies have found an increased risk of moles with increasing number of sunburns, similar to the association seen between sunburns and melanoma.

The contribution of tanning bed use to the development of moles has not been well-studied at this time. Similar to sun exposure, ultraviolet radiation from tanning bed use is likely to increase the number of moles. Tanning beds may emit up to 30 times the amount of UV radiation received by the sun. Any changes in a mole seen after tanning bed use should be shown to a dermatologist immediately.

Few moles develop into melanoma. Individuals with many moles have a greater chance that progression will occur. It is important to recognize changes in a mole. Photographs or full body charts of your moles can be used to monitor changes in shape, color, and size over time. The most important warning sign for

melanoma is a spot on your skin that is changing in size, shape, or color over a period of 1 month to 1 or 2 years. The ABCD rule may help you remember the four signs of melanoma.

Consult a dermatologist if you find one of the following: A, not ASYMMETRIC—if half of the mole does not match the other half; B, irregular BORDER—a mole forms irregular borders or becomes ragged, notched, or blurred; C, change in COLOR—a mole changes in color or is not the same color all over; D, large DIAMETER—a mole is larger than the width of a pencil eraser (more than 1/4 in. or 6 mm in diameter).

Seeking medical attention for suspicious moles is very important because melanoma can be a deadly disease with few or no symptoms or pain. However, melanoma is also easily curable if identified early and removed. Distinguishing between a mole and a melanoma may be difficult, even for a dermatologist. The most dependable method to distinguish a normal mole from melanoma is to remove the mole and have it examined under a microscope to determine whether the lesion is cancerous.

Suggested Readings

- Dennis LK, White E (1994) Risk factors for the prevalence of nevi: a review. In: Gallagher RP (ed) *Epidemiologic aspects of melanoma*. Kluwer, Amsterdam
- Elder DE (1989) Human melanocytic neoplasms and their relationship with sunlight. *J Invest Dermatol* 92:2985–3035
- Rigel DS, Carucci JA (2000) Malignant melanoma: Prevention, early detection, and treatment in the 21st century. *CA Cancer J Clin* 50:215–236 (available online)

Mood Disorders

Kimberly R. Bogan

Mood disorders are among the most common psychiatric disorders present in the geriatric population today as 2–4% of elders in the community are affected. Today, many studies are being conducted with a sense of urgency to further characterize, better diagnose and treat mood disorders in older Americans, as this population will account for 20% of the total population by 2030. Mood disorders are subclassified by the

Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR) criteria reference manual to include bipolar I disorder (mania and depression), bipolar II disorder (hypomania and depression), cyclothymia (hypomania and dysthymia), dysthymia (chronic low-grade depression), and major depressive disorder (MDD). The building blocks, which further define these subclasses, can be conceptualized as a disturbance anywhere along the “happy–sad” mood continuum. Mood symptoms are also present in other disorders including mood disorders due to a general medical condition, substance-induced mood disorders, bereavement and adjustment disorder with depressed mood. In this entry major depressive, dysthymia, and bipolar disorders will be discussed.

MDD is a mood disorder made of a primary cluster of symptoms with the essential symptom being a pervasive low mood or a decreased level of interest in things that used to give pleasure. Additionally within this core cluster are changes in one’s biological (sleep, energy level, libido, appetite, and weight) and cognitive functions (attention and concentration), thought content (negative view of self, world or future guilt, suicide, delusions), and if the depression is severe, the presence or absence of perceptual disturbances (auditory hallucinations). In distinction to common human experiences such as sadness, grief, or demoralization, major depression rises to a level of mood disorder when there are five or more of the above-mentioned symptoms clustered within the same 2-week period, along with a change in premorbid function. Depression can be further specified by its (1) severity (mild, moderate, or severe), which if severe may lead to psychotic features as noted earlier; (2) course (single, recurrent, chronic); and (3) remission status (partial or full). Additionally there are associated symptoms that may occur alongside the latter primary symptoms including anxiety, irritability, crying, etc.

According to the Epidemiologic Catchment Area study 1% to 3% of elders in the community are diagnosed with depression, and depression is found to be more common in women than in men. In other settings, up to 21% of hospitalized elders meet criteria for a major depressive episode, whereas more than 25% meet these criteria when living in a nursing home. Although the diagnostic criteria for depression are applicable to all ages, studies have shown that depressed elders appear to exhibit certain symptoms more so than their depressed younger counterparts such as weight loss, feelings of guilt, melancholic-type

depression, hypochondriasis, a higher frequency of psychosis (usually delusions), suicidal ideation, and a poorer prognosis. Furthermore, studies on geriatric suicide reveals that 83% to 87% of elders with suicidal thinking suffer from a mood disorder, of which major depression accounts for 65%. Elderly white males have a suicide rate five to six times the US national population and are at a higher risk of completing suicide than elderly females; compared with other age groups, elders who commit suicide are less likely to seek mental health care than to have sought primary health care shortly before committing suicide. Hence, suicide risk assessments must be routine coupled with knowing the risk factors for suicide, which includes increasing age, white males, single status, recently widowed, recent losses, depression, anxiety, substance abuse, comorbid and chronic medical disorders such as renal failure and cancer, previous suicide attempts, access to lethal means (such as firearm), loneliness, and isolation.

Although the general criteria for depression, as previously mentioned, are clear, there are many barriers that may delay or obscure its diagnosis in the elderly population. These barriers may include: discounting symptoms of depression such as changes in biological and cognitive functions as secondary to natural aging processes, and natural cognitive decline; depression manifesting primarily as somatic complaints that may mimic other medical disorders; coexisting psychiatric or medical disorders (i.e., dementia, delirium) that may eclipse depressive symptoms; general medical (i.e., hypothyroidism) or neurological (i.e., stroke, multiple sclerosis) conditions that may lead to depression; patient-stigma-sensitivity that may lead to reluctant disclosure of depressive symptoms; and hurdles imposed by the health-care system. Studies have shown that geriatric depression has deleterious interactions with physical health; hence if left unrecognized and untreated, depression could lead to disability, disease burden to the caregiver, and irreversible devastation in this population.

Risk factors for late-life depression are multifactorial and include genetic contributions, which are lesser in late-life than in earlier phases of the life cycle; changes with aging such as neurotransmitters (decreased norepinephrine and serotonin) and endocrine regulation (increased cortisol, decreased growth hormone, and decreased thyroid-stimulating hormone); and disruption of biochemical and physiological circadian rhythms.

Structural brain changes also create vulnerabilities for depression as a stroke may commonly precede

depression in 25% to 50% of post-stroke patients. In patients with dementia, Alzheimer's type depression occurs in approximately 10%; and with Parkinson's disease it occurs in 20%. Other possible biological risks for late-life depression include myocardial infarction, heart transplantation, congestive heart failure, and cancer. Medications may also cause symptoms of depression including analgesics, antihypertensives, antipsychotics, anxiolytics, chemotherapeutics, sedative hypnotics, steroids, diuretics, and H2 blockers. Additionally there are psychosocial risk factors for depression in the elderly, which commonly include losses (previous function, family, friends, etc.), being female, single, lacking a social network, and having stressful life events.

Management strategies should be evidence-based and includes using preventative measures such as appropriate nutrition, exercise, and social activities. The diagnostic workup for geriatric mood disorders should include a thorough history and physical to rule out medical and neurological disorders along with drug side effects; thorough psychiatric history and review of systems, as well as a suicide risk assessment; routine laboratory tests (electrolytes, B2, folate, BUN, creatinine, complete blood count, liver function test, thyroid function test, urinalysis, drug screen), electrocardiogram (ECG), and brain imaging as needed. Treatment is divided into three phases including acute (resolves symptoms; duration: 7 to 9 weeks in the elderly), continuation (prevents relapse; duration: 4 to 6 months), and maintenance (for elders at high risk for recurrence; duration: case specific). Pharmacotherapy can include tricyclic antidepressants (nortriptyline or desipramine and others), selective-serotonin-reuptake inhibitors (Celexa, Prozac, and others), atypical antidepressants (trazadone, venlafaxine, mirtazapine, and others), monoamine oxidase inhibitors (tranylcypromine), and electroconvulsive therapy (ECT) for acutely ill or treatment-resistant patients. Doses should be customized to the individual, started at lower doses, and followed by slow titration to an optimal dose. Furthermore, renal and liver functions should be monitored routinely and are drug-specific. Due to comorbid (co-occurring) medical disorders that require multiple medications, knowledge of drug-drug interaction may prevent side effects or treatment failure. Finally, psychotherapy can be used alone or in combination with medications and can include cognitive-behavioral, interpersonal, supportive, problem-solving, or psychodynamic therapy, which have all been shown to be efficacious in geriatric depression.

Dysthymia is characterized by at least 2 years of a milder form of depression for more days than not, and is accompanied by at least two symptoms that do not reach the criteria for MDD. The symptoms may include poor concentration or indecisiveness, hopelessness, poor self-esteem, low energy, hypersomnia or insomnia, and increased or decreased appetite. It affects approximately 1% of elderly males and 2.3% of elderly females. According to multiple studies, it is also known to manifest differently in the elderly than in the younger populations. As with major depression, dysthymia often goes undetected and untreated due to multiple barriers, which may lead to poor outcomes (medical burden and disability). Although studies appear promising for all classes of antidepressants in the treatment of geriatric dysthymia, double-blind, placebo-controlled studies are needed.

Bipolar Disorder: Bipolar I disorder (BAD I) is a mood disorder that requires one or more manic episodes, with which a depressive episode may or may not be present. Manic episodes are characterized by a euphoric, expansive, or an irritable mood along with distractibility, increased activity, grandiosity, flight of ideas, impulsivity, decreased sleep, and excessive talking for at least 1 week. If mania becomes severe, reality testing may be lost, causing the individual to believe that he or she is power-endowed. This false belief coupled with euphoria may breed poor judgment and impulsivity, which may manifest as overspending and risk taking. Bipolar II disorder (BAD II) requires both a hypomanic and a major depressive episode to make the diagnosis. Hypomania is defined by the same criteria as mania; however, it requires duration of 4 days, and does not require hospitalization, functional impairment, or psychosis. Completed suicide in BAD is associated with a lifetime rate of 15%.

In the clinical setting 5% to 19% of all seniors with mood disorders have bipolar disorder and approximately 10% with bipolar disorder will develop the disorder after the age of 50. Late-life bipolar disorder may occur in multiple contexts including early-onset bipolar disorder, late-onset bipolar disorder (secondary mania), or seniors with preexisting depression who develop new-onset manic symptoms. New-onset BAD is usually rare after the 50th decade of life and is often secondary to a medical and neurological disorder or the side effects of medication, especially antidepressants and steroids. Lithium is the most studied mood stabilizer for geriatric BAD and dosing should be reduced by 25% to 50% as compared with younger

patients. Other treatment options may include anticonvulsants (valproate, carbamazepine) and antipsychotics (such as risperidone or quetiapine). Despite the lack of controlled studies on the latter medications, the general rule is to start at low doses and titrate slowly as well as obtaining pertinent labs and an EKG to monitor for toxicity.

Related Topics

[Bereavement](#), [Bipolar disorder](#), [Cognitive-behavioral therapy](#), [Depression](#), [Drug interactions](#), [Dysthymia](#), [Grief and grieving](#), [Isolation](#), [Loneliness](#), [Medication management](#), [Mental illness](#), [Psychotherapy](#), [Substance use](#), [Suicide](#)

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th edn, Text Revision. American Psychiatric Association, Washington, DC; <http://psychiatryonline.org>
- Blazer DG, Hybels CF, Hays JC (2004) Textbook of geriatric psychiatry, 3rd edn. American Psychiatric Publishing, Virginia
- Charney D, Reynolds III CF, Lewis L et al (2003) Depression and bipolar support alliance consensus statement on the unmet needs in diagnosis and treatment of mood disorders in late life. *Arch Gen Psychiatry* 60(7):664–672; <http://archpsyc.ama-assn.org>
- Reynolds III CF, Kupfer DJ (1999) Depression and aging: A look to the future. *Psychiatr Serv* 50(9):1167–1172; <http://ps.psychiatryonline.org>
- Scogin F, Welsh D, Hanson A, Stump J, Coates A (2005) Evidence-based psychotherapies for depression in older adults. *Clin Psychol Sci Pract* 12(3):222–237

Morbidity

José S. Lozada Boron

Morbidity could be considered the effect of illness on the body that would alter or change what would otherwise be considered normal daily life. Morbidity could be short-term and long-term. Short-term (temporary)

morbidity could be illustrated by the congestion, sneezing, and sleepiness that occur during a seasonal cold or the sensitivity to extreme temperatures of a tooth cavity. Examples of long-term (chronic) morbidity include loss of bone density due to osteoporosis or the pain in joints due to arthritis.

The term morbidity has its origin in the Latin word *morbidus*, which means sickly, diseased, or unwholesome. Unlike the word English adjective morbid, which is commonly used to describe things associated with death, morbidity is simply a term used to measure the degree of imperfect health. Early on in life, the main causes of chronic morbidity in humans can be mainly due to infectious diseases (such as parasitic worms), congenital birth defects, or a physical injury that never completely healed. Such morbidity could result in stunted physical development, reduced mental development, or simply a loss of quality of life, which is readily defined as a measure for how satisfied an individual is with the conditions in which they live. Morbidity later in life could be brought on by a multitude of reasons, such as macular degeneration, hypertension, erectile dysfunction, and loss of teeth. Old injuries, chronic back pain, type I and type II diabetes, hemorrhoids, and bunions—ailments which can be exacerbated in older age—also reduce the quality of life in individuals as they become older, thus increasing their morbidity.

Morbidity is important in public health because it is a useful inverse measure of health. If morbidity in a population is high, then the health of that population will be low, if the overall morbidity of the population is low, then one could deduce that the health of that community is favorable. The two most common methods for measuring morbidity attributable to a certain disease in a population are by measuring the incidence (the number of new cases in a population over a period of time) and prevalence of a certain disease (the number of total cases in a population over a period of time). Population-level morbidity, in conjunction with mortality, often referred to as that population's burden of disease, is measured in Disability Adjusted Life Years (DALYs). DALYs is a measure which combines the years of life lost due to premature mortality in the population and the years lost due to disability. One DALY is equivalent to 1 year of healthy life lost.

Chronic health conditions can cause restrictions in activities of daily living. The leading conditions

causing such restrictions in the 45 to 64 age group are cardiovascular conditions, diabetes, and mental illness. In contrast, older adults 65 years of age or older report arthritis and musculoskeletal conditions as the leading cause of restrictions in activities of daily living, followed by cardiovascular conditions, and stroke. In the oldest (age 85 and older), the leading causes of restriction are dementia, and vision and hearing problems.

In addition to reduced physiologic and functional reserve, several factors can increase older individuals' susceptibility for disease, including—but not limited to—family history of certain diseases; unhealthy lifestyle (e.g., smoking, consumption of alcohol, sedentary lifestyle, and unhealthy diets); and exposure to toxic and chemical agents, often resulting from high-risk occupations, such as mining. Inadequate use of primary care and preventive services can also be responsible for increased morbidity. For example, flu vaccines have been shown to be effective in reducing hospital admission and death from influenza-related conditions in noninstitutionalized elders. Similarly, undergoing cancer screening services on a regular basis is key to early diagnosis of such cancers as that of the female breast, the prostate, or the colon—three of the most common cancers among elders. Detection of cancer at an early stage coupled with adequate treatment and follow-up care are essential to good prognosis.

While living longer, elders in the United States are likely to experience increased morbidity. Substantial improvement in quality of life and reductions in morbidity could be achieved with greater commitment to healthy lifestyle and with adequate use of preventive services.

Related Topics

➤ Arthritis, ➤ Cancer, ➤ Cardiovascular disease, ➤ Disability, ➤ Mortality, ➤ Quality of life

Suggested Readings

Last JM, Spasoff RA, Harris SS, Thuriaux MC (2001) A dictionary of epidemiology, 4th edn. Oxford University Press, New York
Murray CJL, Salomon JA, Mathers CD, Lopez AD (eds) (2002) Summary measures of population health: Concepts, ethics, measurement and applications. World Health Organization, Geneva, Switzerland

Suggested Resources

The Global Burden of Disease 2000 in Aging Populations. Burden of Disease Unit Harvard University, Cambridge; <http://www.hsph.harvard.edu/burdenofdisease/> (December 15, 2005)
Lindegren ML (ed) Morbidity and mortality weekly report, Centers for Disease Control and Prevention, Atlanta; <http://www.cdc.gov/mmwr>
National Center for Health Statistics (2005) Health, United States, 2005, with Chartbook on Trends in the Health of Americans; <http://www.cdc.gov/nchs/data/hus/hus05.pdf> World Health Organization Website, World Health Organization, Geneva; <http://www.who.int>

Mortality

José S. Lozada Boron · Siran M. Koroukian

Mortality is the measure of death in a population. From a perspective of public health, measurements can be expressed in crude mortality rate, which, as the name suggests, simply measures the number of deaths in a population over a specified period of time regardless of age or cause; or in age-adjusted mortality rate, which accounts for differing age distributions across populations. Cause-, gender-, and age-specific mortality are other common measures that, as the names imply, measure the number of deaths that occur within subgroups of the population.

Concepts of mortality have changed over time. For most of human history, death was a part of everyday life, and life expectancy beyond the age of 40 was not very promising. If individuals survived a childhood where they were exposed to infectious diseases, possible food shortages, and incurable congenital birth defects, they would enter an adulthood filled with an equal amount of adversity. Pregnancy, war, pestilence, and lethal dangers in occupations posed constant risks to an individual's survival. Though many different interventions have played a role in altering human mortality—such as advances in chemotherapeutic treatments for chronic diseases—two public health interventions, vaccines and sanitation practices, have provided some of the greatest impact on this change. The impact of these two practices has been mainly due to their success in isolating infectious diseases and preventing their proliferation within a population.

In 1900, the number of deaths attributed to infectious diseases was nearly equal to those attributed to noninfectious causes. Except for the sharp increase in deaths during the influenza pandemic of 1918, the first half of the century witnessed a steep decline in the rate of death due to infectious diseases, which coincided with the initiation of wide-spread vaccination and sanitation programs. After 1950, nearly all deaths were due to noninfectious causes and inversely, only a small fraction of deaths could be attributed to infectious diseases. Such an observation demonstrates the success of these two public health initiatives in eliminating the risk of death due to infectious diseases, and thus dramatically reducing the overall mortality rate in the US population.

These developments, coupled with great advances in medical care and pharmaceuticals have yielded great increases in life expectancy. In as recently as 1930, the life expectancy at birth in the United States was approximately 59 years of age. By the year 2000, the life expectancy at birth had increased to 77 years, and this figure continues to rise. Japan currently has the oldest population in the world and the highest life expectancy at birth. Over 10 countries in the world have populations where more than 15% is older than 65 years of age.

The five leading causes of death in the 60–74 age group are the following: (a) malignant neoplasms (cancer), (b) heart disease, (c) stroke, (d) chronic lower respiratory disease, and (e) type II diabetes. Depending on the age group of older adults that one examines, variations in this list may be observed. For example, unintentional injuries are listed among the top five leading causes of death in the 50–59 age group. Chronic liver disease and cirrhosis is listed as the fifth leading cause of death in the 50–54 age group, and the seventh leading cause of death in the 55–59 age group. On the other hand, influenza and pneumonia are listed in the top five leading causes of death in elders 80 years of age or older. Similarly, Alzheimer's disease appears in the top six leading causes of death among persons 80 years of age or older.

However, notable racial disparities have persisted. Minority populations in the United States tend to be poorer, have a lower overall level of education, and may be more likely to be underinsured or uninsured—all of which compromise their ability to access high quality care, leading to poorer health outcomes and increased mortality at a younger age. Despite such disparities, however, life expectancy has increased in all groups in the United States.

Increase in life expectancy and changes in the causes of mortality have altered the demographics and politics of many nations. Social welfare programs, pension and retirement policies, and living environments are just a few examples of systems that have to be addressed with the onset of increased longevity. Although advances in medicine have considerably lengthened life expectancy, quests for medical cures need to be coupled with changes in lifestyle and adequate use of routine, primary care services for early detection and effective management of chronic diseases. Diet and regular exercise are recognized as key factors in addressing the epidemic of obesity and diabetes worldwide, both of which are strongly associated with cardiovascular disease. Smoking cessation and efforts to prevent initiation of smoking among teenagers will lead to a reduction of chronic pulmonary disease and lung cancer. Similarly, use of preventive services, such as cancer screening tests, will make it more likely for the three of the most common cancers (breast, prostate, and colorectal cancer) to be diagnosed at earlier stages, when these cancers are curable. Finally, educating the public of the benefits of these preventive measures and improving access to health services will yield public health benefits above and beyond that achieved by scientific advances alone.

Related Topics

[Disability](#),
 [Immunization](#),
 [Life expectancy](#),
 [Morbidity](#),
 [Quality of life](#)

Suggested Readings

- Armstrong GL, Conn LA, and Pinner RW (1999) Trends in infectious disease mortality in the United States during the 20th century. *JAMA* 281(1):61–66
- Gordis L (2004) *Epidemiology*, 3rd edn. W.B. Saunders, Philadelphia, PA
- Last JM, Spasoff RA, Harris SS, Thuriaux MC (2001) *A dictionary of epidemiology*, 4th edn. Oxford University Press, New York
- Prentice T (ed) (2005) *World health report 2005: Make every mother and child count*, vol. 11. World Health Organization, Geneva

Suggested Resources

Deaths, percent of total deaths, and death rates for the 15 leading causes of death in 5-year age groups, by race and sex: United

States, 2000. (2001) Centers for Disease Control and Prevention; http://www.cdc.gov/nchs/data/dvs/LCWK1_2000.pdf

Lindegren ML (ed) Morbidity and mortality weekly report, Centers for Disease Control and Prevention, Atlanta; <http://www.cdc.gov/mmwr>

National Center for Health Statistics, Centers for Disease Control and Prevention, National Vital Statistics Reports (2004), vol. 53, no. 5 (January 31, 2006); http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_05.pdf

National Center for Health Statistics, Centers for Disease Control and Prevention, National Vital Statistics Reports (2003), vol. 52, no. 3 (January 31, 2006); http://www.cdc.gov/nchs/data/nvsr/nvsr52/nvsr52_03.pdf

World Health Organization Web site, World Health Organization, Geneva, Switzerland; <http://www.who.int>

Multiple Sclerosis

Joseph P. Hanna

Multiple sclerosis is an immune disorder affecting adults of all ages and the most common inflammatory disease of the central nervous system. Myelin, the insulator of nerves, is attacked by the immune system because of improper recognition of self as intruder. A variety of environmental factors trigger disease progression including trauma, infection, and parturition. Vaccination, although without a clear statistical link, has been implicated in exacerbations.

Women are disproportionately affected, outnumbering men nearly 2 to 1. The disease typically begins from age 20 to 50. However, individuals with disease onset after age 50 are not rare. A difference in incidence between genders is not evident when disease is diagnosed after age 50. When multiple sclerosis begins at older ages, disability may progress more quickly. Nearly half the patients with multiple sclerosis die from complications of their disease with the remainder of deaths being similar to the general population with the exception of suicide attributed for 15% of deaths.

The prevalence of multiple sclerosis is 70 per 100,000 in the United States, with regional variation. A curious equatorial-to-polar gradient in prevalence with the Northern Hemisphere has been recorded that has not been as easily demonstrated in the Southern Hemisphere. All races are affected. However, Northern Europeans, particularly of Swedish and Swiss ancestry, and North Americans of similar descent are at greatest risk.

Familial tendencies are apparent with the children of patients with multiple sclerosis having a sixfold greater risk of developing multiple sclerosis than those children of patients without the disease. Siblings of patients with multiple sclerosis incur a 5- to 15-fold risk compared to the general population. Twin studies have reported a tenfold relative risk ratio of monozygotic/identical twin (26%) to dizygotic/nonidentical twin (2.3%) pairs. The low conjugal incidence (husbands and wives both being affected) and similar prevalence of dizygotic twins to the general population support the premise that an environmental exposure before early adulthood plays a role in later development of multiple sclerosis.

Conservative estimates suggest that nearly one-half million United States citizens have multiple sclerosis. Approximately 45% of people with multiple sclerosis are more than 50 years old. Because of associated disability, the disease reduces life expectancy by 14 years compared with that of healthy individuals. Individuals with multiple sclerosis and severe disability have the greatest risk of death. Additional risks for more progressive course include those with later onset of disease, cerebellar signs, and male gender.

Various subtypes of multiple sclerosis exist. Each subtype depicts the clinical course of progression of the illness. Onset may be either relapsing-remitting (waxing and waning) or primarily progressive. The most common subtype, relapsing-remitting, begins before the primary progressive subtype by nearly a decade. The peak incidence of relapsing-remitting multiple sclerosis occurs between the ages of 25 to 29. Relapsing-progressive multiple sclerosis occurs when an individual no longer returns to baseline following a relapse. In time, this subtype may change its temporal behavior and become secondarily progressive. Primary progressive multiple sclerosis is most commonly diagnosed between ages 35 to 39. Distinguishing a person's subtype is important because different therapies exist to prevent progression of various subtypes.

The clinical symptoms and physical finding in multiple sclerosis are varied. All regions within the central nervous system may be affected. Cognitive impairment occurs to variable degrees in more than one-half of individuals with multiple sclerosis. Cognitive speed, recent memory, attention, and abstraction are commonly impaired. Mood disorders ranging from euphoria through depression are not uncommon.

The optic (eye) nerve is a frequent site of affliction. Optic nerve inflammation commonly causes eye pain worsened with eye movement along with blurred

vision. Visual loss progresses over several days with a predilection for impaired color vision. Central visual is also decreased reflecting swelling of the optic nerve as it enters the optic canal. Other cranial nerves may also be involved. Eye movement difficulties caused by disturbances in brainstem pathways result in double vision. Facial pain may occur associated with numbness and tingling heralding the onset of disease. Slurring of speech and difficulties swallowing are infrequently noted.

Disturbances of sensation and strength are common. Regional inflammation within the brain or spinal cord results in loss of sensation or strength on the opposite side of the body. Clumsiness of the body or legs frequently impairs walking. Disturbed body and leg coordination impairs mobility. The majority of older individuals with multiple sclerosis require a device such as a cane, walker, scooter, or wheelchair to assist in mobility.

Autonomic nervous system involvement commonly causes urinary urgency and incontinence. Problems with constipation or fecal incontinence are less common. Erectile dysfunction and absence of orgasms are not infrequent. These issues common in the elderly may be attributed to aging rather than multiple sclerosis or its medical management.

Diagnosis is based on historical information, examination, and laboratory testing including radiological imaging, spinal fluid analysis, and evoked potentials (specialized nerve testing). Alternative diagnoses including infections, a variety of immune disorders, metabolic, and inherited disorders should be excluded.

Pharmacologic therapy for multiple sclerosis continues to evolve. Acute treatment with intravenous and oral anti-inflammatory steroids speeds functional recovery after a relapse. Refractory patients with a severe attack may benefit from plasma exchange. Subcutaneous and intramuscular medications decrease the frequency of relapses in patients with either relapsing-remitting or relapsing-progressive subtypes. Beta-interferon and glatiramer acetate are medications that are more likely than not capable of decreasing the number of relapses of disease. Various aspects of secondary progressive multiple sclerosis improve with the medications beta-interferon, glatiramer acetate, and mitoxantrone. Unfortunately, a clear treatment to slow the progression of primary progressive cases has not yet been delineated.

Chronic illness often strains relationships resulting in marital or familial discourse. Employment may be

jeopardized from either physical or cognitive disability. Rehabilitative experts with interest in multiple sclerosis and its associated conditions are available in the community. Both inpatient and outpatient therapies are appropriate to speed the return toward normal daily activity. Counseling and pharmacologic management of depression should be sought early to prevent social isolation. Social support for both individual and the family exists through local chapters of various nonprofit agencies that may lend aid in remaining integrated in society.

Related Topics

▶ [Mood disorders](#)

Suggested Readings

- Buchanan RJ, Martin RA, Wang S, Ju H (2004) Analysis of nursing home residents with multiple sclerosis at admission and one year after admission. *Mult Scler* 10(1):74–79
- DiFabio RP, Choi T, Soderberg J, Hansen CR (1997) Health-related quality of life for patients with progressive multiple sclerosis: Influence of rehabilitation. *Phys Ther* 77(12):1704–1716
- Freeman JA, Langdon DW, Hobart JC, Thompson AJ (1999) Inpatient rehabilitation in multiple sclerosis: Do the benefits carry over into the community? *Neurology* 52(1):50–56
- Galetta SL, Markowitz C, Lee AG (2002) Immunomodulatory agents for the treatment of relapsing multiple sclerosis: A systematic review. *Arch Intern Med* 162(19):2161–2169
- Liguori M, Marrosu MG, Pugliatti M et al (2000) Age at onset in multiple sclerosis *Neurol Sci* 21(4 Suppl 2):S825–S829
- O'Connor P, Canadian Multiple Sclerosis Working Group (2002) Key issues in the diagnosis and treatment of multiple sclerosis. *Neurology* 59(6 Suppl 3):S1–S33
- Pryse-Phillips W, Costello F (2001) The epidemiology of multiple sclerosis. In: Cook S (ed) *Handbook of multiple sclerosis*, 3rd edn. Marcel Dekker, New York, pp 15–32

Myocardial Infarction

Amar D. Patel · Nanette K. Wenger

Coronary heart disease (CHD) accounted for one of five deaths in the United States in 2002. Of these 656,000 CHD-related deaths, approximately 225,000 were the result of a myocardial infarction (MI) or

“heart attack.” About 7,100,000 Americans have sustained an MI with an estimated 865,000 new and recurrent MIs expected to occur in 2005. Up to 60% to 65% of MIs occur in patients 65 years and older and 33% occur in patients 75 years and older. Almost 85% of deaths related to MI occur in patients aged 65 years and older. MI occurs when the blood supply to the heart muscle is interrupted. This usually results from fresh thrombus (blood clot) formation on top of a ruptured cholesterol plaque that often was dormant for years. The plaques that lead to MI are considered to be “unstable,” i.e., characterized by a large thrombogenic (propensity to form clot) lipid core that is covered by a thin fibrous cap. Inflammatory processes at the plaque edge (or shoulder) release digestive enzymes that dissolve this fibrous edge resulting in plaque rupture. Exposure of this reactive lipid core leads to the development of clot (thrombus). This plaque morphology and processes are in contra-distinction to a “stable” plaque. Stable plaques have a small lipid core with few inflammatory cells and are surrounded by a thick fibrous cap. These plaques do not rupture, but tend to cause progressive chest pain (angina) over time as they grow and block the artery.

Presenting Symptoms

The manifestations of CHD differ in patients above age 75 compared to younger patients. Chest discomfort remains the most common presentation of MI. Fatigue, shortness of breath occurring at rest, or confusion (delirium) may often be the only symptom. Such symptoms are commonly overlooked, which may lead to a delay in treatment, if the diagnosis is missed. Recent studies have shown that 38% to 60% of elderly patients who had electrocardiographic (ECG) evidence of a prior MI did not know that they had experienced such an event and/or did not experience symptoms suggestive of MI. This is worrisome in that the prognosis of an asymptomatic MI is as bad as the prognosis for a typical, symptomatic MI.

The atypical symptoms of elderly patients and their delay in presentation to the hospital contribute to a dramatically increased mortality rate from MI. Coexisting medical conditions such as hypertension, chronic kidney disease, cerebrovascular disease, peripheral vascular disease, congestive heart failure, dementia, and poor overall multiorgan system reserve make elderly patients less tolerant to MI and increase their

subsequent complications. In one study, heart failure was associated with MI in 36% of patients age 65 to 69 and 65% in patients 85 years and older. When compared to individuals ages 55 to 64, the death rate from MI is sixfold higher in the 75 to 84 age group, and eightfold higher in patients above age 85.

Types of Myocardial Infarction

Though the pathophysiology of MI is similar in younger and older patients, the types of MI in elderly patients are different. Elderly patients are more likely to have a non-ST-elevation MI (NSTEMI) than a ST-segment elevation MI (STEMI). STEMI usually occurs when a blockage develops in the main portion of the coronary artery (epicardial location) or in one of its main side-branches. NSTEMI usually occurs when a blockage develops further downstream in the coronary vascular bed. Typically, the amount of myocardium (heart tissue) affected is greater with a STEMI than a NSTEMI. Despite this difference, the prognosis of patients with an NSTEMI is as poor, if not worse, compared to STEMI. Elderly patients are more likely to have a NSTEMI, likely due to the extensive and diffuse atherosclerosis (obstruction of the arterial channel) throughout the coronary arteries, with smaller branches of the coronary arteries more likely to be obstructed than the larger branches. As may be expected, the symptoms of NSTEMI are often more subtle than STEMI. This contributes to a lower detection rate of MIs in the elderly and delayed or decreased initiation of beneficial therapies such as medications, coronary angiography, and coronary revascularization (restoration of blood flow). This delay, combined with concurrent medical conditions, contributes to increased complication rates after MI.

Therapies for Myocardial Infarction

Effective therapies exist for the treatment of both types of MI. The most important aspect with MI is presentation to the hospital in a timely manner and prompt therapy. Due to the obstacles described above, 30% of elderly patients present to the hospital after a significant delay from symptom onset (greater than 6 h). Reperfusion therapies using medications such as thrombolytic drugs (clot-busting agents) or mechanical revascularization using primary percutaneous coronary

intervention (PCI) (immediate coronary angiography to identify the artery causing the MI and placement of a balloon and or stent when appropriate to open the artery) are the treatments of choice for STEMI. The treatment strategy is dependent on the capability of the facility. Large clinical trial results have shown a comparable benefit of thrombolytic use in patients up to age 75. Survival rates in elderly patients aged 65 to 75 years are higher compared to younger patients. Clinical trial data for thrombolytic use in patients older than age 75 are limited, as they were generally excluded from research studies. Studies in patients ≥ 75 have noted a higher risk of hemorrhage (bleeding) into the brain. If thrombolysis is considered, the first 12 h after symptom onset is considered appropriate for this reperfusion modality. Once the patient comes into contact with medical personnel (e.g., emergency medical service), initiation of thrombolytic therapy within 30 min is the goal. Reestablishment of flow in the artery causing the MI occurs in 60% to 70% of cases, with re-occlusion occurring in about one third of these patients.

Given the increased bleeding risks associated with thrombolysis, concurrent medical conditions that preclude its use, and the higher likelihood of delayed presentation to a medical facility, primary PCI remains the preferred treatment modality. Primary PCI is more effective in restoring flow and maintaining the patency of the artery compared to thrombolysis. Primary PCI should be performed within 12 h of symptom onset with a goal of opening the blocked artery within 90 min after presentation to the hospital. Use of primary PCI is associated with a decrease in short- and long-term mortality (up to 18 months after an MI), recurrence of MI, and intracranial bleeding (combined end-point analysis) compared to thrombolytic therapy. The Cooperative Cardiovascular Project clearly showed the benefit of primary PCI versus thrombolysis. Of the 20,683 patients (average age 73 years), 18,645 patients treated with thrombolysis and 2,038 with primary PCI, PCI resulted in a lower mortality rate at 30 days (8.7% versus 11.9%) and 18 months (14.4% versus 17.6%) compared to thrombolysis. The benefits of primary PCI are so great that patients who present to medical centers not equipped to perform primary PCI are recommended to be transferred to a nearby facility that can perform PCI within 90 min, in lieu of administering thrombolytic therapy. If an elderly patient has MI complicated by cardiogenic shock, clinical trial data suggest that primary PCI

should not be withheld if they are otherwise acceptable candidates, given the higher mortality rate with delayed revascularization. Despite reperfusion therapy using PCI, elderly patients still have increased rates of bleeding, stroke, and death compared to their younger counterparts (less than age 65) in short-term follow-up. However, these rates are much lower compared to thrombolysis use or older generation PCI technology.

Efficacious treatment and management strategies for NSTEMI are exceedingly important for the elderly. Although not necessarily as urgent as in STEMI, coronary angiography with subsequent PCI is recommended for suitable patients with NSTEMI. Thrombolytic drugs are not of benefit in NSTEMI; other medication classes such as glycoprotein IIB/IIIa receptor antagonists (GPI) and thienopyridines are utilized. Thienopyridines such as clopidogrel (Plavix™) are effective adjunctive medication for patients with NSTEMI. The clopidogrel in Unstable Angina to Prevent Recurrent Events (CURE) trial (12,562 patients, 49% older than age 65) showed that treatment with clopidogrel and aspirin reduced the likelihood of death, MI, and stroke at 30 day follow-up compared with placebo and aspirin. Adjunctive anticoagulant therapy using heparin in conjunction with a GPI such as abciximab (Reopro™), eptifibatid (Integrilin™), and tirofiban (Aggrastat™) reduced the rates of death, MI, or ongoing angina (combined end-point analysis) compared to either anticoagulant used alone. This benefit included patients 65 years and older.

Patients with NSTEMI can be managed with an “early invasive” or “early conservative” strategy. Early invasive strategy involves coronary angiography with PCI usually within 72 h when there are no contraindications to the procedure. In an early conservative strategy, aggressive medical therapy is initially used and coronary angiography with subsequent PCI is performed in patients who continue to have persistent symptoms or ECG changes to suggest ongoing and symptomatic blockage of the coronary artery. Studies have shown a significant risk reduction in future events (death and MI) in patients age 65 and older with an early invasive approach. Patients who typically benefit from an early invasive approach include those with symptomatic heart failure, low blood pressure, heart rate alterations, specific ECG changes, and age 65 or greater.

Additional medical therapies are given to patients with MI, regardless of type (STEMI or NSTEMI) and

should be administered as soon as possible. Certain comorbidities and clinical circumstances may limit the use of some of these therapies. Adjunctive medical therapy is of greater benefit in elderly compared to younger individuals, especially after MI. Aspirin should be given as soon as possible with MI, if no contraindication exists. In earlier trials, aspirin was at least as good as some thrombolytic therapies and provided an additional benefit when given in conjunction with these medications. Beta-blockers, even when given during an MI, reduce the likelihood of death. Some studies note that the elderly derive a greater benefit than the younger population (less than age 65) from beta-blockers. Angiotensin-converting enzyme (ACE) inhibitors are usually given within the first 24 h after MI. Clinical trials studying ACE inhibitors have demonstrated at least a 12–25% reduction in death in patients with MI; all patients without contraindications should be given this medication. Angiotensin receptor blockers (ARB) may be used in those intolerant to ACE inhibitors, as similar efficacy has been demonstrated. Combination treatment with beta-blockers and ACE inhibitors improve outcomes compared to either medication given alone. In a select group of patients with MI complicated by systolic (pumping function) dysfunction, administration of adjunctive medical therapy using epleronone, an aldosterone antagonist, decreased mortality by nearly 15%. Epleronone blocks the hormonal effects of aldosterone which causes salt and water retention and induces abnormal healing of the myocardium after MI. HMG CoA reductase inhibitors (statins) given within the first 24–48 h after MI improve endothelial function and have anti-inflammatory and antiplatelet properties. Treatment with statin therapy reduced further cardiac-related adverse events by approximately 16% compared to placebo.

After a Myocardial Infarction

After MI, risk factor modification and continued medical treatment are of utmost importance. In addition to smoking cessation, blood pressure control, aggressive diabetes management, lipid management, weight control, and exercise, continued treatment with ACE-inhibitors, beta-blockers, and aspirin must be undertaken. Daily maintenance doses of aspirin (75–162 mg) are an important adjunct in patients taking clopidogrel due to PCI. Although clopidogrel may be stopped after

several months, aspirin must be continued. Long-term beta-blocker use in elderly patients resulted in an approximate 30% reduction in death and 40% reduction in the development of heart failure. ACE inhibitors after MI are particularly useful in patients with heart failure, as prolonged therapy (5 years) resulted in a 35–40% reduction in death. Therapy with statins afforded significant reductions in death and stroke, even in patients with high-normal cholesterol values. Unfortunately, these medications are underutilized in the elderly, despite proven benefits in large cardiovascular clinical trials. Continued physician and patient education should reduce the number of undertreated elderly patients.

Several studies have defined risk factors that lend an adverse prognosis after MI. In a review of over 100,000 patients aged 65 and older, factors associated with increased risk for death at 1 year included older age, urinary incontinence, impaired mobility, peripheral vascular disease, heart failure, low body weight, and kidney disease as manifested by elevated serum creatinine. As with younger patients, exercise stress testing can provide useful prognostic information in the elderly, assuming that no other comorbidities exist (e.g., severe osteoarthritis, wheelchair dependent). Alternatively, pharmacologic stress testing (medications to mimic exercise stress) is appropriate. Additional measures include concomitant testing using specialized heart testing such as echocardiography or nuclear cardiac scans to gauge the level of risk and guide specific therapies. Elderly patients should be strongly encouraged to participate in cardiac rehabilitation after MI, as it improves quality of life, exercise capacity, and cardiac risk factors.

Medical and revascularization strategies for patients with MI have greatly improved over the last two decades, and are useful in the elderly as well. Revascularization strategies and maximization of medical therapy will continue to improve the outcomes of elderly patients with MI. Continued pharmacological and technological advances in therapeutic options should continue to improve both short- and long-term outcomes in the elderly.

Related Topics

- [Coronary heart disease](#), • [Diabetes](#), • [Hypertension](#), • [Myocardial Infarction](#), • [Obesity](#), • [Smoking](#)

Suggested Readings

ACC/AHA (2004) Guideline update for coronary artery bypass graft surgery. *Circulation* 110:e340–e437

Antman EM, Anbe DT, Armstrong PW et al (2004) ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction *Circulation* 110:e82–e292

Braunwald E, Antman EM, Beasley JW et al (2002) ACC/AHA 2002 guideline update for the management of patients with unstable angina and non-ST-segment elevation myocardial infarction—summary article: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on the Management of Patients with Unstable Angina) *J Am Coll Cardiol* 40:1366–1374

Smith SC Jr, Dove JT, Jacobs AK et al (2001) ACC/AHA guidelines of percutaneous coronary interventions (revision of the 1993 PTCA guidelines)—executive summary A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1993 Guidelines for Percutaneous Transluminal Coronary Angioplasty). *J Am Coll Cardiol* 37:2215–2239

Williams MA, Fleg JL, Ades PA et al (2002) Secondary prevention of coronary heart disease in the elderly (with emphasis on patients ≥ 75 years of age): An American Heart Association scientific statement from the Council on Clinical Cardiology Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention *Circulation* 105:1735–1743

Nail and Hand Care

Wendy Metzner

Ridges are one of the most common nail complaints. Ridges may result from a decrease in the levels of natural oils and moisture that are associated with aging; trauma to the nail bed or matrix (where the nail grows from); allergies to various agents, such as formaldehyde that is found in many polishes; psoriasis; and various illnesses. Although there is no cure for ridges, the condition can be somewhat alleviated through consistent care of the nails.

Chipping or peeling of nails may result from dehydration, stress, allergies, poor circulation, and illness. Hangnails, which are pieces of the nail that have split on the sides and tear into the cuticle, occur frequently. This is often caused by trauma to the cuticle area or by improper trimming of the cuticles.

Pterygium inversum unguis is described as the overgrowth of the skin under the nails-free edge. This is not a serious condition and is common in women who wear artificial nail enhancements. These artificial enhancements trigger this condition, as the nail bed is not accustomed to the weight of the artificial product.

There is a possibility that more serious nail disorders can develop that will require medical attention. Onychatrophia is the condition of weakening or wasting away of the nail plate, resulting from trauma or injury to the nail bed or matrix, or from a bacterial infection. This causes the nail to lose its shine, become smaller, and occasionally, fall off entirely.

Beau's lines are horizontal lines of darkened cells and linear depressions that run from the cuticle to the tip of the nail. Beau's lines are usually caused by trauma, illness, malnutrition, major metabolic conditions, chemotherapy, or other damaging events. They are usually a result of any disruption in the protein formation of the nail plate.

Tinea unguis is also known as ringworm of the nail. The main symptom of tinea unguis is a thickening of the nail along with a noticeable nail deformation. If not treated, it could result in nail plate loss.

Onychauxis, or abnormally thick nails, are very common in older people. This condition may be caused by a number of things, such as injury, infection,

poor blood supply, diabetes and heredity, or poor nutrition.

Onychocryptosis is more commonly known as an ingrown nail. Although it usually occurs on the toes, it can also affect the fingernails. In some extreme cases, the ingrown nail will have to be removed.

Pterygium refers to the growth of the cuticle down over the nail bed. In severe cases, the cuticle covers the entire nail. If this happens, one should have the skin removed only by a doctor, so as not to cause any infection. This can be prevented with regular manicures and maintenance of nails at home, by pushing back the cuticle with either a fingernail or an orangewood stick after the skin has been softened in warm water.

Onychorrhexis, otherwise described as brittle or splitting nails, may be due to overexposure of nails to harmful chemicals, injury to the nail bed or matrix, overuse of product solvents (in the removal of artificial nails), an allergic reaction to polish removers, and improper nail maintenance. Protective gloves will shield the nails from exposure to harmful chemicals.

Bruised nails are red, green, blue, yellow, or black discolorations of the nail bed that are usually caused by trauma to the nail. Nail biting (onychophagia) may result in a shortened and deformed nail bed. Leukonychia appears as small white spots on the nail bed. These are caused by mild trauma to the nail. Eggshell nails are usually caused by improper diet, internal diseases, or medications.

Onycholysis, the separation of the nail plate from the nail bed, may be caused by trauma to the top or the underside of the nail, psoriasis, dermatitis, yeast infections, bacterial infections, various viruses, and a reaction to some medications. The effects are usually painless and gradual, but if left untreated could lead to other problems.

Fungal infections are not to be taken lightly. Fungal infections may be detected by discoloration of the nails, an offensive odor, and a thickening of the nail.

Suggested Resources

<http://www.beautyweb.com>

<http://www.hookedonnails.com>

Web MD at <http://www.webmd.com>

National Council on the Aging

Kristin A. Cassidy

The National Council on the Aging (NCOA) has 3,800 members and over 10,000 affiliated organizations, which help it to achieve the goal of “promoting vital aging in America.” Since its founding in 1950, NCOA’s mission has been to improve the health and independence of older adults, to increase their continuing contributions to their communities, society, and future generations, and to build caring communities. The members of the council include area agencies on aging, senior centers, churches, employment services, long-term care organizations, and many other organizations that work closely with senior citizens. In addition, NCOA’s mission is further supported by volunteers who are business, academic, and labor leaders.

NCOA advocates for public policies that promote vital aging. Recently, the focus of NCOA’s advocacy has been on increasing funding for the Older Americans Act programs, especially supportive services, nutrition, and caregiver support; improving access to home and community services through Medicare, Medicaid, and the tax codes; and creating a new Medicare prescription drug benefit that provides affordable and meaningful coverage. In addition, when NCOA needs help with advocating for particular policies, they put out an “action alert” explaining current legislation before Congress, what NCOA’s position is on the issue, and how their members and other visitors to their website can take action.

As an innovator and leader in advocacy and education efforts, NCOA creates programs and services based on new knowledge, creative ideas, and research. The focus of these projects range from programs that promote intergenerational interaction (e.g., Foster Grandparent program, Family Friends program) to services for seniors in need of mental health and substance abuse resources (e.g., Healthy IDEAS, Get Connected!). NCOA then supports and works closely with thousands of community organizations that use these programs to help provide assistance to older adults. NCOA also puts older consumers in touch with the resources they need to make informed decisions through the development of decision support tools such as BenefitsCheckUp, which helps connect people to the government

programs that can assist them in paying for prescriptions, health care, utilities, and other needs.

Related Topics

[Area Agency on Aging](#), [Employment](#), [Foster grandparent program](#), [Health promotion](#), [Medicaid](#), [Medicare](#), [Older Americans Act](#), [Senior centers](#)

Suggested Resources

BenefitsCheckUp—Online screening system, a service of The National Council on the Aging. Washington, D.C. (2006); <http://www.benefitscheckup.org>

Center for Healthy Aging—The Center on the Aging and the Administration on Aging evidence-based disease prevention grants program. Washington, D.C. (2005); <http://www.healthyagingprograms.org>

The National Council on the Aging (NCOA). Washington, D.C. (2006); <http://www.ncoa.org>

Neuroendocrine (Aging Clock) Theory of Aging

Jessica Diggs

Developed by Vladimir Dilman, the neuroendocrine theory of aging states that “The effectiveness of the body’s homeostatic adjustments declines with aging—leading to the failure of adaptive mechanisms, aging, and death.” This theory has also been referred to as the aging clock theory and the pacemaker theory. Consistent with this theory, the hypothalamic pituitary axis (HPA), the main regulatory system controlling homeostasis in humans, loses efficiency with aging resulting in increases in the number and severity of pathologic responses to changes in the body system, and a decline in many physiologic functions.

Hypothalamic Pituitary Axis

The HPA system works by the interplay of various hormonal signals that initiate reactions in target tissues

coupled with a negative feedback mechanism (the produced substances inhibit their own production) to allow for fine control of body functions, such as blood pressure, fluid and electrolyte levels, and body temperature. Hormones are regulatory molecules produced by glands such as the pituitary, the adrenal, the thyroid, and the pancreas. The hormones are secreted and act on other cells to produce some action that is needed by the body. The hypothalamus, the main regulatory center and mediator between the nervous and the endocrine systems, functions to keep the internal environment of the body at homeostasis. To accomplish this, on any change in the body that causes a loss of homeostasis, the hypothalamus will receive a signal from the internal or external environment and will respond to this change, through stimulating the secretion of regulatory hormones, which will act upon target tissues, initiating a series of events that will restore homeostasis.

The hypothalamus is physically connected to the pituitary gland, which is often referred to as the master gland of the body, like the central processing unit of a computer. The pituitary gland has both an anterior and posterior lobe. The posterior pituitary is actually considered a part of the brain. It receives arterial blood from the body and is connected to the hypothalamus by nerve fibers. The posterior pituitary acts as the storage and release site for two hormones: antidiuretic hormone (involved in water resorption from the kidney) and oxytocin (important for labor and breast-feeding). The anterior pituitary is connected to the hypothalamus via the pituitary portal system, which is used to carry neuropeptides (regulatory molecules) from the hypothalamus to the anterior pituitary. Six hormones are produced and secreted from the anterior pituitary including growth hormone (GH), thyroid stimulating hormone (TSH), adrenocorticotropic hormone (ACTH), luteinizing hormone (LH), and follicle stimulating hormone (FSH) and prolactin (PRL).

The hypothalamus regulates the secretion of neuropeptides from both the posterior pituitary, through the neural connections, and the anterior pituitary through the release of hypothalamic-releasing hormones into the portal system. There are several of these releasing hormones, growth hormone-releasing hormone (GHRH), thyrotropin-releasing hormone (TRH), gonadotrophin-releasing hormone (GnRH), and corticotropin-releasing hormone (CRH). Upon

detection of a change in homeostasis, the hypothalamus will secrete the appropriate releasing hormone into the portal system. Once the anterior pituitary receives this hormonal signal from the hypothalamus, the corresponding hormone is released from the anterior pituitary. These peptide hormones are released from the anterior pituitary and travel through the blood stream to act on target tissues, causing that gland or tissue to perform some function. Hormones secreted by these target tissues or glands often act in negative feedback loops to control the amount of the particular hormone present in the blood and stop the secretion process, once homeostasis has been achieved. One example of this is the body's response to emotional (triggers fight or flight response) or physical stress (surgery, trauma, major blood loss, or severe infection). Upon sensing a stressor, such as a change in temperature due to infection, the hypothalamus (under control of higher brain centers) will release CRH into the portal system. The anterior pituitary will in turn be stimulated to release ACTH, which will travel through the blood to its target organ, the adrenal gland. The adrenal gland is then stimulated to release cortisol, a corticosteroid hormone, with many target tissues that lead to an increase in blood pressure and blood sugar and to suppression of the immune system. Cortisol, in turn, acts on the anterior pituitary to inhibit the secretion of ACTH and on the hypothalamus to inhibit CRH release, striking a delicate balance that will allow for restriction of cortisol levels to an appropriate range (often termed negative feedback).

Age-Related Changes in HPA

Glandular function, and the secretion and clearance of hormones change with age. Some glands (like the adrenal gland) and organs (such as the liver involved in hormone clearance) will atrophy (decrease in size), while some other glands will experience functional changes, and others will remain virtually unaffected. With aging, many hormones such as growth hormone, testosterone, and an adrenal hormone dehydroepiandrosterone (DHEA) will decrease in levels, leading to effects such as a loss in muscle mass, decreased insulin sensitivity, decreased immune function, and an overall decreased ability of the body to repair and regulate itself. One notable HPA abnormality with aging

involves the cortisol response to stress. Cortisol levels are elevated higher than in younger persons coupled with a decreased rate of clearance and a decreased negative feedback mechanism. The effects of high cortisol levels are many (e.g., osteoporosis and fractures, high blood sugar, high blood pressure, an immune suppression). Cortisol also causes damage and atrophy to the hippocampus, the part of the brain necessary for memory that controls the secretion of cortisol. Although menopause only occurs in women, it is another prime example of an age-related change in the HPA.

Public Health Perspective

Because of the changes over time in the HPA axis, it is critical for health professionals to exercise care when treating the elderly patients, particularly for those elderly patients in need of treatment with corticosteroids, due to a high potential for adverse effects and accumulation. Because of the changes in hormone levels and functionality with age, hormone replacement (such as estrogen replacement therapy) might be instrumental in delaying or preventing the effects of HPA changes and the aging process. Owing to the potential unintended effects of some hormones, and their multiple mechanisms and sites of action in the body, health professionals and the public should be cautious when using commercially available supplements or hormone replacement therapies used for purposes other than indicated by sound clinical research.

Related Topics

- ▶ [Hormone therapy in menopause](#), ▶ [Hormones](#), ▶ [Menopause](#), ▶ [Stress](#), ▶ [Testosterone replacement](#)

Suggested Readings

- Boron WF, Boulpaep EL (2003) *Medical physiology: A cellular and molecular approach*. W.B. Saunders, Philadelphia PA
- Klatz R, Goldman B (1996) *Stopping the clock: Why many of us will live past 100—and enjoy every minute!* Keats Publishing, New Canaan CT
- Masoro EJ (1999) *Challenges of biological aging*. Springer Publishing Company, New York

- Timiras PS (1994) *Physiological basis of aging and geriatrics*, 2nd edn. CRC Press, Boca Raton FL
- Whitbourne SK (2001) *Adult development & aging: Biopsychosocial perspectives*. Wiley, New York

Neuropathy

Kathleen Wolner

Central and Peripheral Nervous Systems

Our nervous system is divided into two segments. The first is the central nervous system, which includes the brain and the spinal cord. The second is the peripheral nervous system, which includes the nerves leading from the brain to the face and head, and the spinal nerves that exit and carry nerve impulses to and from the arms, legs, feet, and hands.

Peripheral Neuropathy: Broad Range of Causes

Symptoms of peripheral neuropathy include numbness, tingling, burning, or pain. These are called paresthesias or dysesthesias. The most common sensations felt by a person with a polyneuropathy are pain or numbness in the hands and feet, also known as the stocking glove distribution. There are over 100 causes of peripheral neuropathy. The time course of onset is important in diagnosing the cause of a peripheral neuropathy. Onset of symptoms ranges from hours to years in some cases. Other neuropathies due to toxins, such as lead, can develop within weeks as opposed to neuropathy due to diabetes and alcoholism that may progress over months to years.

Guillain–Barré syndrome is a common cause of acute paralysis. It generally begins in the feet and legs with progressive weakness of the muscles following a common cold or gastrointestinal illness. The most important part of this illness is that it can impair the muscles of breathing. The outcome is generally good.

In the Western world, diabetes is the most common cause of peripheral neuropathy. (The most common cause of peripheral nerve disease in the

world, however, remains leprosy.) The most common form of diabetic neuropathy involves the feet and hands, with symptoms of burning or numbness. One of the most important treatments of diabetic neuropathy is its prevention with strict glucose control.

Alcoholic neuropathy is caused by alcoholism and is worsened by the lack of essential vitamins. These patients complain of pain and tingling feelings (paresthesias) in the feet and legs. The treatment is good nutrition, vitamins, and abstinence from alcohol. Some of the problems can improve with nutrition and abstinence from alcohol; however, serious neurologic impairments may persist.

Vitamin B₁₂ deficiency can cause numbness in the hands and feet in addition to changes in the brain function. Diagnosis is made with a blood test and it is easily treatable with pills or injections.

A peripheral neuropathy is seen with different types of cancer. It can be caused by the compression of the nerve by the cancer itself or by circulating the released chemicals that cause the nerve to malfunction. It is most commonly seen in small cell cancer of the lung but can also be seen in patients with breast, ovarian, uterine, and gastrointestinal cancers. It is usually progressive.

In 10% of patients with no identifiable cause for their symptoms, there is often excessive protein production. The diagnosis of peripheral neuropathy may ultimately lead to the diagnosis of a disorder called multiple myeloma, a malignancy in the blood. The plasma cells produce excess protein, which damages the nerves.

Complex regional pain syndrome (CRPS) was formerly referred to as reflex sympathetic dystrophy. It often occurs without any obvious physical injury. Increased sensitivity to cold and heat, abnormal blood flow, unusual temperature changes throughout the area, and changes in hair growth and skin texture may be seen in this disorder.

Phantom pain is seen following amputation. Although the limb may be missing, the spinal cord and the brain retain the neurological connections, thus the brain senses that it still exists. This is a poorly understood process. It can occur when a limb is removed and after a mastectomy.

Toxins and Drugs

Toxins associated with peripheral neuropathies include pesticides, organophosphates, lead, arsenic, mercury,

and others. Chemicals used in the plastics industry, including acrylamide, glue sniffing, and nitrous oxide inhalation can cause neuropathy. A few of the medications that may cause neuropathy include amiodarone, *cis*-platinum, dapson, gold for arthritis, and isoniazid, which is used for the treatment of tuberculosis. Vitamin B₆ supplements with isoniazid can prevent neuropathy. The human immunodeficiency virus (HIV) infection causes a painful sensory neuropathy in the feet in about 30% of patients, late in the course of the illness.

Median nerve compression occurs in carpal tunnel syndrome. This is the most common of all the entrapment neuropathies and occurs as the median nerve passes through the carpal tunnel in the wrist. The tunnel is shaped like a wristwatch around the wrist. Pressure on the nerve causes the symptoms. The carpal tunnel either becomes lighter on the nerve or the nerve itself becomes bigger. The nerve is also injured by repetitive tasks that cause sustained and repeated stress, including keyboarding. Treatment includes a wrist splint worn at night. Anti-inflammatory drugs are helpful and surgery is often required.

Bell's palsy is inflammation and swelling of one of the cranial nerves. It is usually of sudden onset and over hours the patient notices one side of the face being paralyzed. The eyebrow does not move and the eyelid will not close. It usually resolves within weeks to months. There are many different treatment options.

Trigeminal neuralgia is a disorder of the largest nerve in the face that supplies sensation and controls the muscles. Patients may complain of facial pain or twitching. Generally, the skin is exquisitely sensitive. Early treatment can help to prevent the pain.

Principles of Care

It is paramount to identify the underlying cause of a neuropathy and to prevent further damage. If there is an entrapment or compression, the pressure should be eliminated.

Diagnosis begins with a history and a thorough physical examination. Blood tests include blood sugar, kidney function, complete blood count, B₁₂ level, and perhaps thyroid tests. A chest x-ray is useful, especially in smokers, as neuropathies are associated with lung cancers. It is useful in nonsmokers, too, as 15% of lung cancers are seen in nonsmokers. Nerve conduction

studies are sometimes needed to clarify the disorder and help guide treatment.

Occupational therapists specialize in assisting patients with devices that allow them to perform the activities of daily living. Ulcers should be treated immediately at the first sign of skin breakdown. Shoes with a wide, deep toe box can protect the toes and feet. Whirlpool, massage, and other modalities can be used for treatment of sensory neuropathy. Aspirin and acetaminophen are effective for pain. Other options include the use of tricyclic antidepressants, which provide pain control and promote sleep. It is very important to start with a low dose and increase it gradually.

An exciting treatment of neuropathy is the class of drugs called anticonvulsants, which are used to treat epilepsy. The theory is that they stabilize the nerve and lead to a healthier, more normal function. Gabapentin and carbamazepine have shown to be very effective at reducing pain and discomfort. They are very well tolerated with limited side effects. The use of narcotics in sensory neuropathy is widely discouraged because of their addictive potential.

Related Topics

[▶ Acquired immunodeficiency syndrome](#),
 [▶ Alcohol use](#),
 [▶ Amputation](#),
 [▶ Cancer](#),
 [▶ Diabetes](#),
 [▶ Pain](#),
 [▶ Pain management](#),
 [▶ Trigeminal neuralgia](#),
 [▶ Vitamins](#)

Suggested Readings

- American College of Physicians—American Society of Internal Medicine. The Medical Knowledge Self Assessment Program 12. The Neurology Book, pp 79–86
- Barker LR, Burton JR, Zieve PD (eds) (2003) Principles of ambulatory medicine, 6th edn. Lippincott Williams & Wilkins, Philadelphia, PA, pp 1215–1217, 1455–1473
- Fishman SM, Berger L (2000) The war on pain. Harper Collins Inc. New York, New York

Suggested Resources

- American Chronic Pain Association, PO Box 850, Rocklin, California 95677-0850, www.theacpa.org
- The American Pain Foundation, 111 South Calvert Street, Suite 2700, Baltimore, Maryland 21202, www.painfoundation.org
- The Neuropathy Association, 60 East 42nd Street, Suite 942, New York, New York 10165, www.neuropathy.org

Nosocomial Infections

Mohamed H. Yassin · Robert A. Bonomo

Nosocomial infections are infections that occur after 48 hours of stay in a hospital (acute care center) or long-term care facility. Elderly individuals are particularly vulnerable to different kinds of nosocomial infections. Elderly individuals usually have longer hospital stay and they constitute the majority of residents in long-term care facilities. Meanwhile, the elderly are more likely to have chronic medical conditions as cerebrovascular strokes, dementia and diabetes (DM) that make infections more likely. The mechanisms for vulnerability to infection depend on the site of infection.

Nosocomial infections are the most common cause of admission of long-term care facility residents to the hospital. Infection control plays a major role in preventing infection spread between patients in the hospital or residents of long-term care facilities. The common nosocomial infections include urinary tract infections, pneumonia, skin and soft tissue infection, and line-related infections (for example intravenous lines that deliver fluids to the body). Infection control in hospitals and long-term care centers have multiple tasks. First is to prevent the occurrence of these infections in patients by proper patient care. Second is to prevent the spread of infection to other patients and health care workers by taking appropriate precautions and isolation techniques based on the type of infection. Last, it is important to prevent and control possible outbreaks such as influenza, varicella, and tuberculosis or bioterrorism agents.

Specific Types of Nosocomial Infections

Urinary tract infections (UTI) are the most common nosocomial infections in the elderly. The prevalence of bacteriuria (bacteria in the urine) in the elderly is high, reaching over 20% of long-term care facility residents. Bacteriuria in elderly men increases with age secondary to urethral obstruction (obstruction of the passageway between the bladder and the urinary opening) caused by prostatic hypertrophy (aging related enlargement of the prostate gland). Urinary catheters (tubes inserted into the bladder through the urinary opening in the penis) are a major risk factor for UTI and should be

avoided whenever possible. The majority of patients with indwelling urinary catheters (catheters left in place for an extended period of time) will have bacteriuria by 30 days but, a minority will actually develop an infection.

Symptomatic bacteriuria (bacteriuria that causes clinically noticeable symptoms) should be treated. Elderly individuals with symptomatic UTI often are acutely sick with hemodynamic instability (serious abnormalities of blood pressure and other vital signs) and many of them require hospitalization and parenteral (intravenous) antibiotic therapy. The choice of antimicrobial therapy should be based on specialized examination of the bacteria such as Gram stain of the urine (a microscope test) and culture of the blood and urine. The treatment of asymptomatic bacteriuria does not generally provide any benefit and may lead to extensive use of unnecessary antibiotics. Inappropriate use of antimicrobial agents is a main cause of spread of multi-drug-resistant bacteria in hospitals and long-term care facilities.

Pneumonia is the most common infectious cause of death in the elderly, and it is much more common in elderly than in younger individuals. Major risk factors for nosocomial pneumonia (NP) are endotracheal intubation (tubes or openings in the windpipe), poor nutrition, and neuromuscular diseases (particularly cerebrovascular stroke with effects on swallowing). Nosocomial pneumonia in the elderly is different in many aspects compared to community-acquired pneumonia (CAP) in younger individuals. The spectrum of organisms causing NP is much broader than CAP. *Streptococcus pneumoniae* is still the leading bacterial organism but the list includes bacteria such as *Staphylococcus aureus*, various gram-negative bacteria, and a long list of viruses such as influenza and respiratory syncytial virus (RSV). A major part of NP in the elderly is attributed to aspiration (breathing in body fluids or food), which could be polymicrobial including anaerobic, gram-negative, and gram-positive bacteria (various types of bacteria).

It is very essential for clinicians to understand that NP are more difficult to diagnose as symptoms are often more subtle. Fever may be absent in a large proportion of elderly individuals with NP. The documentation of change in the sputum (mucous coughed up from the lungs) into more purulent (pus-like) form or the expected increase in amount of sputum is sometimes unreliable. Other parameters include oxygenation, leucocytosis (increased white blood cell count)

and radiographic findings, which are nonspecific for pneumonia. The initiation of antibiotic therapy for every patient with one of these findings can lead to massive inappropriate use of antibiotics.

Multiple efforts have been made to help guide the diagnosis of NP by creating a scoring system that includes the most reliable objective findings as body temperature, leukocyte (white blood cell) count, volume and character of secretions, arterial oxygenation, chest radiograph (x-ray) findings, and gram stain and culture of the tracheal aspirate (microscopic evaluation of fluids from the windpipe). Also, patients in shock with suspicion of NP will have much lower threshold for treatment.

Elderly with NP often treated with much broader spectrum antibiotic, as infection may be polymicrobial (due to multiple different types of bacteria), and aspiration is often suspected. Appropriate sampling of tracheal aspirate and quantitative analysis of cultures is helpful in confirming the diagnosis and in helping to select the most effective antimicrobial therapy. A shorter course of 8 days of antibiotic therapy has been established in large clinical trial as equivalent to 2 weeks of antibiotic therapy. However, before any individual discontinues antibiotic therapy, this should be discussed with the treating practitioner. It is certainly important to individualize the therapy based on clinical improvement and consultation with health care staff. It is also important to recognize that highly resistant bacteria as *Pseudomonas aeruginosa* may require longer therapy.

Other nosocomial infections include intravenous catheter infections, infected decubitus ulcers (bed sores), and osteomyelitis (bone infection). Many of these nosocomial infections are preventable by proper care. As an example, proper antiseptic techniques in insertion and care of intravenous catheters decrease risk for line-infection. A focus on appropriate nutrition in elderly individuals is also a key factor in prevention of decubitus ulcers.

Prevention of Nosocomial Infections

Infection control functions to prevent spread of infection in hospitals as well as long-term care facilities. Typically, an infection control team keeps track of infection rates, organisms, and types of infections. Analysis of these data can predict an outbreak if there is significant increase in any particular infection. Infection control

teams can also assure the implementation of standard precautions of patient care as well as various isolation precautions. Standard precautions include use of gloves on touching any body fluid, nonintact skin, and mucous membranes as well as hand hygiene. Many nosocomial infections spread by contact from the hands of health care workers. It is of note that most of the infectious organisms are loosely attached to the skin and can be easily removed by hand washing. Alcohol-based hand rubs are more effective than soap and water, and increase compliance with hand hygiene.

Another important reason for the spread of resistant microorganisms is the inappropriate use of antimicrobial agents. Infection control teams can limit the use of some antibiotics or review the indications and duration of use. However, implementing infection control strategies is much harder in long-term care facilities compared to acute care facilities because of the more interactive nature of long-term care facilities.

Isolation is a technique used to contain particular infection. Types of isolation are contact, droplet, and airborne. Contact isolation requires using appropriate measures to prevent contact with the patient. Contact isolation is used for resistant bacterial infection or colonization such as vancomycin resistant enterococci (VRE), clostridium difficile diarrhea, and resistant gram-negative bacteria. Droplet isolation requires wearing a mask within 3 ft from the patient. Droplet infectious agents include bacterial meningitis, and influenza. Although airborne isolation requires negative pressure rooms and wearing appropriate masks to prevent inhalation of these small droplets, airborne infectious agents are limited and include TB and varicella.

In summary, elderly patients in acute or long-term care facilities are particularly vulnerable to nosocomial infections and are more likely to have a poor outcome. Elderly patients constitute a majority in nosocomial infection outbreak victims. As an example, influenza outbreak in an elderly group of long-term care facility can lead to very high rate of morbidity and mortality. Annual immunization is effective in preventing influenza infection. In case of an outbreak, patients who are coughing should be put under respiratory precautions. Droplet isolation should be attempted. Contacts should receive prophylactic antiviral chemotherapy. It is clear that prophylaxis is much more effective than treatment and should be started as soon as possible. Finally appropriate antiviral therapy should be offered to patients.

Related Topics

▶ Immunizations, ▶ Institutionalization, ▶ Long-term care, ▶ Pneumonia, ▶ Urinary tract infections

Suggested Readings

Coffin SE, Zaoutis TE (2005) Infection control, hospital epidemiology and patient safety. *Infect Dis Clin North Am* 19:647–665

Scott FA, Harold CR, Sanjay S (2006) Nosocomial pneumonia: State of the science. *Am J Infect Control* 34(2):84–93

Nursing Home

Siran M. Koroukian

Nursing homes provide personal and medical care to individuals who cannot be cared for at home or in the community because of physical, emotional, or mental problems. Placement in a nursing home may be necessary if an individual needs round-the-clock nursing care; is likely to wander away without supervision; cannot live alone; needs more assistance than the current caregiver can provide; or needs help with activities of daily living (e.g., meals, bathing, personal care, moving around). In addition to 24-hour supervision, nursing home residents might receive medical care, as well as physical, speech, and occupational therapy. Rooms in nursing homes are usually equipped for one or two individuals, sometimes even accommodating couples. Some nursing homes encourage their residents to bring special items from home to make their rooms more familiar. Most nursing homes have special areas for patients with dementia to keep them safe from wandering.

In 2002, there were 1.8 million nursing home beds in facilities certified for use by Medicare and Medicaid. There were 1.6 million individuals residing in 18,000 nursing homes nationwide. The occupancy has remained relatively stable during the 1995–2002 period, at 82%.

Nursing home care amounts to over \$100 billion annually. The average monthly charges per resident amounted to \$3,505 in 1999—up from \$2,769 in 1995. Nursing home services are paid for out-of-pocket

by residents themselves, long-term care insurance, or Medicaid, if the person is eligible. In fact, Medicaid covers the costs for nearly seven out of every ten nursing home residents. Medicare covers some skilled nursing care (only up to the 100th day), but not for help with activities of daily living, also referred to as non-skilled or custodial care.

Approximately 43 of every 1,000 individuals aged 65 years or older reside in nursing homes. However, this rate increases with age, with 11, 43, and 182 for residents in each of the age groups 65–74, 75–84, and 85 and older, respectively. Approximately one in four nursing home residents are men, and nearly half are 85 years of age or older. Reasons for nursing home admission include older age, low income, poor family and psychosocial support, low social activity, and difficulties in physical or mental functioning.

An analysis of residents' functional status revealed that in 1999, 80% of nursing home residents aged 65 or older needed assistance for walking and for other movement; two-thirds were incontinent; nearly half needed assistance when eating; and 37% were incontinent and needed assistance with mobility and eating. A large number of nursing home residents also suffer from psychiatric ailments and/or cognitive impairment: 50–70% of residents are affected by dementia, and approximately, one-third exhibit problematic behaviors, such as verbal and physical abuse, resisting necessary care, or wandering. Additionally, nearly half of the patients have difficulty both understanding and being understood, and one in five nursing home residents is diagnosed with depression.

Despite these statistics, the length of stay in nursing homes is quite variable. The length of stay can be 3 months, especially when a patient is admitted for rehabilitation or for terminal (end-of-life) care. This is true for one in four of the residents. Nearly half of residents stay in nursing homes for 1 year or longer, however, and 21% live there for up to 5 years.

Finding the right nursing home often requires long periods of waiting—hence the importance of planning ahead. The Center for Medicare and Medicaid Services (CMS), a branch of the Federal government's Department of Health and Human Services that oversees the Medicare and Medicaid programs, contracts with State governments to oversee the licensing and monitoring of nursing homes eligible to provide care to Medicare and Medicaid beneficiaries. In addition to examining the detailed evaluations conducted by teams from the State government, it is highly recommended to visit a

nursing home several times and talk with its residents before making a decision.

A checklist detailing the items to consider in one's decision is available at the Medicare website listed below. Following are some of the highlights from the Medicare checklist and other sources:

- **Payment:** Make sure that the nursing home accepts Medicare and Medicaid and that you understand the facility's contract and payment plan. If the contract is too complex, it is advisable to consult a lawyer before signing.
- **Facility:** As noted in a brochure posted on the Medicare website, the person visiting the nursing home needs to use his or her five senses: Is the environment pleasantly decorated, clean, and free of clutter? How is the appearance of the nursing home and its surrounding? How well is the facility maintained? Is the floor plan easy to follow? Are doorways and hallways wide enough to accommodate wheelchairs and walkers? Are handrails available? Are carpets secured with nonskid material? Does it have good lighting? Are bathrooms private? Are the residents clean, well groomed, and appropriately dressed for the season? Are there unpleasant odors? What is the noise level? Is the temperature comfortable for residents? Does the nursing home meet fire regulations (check for a sprinkler system, fire-resistant doors, evacuation plans)?
- **Staffing:** Is there enough staff available to assist the residents and does the staff treat the residents with respect? It is also important to ensure that there is a Registered Nurse in the nursing home at all times, and that the same team of nurses and Certified Nursing Assistants work with the same resident 4–5 days a week. Is the staff trained to assist residents with memory loss? Is there a full-time social worker on staff?
- **Medical care:** Is there a physician on staff who comes in daily? Can she or he be reached at all times? What is the procedure to respond to a medical emergency? What are the policies regarding medication storage and assistance with medication? Is self-administration of medication allowed?
- **Food:** how is the food service? Are the meals nutritionally well balanced? Is the food attractive and tasty? Are snacks available upon request? Where do residents eat their meal? How are special diets and special requests handled?

- Patient rights: Are the rights of the residents posted? Does the staff encourage patient independence? Do they honor patients' preferences and respect their wishes? Are patients encouraged to prepare an advance directive? Are family members encouraged to take part in care planning? In addition, it is important to see that the name of the ombudsman is posted, and that the nursing home has an active resident or family council.
- Social activities: What do social and recreational activities consist of? Are the activities posted for residents?

The transition of a loved one to a nursing home can be an emotionally difficult time for the individual, as well as for the members of the family who are often overwhelmed with feelings of failure and betrayal. The environment in which long-term care is provided has changed significantly over the years, however, and it is important to be informed and to know what to expect. For example, many think of nursing facilities to be like hospitals, when in fact nursing facilities strive to be homes where people can find familiarity with their surrounding and people around them, and live their lives with physical, mental, and social activities that are appropriate for their age and capabilities. The visiting hours are not as restrictive; in fact, friends and family are encouraged to visit. Health permitting, short visits to home are allowed as well. Also important to be mindful of is that the primary goal of the nursing home staff is to provide rehabilitative care, so that patients can return home or to an assisted living facility.

The trends have indicated an increase in the number of elders admitted to nursing homes. A doubling of that number is expected by 2020 if there is no breakthrough in the treatment of dementia. Unfortunately, quality of care remains a great concern, and a collective approach will be critical in addressing many of the shortcomings. Caregiver fatigue, under-compensation, staff shortages, and high turnaround are at the core of the quality problems. From family and friends, who undeniably constitute a safety net, to the ombudsmen; staff; payers; and researchers, all should contribute to identifying problems and formulating solutions.

Related Topics

➤ Area Agency on Aging, ➤ Assisted living, ➤ Caregiving and caregiver burden, ➤ Dementia, ➤ Elder abuse

and neglect, ➤ Institutionalization, ➤ Medicaid, ➤ Medicare, ➤ Quality indicators

Suggested Resources

- The American Geriatrics Society Foundation for Health in Aging. Nursing Home Care. New York (March 15, 2005); http://www.healthinaging.org/agingintheknow/chapters_ch_trial.asp?ch=15#Nursing
- American Health Care Association. National Center for Assisted Living. Consumer Information about Long-term Care. *Living in a nursing home: Myths and realities*. Washington, D.C. (2003); http://www.longtermcareliving.com/family_guide/myths
- Center for Medicare and Medicaid Services. Nursing Homes section of website. Washington, D.C. (July 25, 2005); <http://www.medicare.gov/Nursing/Overview.asp>
- Cleveland Clinic. Health Information Center. *What you need to know about nursing home care*. Cleveland, OH (February 21, 2003); <http://www.clevelandclinic.org/health/health-info/docs/0700/0730.asp?index=4903>
- National Center for Health Statistics. *Health, United States, 2004, With Chartbook on Trends in the Health of Americans*. Hyattsville, Maryland (2004); <http://www.cdc.gov/nchs/fastats/nursing.htm>
- National Institute on Aging. *Age Pages, Long-Term Care: Choosing the Right Place*. September 2003. U.S. Department of Health and Human Services, National Institutes of Health (December 20, 2005); <http://www.niapublications.org/shopdisplayproducts.asp?id=45&cat=All+Age+Pages>

Nutrition

Rajkumari Richmonds

Nutrition, one of the major determinants of successful aging, is defined as the ability to maintain three key behaviors: low risk of disease and disease-related disability, high mental and physical function, and active engagement of life. Food is not only important to one's physiological well-being, but also contributes to one's social, cultural, and psychological well-being. Research has shown that behaviors such as eating a healthy diet, being physically active, and abstaining from tobacco use are more influential than genetic factors in helping individuals avoid deterioration associated with aging.

Nutrition plays multiple roles in successful aging. As a primary prevention strategy, nutrition helps promote health and functionality. As secondary and tertiary prevention, medical nutrition therapy (MNT) is an effective disease management strategy that lessens chronic disease risk, slows disease progression, and reduces disease symptoms.

A nutrient is any element or compound necessary for or contributing to an organism's metabolism, growth, or other functions. Nutrients are grouped as those elements providing energy (carbohydrate, protein, and fat), vitamins, and minerals, which support the metabolic processes in the body. Fluids help in maintaining the hydration status, while fibers are involved in forming the bulk needed for elimination of waste. Some nutrients are classified as essential amino acids and essential fatty acids because they need to be supplied through food sources. They are not synthesized in the body.

Energy Producing Nutrients

Carbohydrates, proteins, and fats are the sources of energy to the body. A gram of carbohydrate and protein gives 4 kcal whereas a gram of fat gives 9 kcal.

Age and Energy Requirements

Energy intake declines progressively with age. One of the reasons for this can be attributed to a declining metabolic rate (BMR) and decreasing physical activity. With advancing age, body composition shifts toward an increase in the proportion of body fat and a decrease in lean body mass. These changes result in a decrease in energy expenditure by 2–3% per decade. Although obesity is a common problem in late middle age, increasing susceptibility to the degenerative diseases like arthritis, hypertension, diabetes, and atherosclerosis, extreme underweight is most prevalent in those aged above 70.

The major function of dietary carbohydrate is to provide energy. Glucose can be used by all body tissues and is required for producing energy. In the absence of dietary carbohydrate, fatty acids are incompletely oxidized, leading to ketosis, which may cause lethargy and depression. Carbohydrate intake should be about 55–65% of dietary energy.

Protein

Lean body mass decreases with age, possibly due to a decreased rate of protein anabolism (tissue formation) and a reduction in physical exercise. Protein requirement per unit of body weight of older adult does not change from that of young adults. As age advances, protein intake represents a greater proportion of total energy intake because energy intake decreases due to a decrease in BMR. A daily protein intake of approximately 1.0 g/kg of body weight is probably adequate. As the elderly are more prone to recurring episodes of chronic disease requiring repletion of protein reserves, protein intake must be increased to satisfy the demands.

Fat

The desirable fat intake for the elderly does not differ from that of younger adults. Fats are the most efficient energy source with twice the energy content per gram than carbohydrate and protein. At least 10% of the total energy intake should be fat, to make it possible for an adequate intake of fat soluble vitamins and the essential fatty acids, linoleic and arachidonic acid. Essential fatty acids are required for the synthesis of prostaglandins and cell membrane phospholipids. The fat content of the average American diet, consists of approximately 40% of total energy intake, is too high and contains a higher proportion of saturated fat and cholesterol than is desirable for the optimal health of adults. The American Heart Association recommends that the total fat intake be limited to 30% or less of the total energy intake and the cholesterol intake be limited to 300 mg/dL or less.

Serum Cholesterol and Coronary Heart Disease

Serum cholesterol is a strong risk factor for coronary heart disease until age 55, but its impact decreases with increasing age. Serum cholesterol does not predict the incidence of coronary heart disease past age 70 in men but remains as a weaker predictive for coronary disease in women. Low-density lipoprotein (LDL cholesterol) and its protective component high-density lipoprotein (HDL cholesterol), and LDL–HDL ratio continue to be

related to the incidence and mortality of coronary heart disease in elderly men and women.

Dietary Intervention for Hypercholesterolemia

Total and LDL cholesterol are increased because of high intake of carbohydrates, total fat, and saturated fat. These can be lowered by avoiding excessive intake of calories and total fat and substituting monounsaturated fat for saturated fat. Cessation of smoking also improves HDL level. For healthy individuals below age 70, the American Heart Association's recommendations for lipids are appropriate, but these dietary interventions may not be indicated in individuals over the age of 70, who have limited economic resources, limited activity, and quality of life due to advanced disease or poor dietary intake. It is important to eat fatty foods and oils that are high in unsaturated and monounsaturated fatty acids to protect the cardiovascular system from the ravages of LDL cholesterol.

Saturated fats are solid at room temperature and they are more stable. They do not become rancid by combining with oxygen. Dietary sources of saturated fats are foods from animals, coconut, palm kernel oil, and cocoa butter. These foods when eaten in excess raise the total cholesterol and LDL cholesterol. LDL cholesterol is small dense particles and is atherogenic. Polyunsaturated fats have been shown to have lower cholesterol levels but have a heterogeneous effect on HDL cholesterol levels. Food sources are vegetable oils (corn, safflower, soybean, sunflower, cottonseed) and walnuts. Monounsaturated fats lower total cholesterol but do not lower HDL cholesterol levels. Food sources of monounsaturated fats are canola, olive, peanut oils, and nuts (except walnuts).

Trans-Fatty Acids

Trans-fatty acids (TFAs) are specific type of fat formed when liquid oils are made into solid fats like vegetable shortening and hard margarine. Most of the trans fats in a typical American diet comes from commercially baked and fried foods prepared with vegetable shortenings or hard margarines. The trans-fat content of these foods may be as high as 45–50% of fat. Trans fats raise total cholesterol and LDL cholesterol, and lower the HDL cholesterol.

Vitamins

Vitamins A, D, E, K, B₁ (thiamine), B₂ (riboflavin), B₃ (pyridoxine), B₁₂ (cyanocobalamine), C, biotin, folic acid, niacin, and pantothenic acid play an important role in the metabolism. Except vitamin D, the human body is incapable of producing any of these vitamins. They must be supplied through food. Vitamins function as cofactors and toxicity states result from taking mega doses of vitamins. Deficiencies of these vitamins result when the recommended dietary allowance (RDA) is not met.

Minerals

Minerals are inorganic (not made by the human body) substances essential for the proper functioning of the human body. Establishing requirements for minerals in humans is difficult. There are no RDAs for sodium or potassium even though they are required for physiological function. There are recommendations for calcium and magnesium. Elderly patients are more susceptible to the development of both hyponatremia and hypernatremia. Elderly individuals develop a defect in their thirst mechanisms, especially when associated with any cerebral disease, making them prone to develop hypernatremia, resulting from dehydration secondary to water depletion.

Hypokalemia and hyperkalemia are also more common in elderly people. Medication such as diuretics, purgatives, enemas lead to potassium loss. Hyperkalemia is the result of lower renin–aldosterone levels often found among the elderly. When the level of renin–aldosterone is low, the kidneys have difficulty in clearing excess amounts of potassium. Osteoporosis is a condition in which deossification of bone with resultant enlargement of marrow, decreased thickness of cortex, and structural weakness occur. This is a common ailment in elderly people. This is due to changes in hormone balance, physical activity, and vitamin D and calcium deficiency.

Fluids

The number of functioning nephrons per kidney decreases with age and therefore the solute load per nephron is increased greatly. For the kidneys to eliminate this solute load, adequate fluid is essential.

Decrease in thirst sensation is common in old age and puts them at risk for dehydration and electrolyte imbalances. Depending on the type of feeding, fluid replacement is essential. A water intake of approximately 30 ml/kg of body weight or 1 ml of water for each calorie ingested is a reasonable recommendation for normal renal and bowel function.

Fiber

Dietary fiber is that part of carbohydrates which is not digested by the gastrointestinal tract. This includes hemicellulose, pectin, gums, lignin, and cellulose. They absorb water from surrounding tissues through osmosis and may provide a laxative effect. They also provide the necessary bulk for bowel movement. Excessive intake of fiber should be avoided as it may decrease the absorption of vitamin B₁₂ and also lead to a loss of some minerals by binding to the phytic acids present in them. Specific recommendations for the elderly have not been established, although a safe recommendation would encourage intakes of 10–30 g dietary fiber per 1000 kcal. All recommendations need to recognize the importance of adequate fluid intake. Exercise caution when recommending fiber to those with gastrointestinal diseases, including constipation.

Related Topics

▶ [Body Fat](#), ▶ [Body image](#), ▶ [Cardiovascular disease](#),
▶ [Constipation](#), ▶ [Diabetes](#), ▶ [Diet](#), ▶ [Eating](#)

[disorders](#), ▶ [Feeding behavior](#), ▶ [Heart disease](#),
▶ [Hypertension](#), ▶ [Malnutrition](#), ▶ [Obesity](#), ▶ [Weight control maintenance](#)

Suggested Readings

- Bales CW, Ritchie CS (eds) (2004) Handbook of clinical nutrition and aging. Humana Press, Totowa, NJ
- Fiatarone-Singh MA, Bernstein MA, Ryan AD, O'Neill EF, Clements KM, Evans WJ (2000) The effect of oral nutritional supplements on habitual dietary quality and quantity in frail elders. *J Nutr Health Aging* 4(1):5–12
- Koehler KM, Pareo-Tubbeh SL, Romero LJ, Baumgartner RN, Garry PJ (1997) Folate nutrition and older adults: Challenges and opportunities. *J Am Diet Assoc* 97(2):167–173
- Mahan LK, Escott-Stump S (eds) (2000) Krause's food, nutrition, and diet therapy, 10th edn. W. B. Saunders, Philadelphia, PA
- Muscoso E, Puglisi N, Mamazza C, Lo Giudice F et al (2004) Anti-resorption therapy and reduction in fracture susceptibility in the osteoporotic elderly patient: Open study. *Eur Rev Med Pharmacol Sci* 8(2):97–102
- Omran ML, Morley JE (2000) Assessment of protein energy malnutrition in older persons, part I: History, examination, body composition, and screening tools. *Nutrition* 16(1):50–63
- Reynish W, Vellas BJ (2001) Nutritional assessment: A simple step forward. *Age Ageing* 30(2):115–116
- Roberts SB (2000) Energy regulation and aging: Recent findings and their implications. *Nutr Rev* 58(4):91–97
- Rodwell S (1978) Title essentials of nutrition and diet therapy. Mosby, St. Louis, MO
- Taaffe, DR, Marcus R (2000) Musculoskeletal health and the older adult. *J Rehabil Res Dev* 37(2):245–254
- Vellas BJ, Hunt WC, Romero LJ, Koehler KM, Baumgartner RN, Garry PJ (1997) Changes in nutritional status and patterns of morbidity among free-living elderly persons: A 10-year longitudinal study. *Nutrition* 13(6):515–519

Obesity

Asra Kermani

Obesity is an excess accumulation of adipose tissue mass, not of entire body weight alone. However, since weight gain beyond the acquisition of muscle mass is accumulation of fat tissue, the current definition still utilizes body weight, in proportion to height. Body weight divided by the square of the height is called the body mass index (BMI). Whereas most people with an increased BMI have increased fat mass, very muscular individuals may have an increased BMI without being overweight or obese. See ▶ [Table 1](#).

■ **Table 1**
Classification of Overweight and Obesity

BMI (kg/m ²)	
Underweight	<18.5
Normal	18.5–24.9
Overweight	25.0–29.9
Obese	
Class I	30–34.9
Class II	35.0–39.9
Class III	>=40 (extreme obesity)

Worldwide, there is an increasing incidence of obesity as a consequence of increasingly sedentary lifestyles coupled with the intake of high-energy foods. According to the National Health and Nutrition Examination Survey (NHANES) 1999–2000 data, the prevalence for overweight among adults was 34% and for obesity, 30%. Therefore 64% of the population suffers from excess body weight. Obesity and overweight are rapidly increasing in both men and women.

The repercussions of obesity are widespread and can be metabolic, malignant, infectious, mechanical, psychological, and social (see ▶ [Table 2](#)). Importantly, the obesity and type 2 diabetes epidemics go hand in hand. Therefore, prompt intervention on a population-wide scale is likely to have a great impact.

Pathophysiology

Although few genetic syndromes cause obesity, it is apparent from the rapid increase in the rates of obesity that major genetic changes cannot explain this

■ **Table 2**
Complications of Obesity

<i>Cardiovascular</i>
High blood pressure
Heart failure
Angina (cardiac chest pain), heart attack
Stroke
Blood clots in leg veins and lungs
Leg swelling
<i>Respiratory</i>
Sleep apnea
Restrictive lung disease
<i>Malignancy</i>
Increased risk of cancer of the breast, uterus, colon
<i>Urinary</i>
Urinary incontinence (women)
<i>Infections</i>
Superficial fungal skin-fold infections
Leg ulcers
<i>Gastrointestinal</i>
Gallstones, gallbladder inflammation
<i>Metabolic</i>
High LDL cholesterol, high triglycerides, low HDL cholesterol
Diabetes
Gout, uric acid kidney stones
<i>Musculoskeletal</i>
Degenerative arthritis, knees and spine
<i>Psychosocial</i>
Depression/social isolation
Impaired activities of daily living

phenomenon. What is more likely is the impact of environmental changes on pre-existing genes. For weight gain, there must be an imbalance favoring caloric intake in excess of caloric expenditure. According to NHANES 1999–2000, the caloric intake in men aged over 60 averaged 2000 calories per day; in women of the same age, 1500 calories per day. However not all individuals expend the same number of calories that they consume. The net gain in calories is stored as energy, which is most efficiently stored as fat. Importantly with age and other medical problems, one cannot only rely on exercise as a means of expending energy. Caloric restriction is required in order to lose weight; exercise is more important in maintaining weight loss.

The corollary is that net caloric expenditure results in weight loss. Many complex hormonal and nerve factors are responsible for the maintenance and loss of body weight. However, there is a limit to both weight gain and weight loss. Hormones such as insulin and leptin, and gastric hormones that control hunger

and satiety signals, such as ghrelin, peptide YY and others, directly or indirectly communicate with centers in the hypothalamus region of the brain. These centers sense satiety or hunger, and also receive and transmit signals to and from various organs and other pathways within the brain. These networks are very complex and are actively being studied.

Treatment

Diet and exercise combined provide the greatest chance for lasting and successful weight loss. Diet alone has not been found to be successful and leads to recurrent weight gain. Exercise coupled with dietary modification, rather than adherence to a rigid type of diet, leads to longer lasting weight loss and weight maintenance, even if individuals regain some of the weight with the passage of time.

There are a variety of different types of diet that vary from simple calorie restriction to alterations in the proportions of different nutrients consumed, such as low-carbohydrate diets and low-fat diets. All types of diet can cause weight loss, but with time much of the weight is regained. The American Heart Association recommends the TLC diet, which incorporates elements of low-fat diets along with a Mediterranean diet, as the latter has shown to have favorable effects on the cholesterol profile.

Exercise increases the energy expenditure of the body, like some of the medications, but without as disturbing side effects. All subjects who have been sedentary must be examined and counseled by a physician prior to embarking on any exercise program, including walking. Previously undetected cardiovascular diseases might be unmasked by aerobic exercises, including angina (cardiac chest pain) and heart rhythm disturbances. It is important not to overdo exercise and to start slow and build up distance and time gradually as tolerated.

Medications approved for treatment of obesity either suppress appetite or cause fat malabsorption. Medical treatment is not without risks and should be used only in conjunction with diet and exercise, in people who have obesity-related diseases and in whom the medications can be safely prescribed. The Food and Drug Administration (FDA)-approved antiobesity medications are sibutramine and orlistat. Sibutramine works by suppressing reuptake of two chemicals in

the brain called norepinephrine and serotonin. This results in satiety, and therefore less need for caloric intake. Weight loss is modest, up to 5% or more of body weight. However, significant side effects are blood pressure and pulse elevation, which need to be monitored closely. Sibutramine should not be used in people who have a history of coronary artery disease, congestive heart failure, arrhythmias, or stroke. Orlistat inhibits 30% of fat absorption from the intestine and may reduce body fat by 5–10%. Side effects are increased gas, oily spotting, abdominal pain, and stool incontinence, but these lessen with time. Fat-soluble vitamin supplements are needed to compensate for their loss in stool.

Bariatric surgery (includes gastric banding and gastric bypass) has become increasingly popular for the treatment of those with severe class III obesity. Patients who might qualify include those 18 years or older with body mass index ≥ 40 or between 35 and 40 with major weight-related comorbidities, who have failed nonsurgical methods or failed treatment in obesity clinics, and who are committed to long-term follow-up and do not have clinical or psychological contraindications to anesthesia or surgery. There are two major procedures: gastric banding to reduce the stomach size, and gastric bypass, which cuts the stomach and attaches it to the lowest part of the small intestine, avoiding absorption of nutrients in the upper and middle part of the small intestine. Banding results in weight loss of 20% of body weight up to 5 years, but weight gain may recur. Gastric bypass results in loss of important nutrients and fat-soluble vitamins, and adequate supplementation is required. Weight loss from this procedure ranges from 50kg to as much as 100kg.

Obesity is a chronic health condition with widespread manifestations and repercussions, both physical and psychological. It is the result of environmental changes on our pre-existing genetic background, and can be modified by changes in lifestyle. Those that have failed lifestyle modifications and who are jeopardized by serious medical problems may be candidates for bariatric surgery. However this is a serious procedure with significant morbidity and mortality.

Related Topics

- [Body image](#), ➤ [Body mass index](#), ➤ [Diet](#), ➤ [Exercise](#), ➤ [Nutrition](#), ➤ [Weight Control maintenance](#)

Suggested Readings

Yanovski SZ, Yanovski JA (2002) drug therapy: obesity. *New Engl J Med* 346:591–602

Suggested Resources

NHLBI Obesity Education Initiative Expert Panel on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. 1998

http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/

Obsessive-Compulsive Disorder

Aditi Mehta

Obsessive and compulsive disorder (OCD) is a type of anxiety disorder. A person is said to be suffering from OCD when he or she has either obsessions or compulsions. Obsessions are recurrent and persistent thoughts or images that make the person feel very anxious. Although the individual with OCD has evidence that states otherwise, obsessive individuals hold on to obsessional thoughts such as their hands not being clean enough, having left the door unlocked or having run over someone with their car. It is very difficult for a patient to suppress these intrusive thoughts and so they resort to responding to these obsessions by repetitive behaviors and mental acts, which are called compulsions. Examples of these compulsive rituals include washing repeatedly or checking constantly to make sure the door is locked.

The lifetime prevalence of OCD is 2–3% and it is the fourth most common psychiatric diagnosis throughout the world. Usually men and women are affected in equal numbers. Often, the symptoms appear before the age of 25 and sometimes they can appear in early childhood. In the elderly population, OCD may be missed due to the notion that anxiety disorders tend to decline with age. In actuality, older people are more likely to report bodily complaints than anxiety, or anxiety may manifest differently in this age group compared to younger populations. Usually the elderly suffering from anxiety have always had mild

symptoms, but the stresses of the aging such as medical illness, cognitive difficulties and losses, may bring out the anxiety in full force. Caucasians seem to suffer more from this disorder than other ethnic groups, but this apparent increased prevalence may be due to the Caucasian population being more likely to seek treatment. Although more than 90% of patients have both obsessions and compulsions, 28% of individuals with OCD are bothered by predominant obsessions, 20% by compulsions, and 50% by both. The onset is usually insidious, except in patients with a neurological basis for their illness.

The neurotransmitters serotonin and norepinephrine are believed to be involved in the development of OCD. Genetics plays an important role as concordance rates are higher for monozygotic (identical) twins and 35% of the first-degree relatives of OCD patients are affected with this disorder. There have been associations found between bacterial *Streptococcus A* beta-hemolytic infection and the development of the neurological disorder, Sydenham's chorea, along with OCD symptoms. Biologic associations have been recently noted, such as involvement of the cingulum (region of the brain associated with memory and attention) and small caudate nuclei in the brains of people suffering from OCD. In fact, neurosurgery involving the cingulum has been found to lead to significant improvement in some cases of severe refractory OCD.

OCD affects the daily functioning of the individual. Afflicted individuals may spend many waking hours consumed with their obsessions and rituals. They are often socially isolated and have difficulty forming and maintaining relationships. Usually male patients have higher celibacy rates and lower fertility rates compared to general populations.

Almost 67% of people with OCD suffer from depression. Sleep electroencephalograms (EEGs) of OCD patients show decreased rapid eye movement latency similar to depressed patients. About 25% of patients with OCD also suffer from social phobia. Other anxiety disorders, such as generalized anxiety disorder (GAD), specific phobia, panic disorder along with personality problems and alcohol abuse are also commonly seen. About 5–7% of patients suffering from OCD suffer from Tourette's disorder and 20–30% of them have a history of tics.

There are four major symptom patterns in OCD. Contamination is the most commonly encountered obsession and patients suffer from compulsive washing

or compulsive avoidance of the object. Common contamination fears are feces, urine, dust, or germs. Another common obsession, pathological doubt, leads to a compulsion of counting and checking. Individuals constantly check to see if the stove is turned off properly, or doors are properly locked. The next most common group is of those with “pure obsessions.” They often have thoughts of sexual or aggressive actions that they have no intention of carrying out. The fourth group comprises individuals who have a reduced ability to carry out daily tasks because of their need for exactness. Individuals may take hours performing daily activities of washing, eating breakfast, getting dressed, etc. Another distinct type of OCD patients are “the hoarders,” who have difficulty discarding things as they fear they may need them in the future. People with OCD usually realize that these thoughts and behaviors are unreasonable and excessive. Unfortunately, these acts consume substantial amounts of time every day and may severely inhibit the functioning of the individual.

In the past, OCD was thought to be predominantly laden psychologically and difficult to treat. More recently, medications have been found to be extremely helpful. The antidepressant medication Clomipramine was the first FDA-approved drug for treating OCD. Newer agents that act on serotonin such as the SSRI antidepressants have also been shown to be effective. Typically higher doses of antidepressants are needed to treat OCD than those ordinarily used for depression.

Research has demonstrated behavior therapy to be an effective psychotherapy in OCD. Behavior therapy has two separate components—exposure and response prevention. Exposure techniques are used to decrease anxiety associated with obsessions by exposing the patient to the stimuli that causes anxiety and then by preventing the ritual–compulsion that usually follows. Response prevention focuses on decreasing the frequency of ritualistic acts.

There is also strong support for cognitive behavior therapy (CBT) in the current literature. This form of therapy gravitates on the reformulation of themes that could be causing exaggerated anxiety. This therapy focuses on decreasing some of the anxiety that builds up with an obsession. Some other types of therapies used are desensitization, thought stopping, flooding, implosion therapy, and aversive conditioning. Typically, long-term medication and behavior therapy is needed for maintenance treatment of OCD. Family therapy, supportive therapy, and group therapy are other techniques that can be helpful. Finally, Electro

Convulsive Therapy (ECT) and psychosurgery are considered as last resort techniques for patients who are refractory to above treatments.

Related Topics

- [Anxiety disorder](#), ➤ [Cognitive behavioral therapy](#),
- [Depression](#), ➤ [Psychotherapy](#)

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th edn, Text Revision (DSM-IV-TR). Author, Washington, D.C.
- Rapoport JL (1989) The boy who couldn't stop washing: The experience and treatment of obsessive compulsive disorder. E.P. Dutton, New York
- Summers M (1999) Everything in its place: My trials and triumphs with obsessive compulsive disorder. JP Tarcher, Putnam, NY

Suggested Resource

<http://www.ocfoundation.org>

Occupational Therapy

Cynthia Olschewsky

Occupational therapy is the holistic health profession that works with individuals to attain, restore, and maintain function in daily life activities and meaningful life roles such as homemaker, grandparent, hobbyist, and retiree. The word “occupation” in the context of occupational therapy refers to activities that are valued by the individual in their culture. Areas of occupation include activities of daily living (grooming, dressing, eating), instrumental activities of daily living (financial, household, and health management), work (volunteering), social participation (family, friends, community), education, play, and leisure.

Occupational therapists treat a variety of conditions and are found in diverse practice areas and settings such as mental health, rehabilitation, nursing homes, home health care, acute care hospitals, outpatient clinics, assisted living facilities, hospice, and community/day

treatment. In most geriatric settings, the process of occupational therapy begins with a referral from a physician. The referred individual is first interviewed and evaluated. The evaluation gives the therapist an understanding of the individual's experience, builds a therapeutic relationship, identifies strengths and limitations, defines what the individual feels is important regarding goals, and establishes treatment priorities. Evaluations assess areas of occupation and performance components (motor, process, and psychosocial skills needed to do daily activities). Motor skills include muscle strength, joint range of motion, sensation, balance, mobility, and coordination. Process skills include concentration, problem solving, judgment, and memory. Psychosocial skills include self-concept, time management, coping skills, and self-expression.

Occupational therapy assessments can help clarify diagnoses and aid in determining legal issues such as competency, guardianship, and placement. The data and recommendations of an occupational therapist can more clearly identify functional abilities and appropriate options to pursue.

After the initial occupational therapy evaluation, goals are established collaboratively with the individual and their significant others. Treatment interventions are identified and implemented. Examples of diagnoses and interventions include the following:

Diagnosis	Treatment
Stroke	Increase coordination, balance, and functional mobility for grooming
Depression	Coping, stress management, and assertiveness training
Dementia	Adapt the environment to help with orientation
Low Vision	Use of compensatory strategy or optical device to read medication label

With advances in medicine and a more health-conscious society, more of our population is reaching older age. To address the unique issues of the elderly, expanded areas of occupational therapy include driving and community mobility, low vision, home modification, and programming for the well elderly. In order to determine the client's appropriateness and safety to continue driving, occupational therapists can be part of a team that assesses vision, depth perception, sequencing, recognizing road signs, reflex testing, range

of motion (especially neck and torso), right- or left-side neglect, and actual on-road driving. Based on test results, recommendations are made regarding the advisability of independent driving. Support, education, and problem-solving alternative modes of transportation is provided, if the client is unsafe to drive.

Occupational therapy intervention with low vision may include environmental or home adaptations such as reducing clutter, adding halogen lighting, arranging and simplifying familiar routines with repetition and memory, and learning by touch to reduce the need to visualize. Adaptive equipment can include optical devices like magnifiers or magnifying spectacles. Available technology includes books on tape and CD, voice-activated large screen computers with large type programs and telephones with large key pads and memory to program important phone numbers.

Occupational therapists provide treatment and recommendations regarding home modification to help maintain a safe, functional, and accessible environment. Interventions range from preventing falls by adding lights, removing obstacles, and installing handrails in stairways. There are a number of adaptive devices available to aid with safety, feeding, toileting and grooming. The use of ramps and redesign of space can improve wheelchair accessibility. Techniques for conserving energy and simplifying work are taught. For example, relocating frequently used items within reach in the kitchen and bathroom aids in increasing efficiency and decreasing energy expended.

As more health-conscious consumers age, the awareness of "wellness" and its benefits have multiplied. Occupational therapists provide programs at assisted living facilities and in community and senior centers in areas of movement or exercise, stress management, and coping with change. Discussions, problem solving, and education help clients adjust to lifestyle and role changes (i.e., from parent or worker to "empty nester" or retiree). Treatment focuses on finding value and meaning when life and abilities change. Occupational therapy uniquely helps individuals achieve optimal function and satisfaction in their life roles and enhance the quality of life throughout the aging process.

Related Topics

- ▶ [Activities of daily living](#), ▶ [Arthritis](#), ▶ [Dementia](#), ▶ [Depression](#), ▶ [Driving safety](#), ▶ [Vision](#)

Suggested Readings

- American Occupational Therapy Association (2002) Occupational therapy practice framework: Domain and process. *Am J Occup Ther* 56:609–639
- Crepeau EB, Neistadt ME (1998) Willard and Spackman's Occupational Therapy, 9th edn. Lippincott, Philadelphia, PA
- Warren M (1999) Occupational therapy practice guidelines for adults with low vision. American Occupational Therapy Association, Inc., Bethesda, MD

Suggested Resources

- American Occupational Therapy Association. Occupational therapists and older driver website. Bethesda, MD; www.aota.org/olderdriver

Old Age, Survivors and Disability Insurance Program

Janet L. Lowder · Mary B. McKee · Lisa M. Montoni

The Old Age, Survivors and Disability Insurance (OASDI) Program is the official name of the comprehensive federal income benefits program more commonly known in the United States as “Social Security.” Unlike programs that provide health insurance coverage, housing vouchers, or food stamps, Social Security is essentially a wage-replacement program that provides cash income benefits. The program is now celebrating its 70th anniversary, having been established back in the mid-1930s.

The Old Age and Survivor's Insurance (OASI) Trust Fund is the account maintained in the US Treasury to pay monthly retirement benefits (sometimes called your “Social Security pension”) and survivor's benefits (sometimes called a “widow's pension” or widower's, as the case may be). Retired workers themselves, spouses if over age 62 or with an under-16-year-old child in care, and their minor or adult disabled children, will have eligibility determined on the basis of the retired worker's earning record. All this is subject to a “family maximum” amount. Who can draw benefits on the earnings record of a deceased worker? A spouse,

but only if over 60, or at least 50 and disabled within 7 years of the spouse's death, and again minor or adult disabled children. Ex-spouses may be entitled to benefits as well, depending on the length of the marriage, when they remarried, their age and disability, and other factors.

In general, healthy, working-age spouses without young children in their care do not receive any automatic cash benefit (or health insurance) when the wage earner on whom they may have grown dependent leaves the workforce because of retirement, death, or disability.

Taxes received under the Federal Insurance Contributions Act (FICA) and the Self-Employment Contributions Act are deposited into the trust fund on every business day to the extent that those taxes are not needed to pay the immediate expenses of the OASDI. Today's workers still comfortably outnumber the beneficiaries drawing Social Security, but not for long, as the ratio between covered workers and Social Security beneficiaries is expected to approach 2:1 by mid-century.

Of interest to many older Social Security beneficiaries now in their eighties and nineties is the “Notch Baby” phenomenon. The term “notch” refers to Social Security benefits paid to people born between 1917 and 1921. A 1972 cost-of-living adjustment (COLA) error caused the benefits for many people born between 1910 and 1916 to be calculated using a flawed, more generous benefit formula, and they received an unintended windfall from Social Security. In fixing the mistake, Congress wanted to avoid an abrupt change for those who were about to retire, so it provided a transition period. Truly by an accident of birth, “Notch Babies,” born between 1917 and 1921, get higher benefits than they otherwise would have had, but lower than the lucky group that got the windfall.

Related topic

- ▶ [Social Security](#)

Suggested Resources

- Cornell University Law School's Legal Information Institute: www.law.cornell.edu/socsec
- National Senior Citizens Law Center: www.nsclc.org
- Social Security Administration, SSA History, 2005, Washington, DC (29 December 2005); <http://www.ssa.gov/history/orghist.html>

Social Security Administration, Trust Fund Data, 2005, Washington, DC (29 December 2005); <http://www.ssa.gov/OACT/ProgData/describeoasi.html>

Social Security Administration, Types of Benefits, 2005, Washington, DC (29 December 2005); <http://www.ssa.gov/OACT/ProgData/types.html>

Older Americans Act

Janet L. Lowder · Amanda M. Buzo · Lisa Montoni

The Older Americans Act (OAA), enacted in 1965, was established to promote the well-being of older persons and help them remain independent in their communities. The Act provides funding for a wide array of programs and services for the elderly, including transportation, information, and referral to home health care, health, nutrition, and social services. The OAA also authorized the Administration on Aging within the Department of Health and Human Services. All individuals aged 60 or older are eligible for OAA services, but the statute's declared purpose is support to the elderly with the greatest economic and social need.

The OAA distributes federal funds to states using a formula based on a state's percentage of the country's population aged 60 and over. States utilize funds to establish centers for information about services available to older persons. The OAA also provides an annual fixed amount of approximately \$5 million for elder abuse prevention activities. Any reduction in funding will severely limit the potential education and outreach accomplished through the OAA's various programs.

The Congress reauthorized the OAA in 2000 and passed the National Family Caregiver Support Program as an amendment to the Act, providing support to informal caregivers. States use the funds available through the program to supply information to caregivers about available services, assistance in gaining access to services, caregiver training, respite care, and a limited amount of supplemental services.

The 2000 reauthorization of the OAA extended the Act's programs and services through 2005. The US House of Representatives Subcommittee on Select Education heard testimony regarding the importance of continued authorization for the OAA in May 2005. Witnesses testified to the growing number of baby boomers reaching age 60 in the coming years, and the

challenges of assisting seniors efficiently and effectively as this segment of the population continues to expand. Whatever the fate of the OAA, the federal government faces the challenge of how to best invest taxpayer dollars to serve the nearly 90 million Americans, a quarter of the US population, who will be 65 and older by 2050.

Related Topics

- ▶ Baby boomers, ▶ Caregiving and caregiver burden,
- ▶ Elder abuse and neglect

Suggested Readings

Center for Social Gerontology, Reauthorization of the Older Americans Act, 2005, Ann Arbor, Michigan (6 January 2006), Updates on the Reauthorization of the Older Americans Act; <http://www.tcsg.org>

Kassner E (2004) The role of the Older Americans Act in providing long-term services and supports. AARP Public Policy Institute, Washington, D.C.

United States House of Representatives, Education and the Workforce Committee Issues: Status of Older Americans Act, 2005, Washington, D.C.; <http://edworkforce.house.gov/issues/109th/education/oa/oa.htm>

White House Conference on Aging, 2005, Washington, D.C. (12 December 2005), Post-Event Summary Report; <http://www.whcoa.gov>

Wise K (2001–2002) Caring for our parents in an aging world: Sharing public and private responsibility for the elderly. *Journal of Legislation and Public Policy* 5:563–598

Older Women's League

Bettina A. Rausa

The Older Women's League (OWL) was founded in 1980 at the conclusion of a White House conference on aging held in Iowa. It is a national grassroots membership organization dedicated to women's issues, especially as they age. It is a nonprofit, nonpartisan group, focusing on research, education, and advocacy accomplished through a network of chapters. OWL chapters are found in 22 states and 38 cities and counties, for a total of 60 chapters, with the national office located in Washington, D.C. Funding is derived primarily through membership dues, donations, and grants from foundations and corporations.

The OWL leaders and members undertake public education and advocacy campaigns, and work through forums and coalitions to put issues they consider critical to women in midlife and later in the public spotlight and on the legislative agenda. OWL considers older women's most critical issues to be financial security, health, control of end-of-life choices, the image of midlife and older women, access to housing and housing alternatives, ending violence against women and the elderly, and job discrimination. Each chapter works on these issues on the federal, state, and local levels. Some chapters take on additional campaigns, such as encouraging members to contact legislative representatives to support the Count Every Vote Act (San Francisco, California). Members sign up online and receive "action alerts" from the national office as well as through local chapters. Action alerts most often provide opportunities for members to contact elected officials to advocate for or against the legislation that the organization considers to be in the best interest of older women. Chapters also focus on providing education to local communities regarding the issues facing older women and for member recruitment through speaker's bureaus and public education sessions.

National OWL campaigns include prescription drugs, Medicare, managed care, mental health, osteoporosis, and nutrition and medication interaction. It has partnered with elected officials on these various campaigns regarding women's and older Americans' issues. For example, through its sponsorship of the Older Americans' Mental Health Week in 2005, and in partnership with several other national organizations, OWL provided support to four members of Congress who introduced the Positive Aging Act. This act calls for funding mental health services in primary care settings through outreach programs.

Whether it is a local group focusing on HIV or AIDS education for women over 40 (Inland Empire, California) or a statewide ballot initiative to increase the number of choices for pain-free end-of-life choices (Chicago), OWL provides a coordinated, nation wide effort for older women and men to take an active role in the issues that are most likely to affect older women's quality of life.

Related Topics

- [American Association for Retired Persons](#),
- [National Council on Aging](#)

Suggested Resources

- The Older Women's League: The Voice of Midlife and Older Women, Washington, D.C., www.owl-national.org/
- The Older Women's League of Illinois: The Voice of Midlife and Older Women in Illinois, 2005, <http://wnkhome.northstarnet.org/owlill/>
- The Older Women's League of San Francisco, The Voice of Midlife and Older Women, 2002, <http://www.owlsf.org/>

Omnibus Budget Reconciliation Act

Marshall B. Kapp

In 1974, the US Congress enacted, and the President signed into law, the Congressional Budget and Impoundment Control Act, Public Law No. 93-344 (Budget Act). Pursuant to the Budget Act, Congress is supposed to set its annual budget goals in a budget resolution, which would then be passed by a facilitated process. In recent years, the 1974 Act's provision for "reconciliation" procedures have come into play, particularly when the budget resolution contains "reconciliation instructions" intended to procedurally facilitate the enactment of an Omnibus Budget Reconciliation Act (OBRA) rather than a number of smaller, more focused budgets. Several OBRA's have contained significant provisions relating to public health programs and activities pertaining to older persons.

As part of OBRA 1987, Public Law No. 100-203, Congress enacted the Nursing Home Quality Reform Act (codified at 42 United States Code §§ 1395i-3(a)-(h) and 1396r(a)-(h)). This Act is modeled on many of the recommendations made in a 1986 Institute of Medicine report that Congress had directed the Department of Health and Human Services (DHHS) to commission. OBRA 87 amended the Social Security Act, Titles 18 (Medicare) and 19 (Medicaid), to require substantial upgrading in nursing home quality and enforcement. To implement this legislation, DHHS published regulations that have been codified at 42 Code of Federal Regulations Part 483. Among the most important nursing home requirements imposed by these regulations are those relating to ensuring resident privacy and decision making rights, proper use of physical restraints and psychoactive drugs, protecting resident funds being managed in the

facility, ensuring transfer and discharge rights, minimum staffing levels, comprehensive resident assessments and individualized care plans drawn in accordance with the assessments, and state prescreening of nursing home entrants for mental illness or mental retardation.

Section 4022 of OBRA 87 set forth new requirements relating to state surveys of home health agencies. Under this statute, state agencies are required to conduct their surveys on a surprise, no-prior-notice basis. Section 4023, relating to enforcement of home health agency requirements, required DHHS to establish a range of intermediate sanctions short of dismissal from the Medicare program that could be imposed on home health agencies found out of regulatory compliance. These intermediate sanctions include civil money penalties, suspension of Medicare payments, and temporary receivership.

OBRA 1989, Public Law No. 101-239, enacted (among other things) a significant change in the methodology for paying physicians for their services under Medicare. Congress enacted the Resource-Based Relative Value Scale (RBRVS), which sets payment rates according to (1) the time and intensity of the physician's efforts in providing a service, (2) a practice expense component based on the physician's overhead in providing a service, and (3) a separate malpractice component reflecting professional liability premium expenses.

In OBRA 1990, Public Law NO. 101-508, Congress tightened federal oversight of the Medicare Supplemental (Medigap) insurance industry, allowed some private organizations to serve as representative payees for beneficiaries of certain government income security programs, and enacted the Patient Self-Determination Act (PSDA). The PSDA, codified at 42 United States Code §§ 1395cc[a][1] and 1396a(a), requires health care providers (limited to all hospitals, nursing homes, hospices, health maintenance organizations, preferred provider organizations, and home health agencies that receive federal dollars) to inquire about the patient or proxy, at the time a professional relationship is formed, whether the patient has previously executed an advance directive for health care. For currently competent patients, the PSDA mandates the provider to offer the patient an opportunity to execute an advance directive at that time. Additionally, OBRA 90 requires providers to provide written information to patients at the time of admission or enrollment concerning "an individual's right under state law to make decisions concerning...medical care, including the right to accept or refuse medical or surgical treatment

and the right to formulate advance directives," maintain written policies and procedures with respect to advance directives and to inform patients of these policies, and provide for education of staff and the community on issues concerning advance directives. The PSDA prohibits providers from conditioning the provision of care or otherwise discriminating against an individual based on whether or not the individual has executed an advance directive.

OBRA 1993, Public Law No. 103-66, requires states to establish estate recovery programs to take back the costs of long-term care services from the estates of deceased Medicaid beneficiaries. States may obtain liens against a Medicaid beneficiary's property for this purpose.

On April 7, 1986, Congress passed the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA), which included the Emergency Medical Treatment and Active Labor Act (EMTALA). This statute contains provisions requiring all hospitals participating in the Medicare program to examine and provide at least stabilizing treatment to all patients seeking care for emergency medical conditions, regardless of their ability to pay and regardless of their eligibility for Medicare benefits.

Related Topics

[Advance directive](#), [Confidentiality](#), [Health insurance](#), [Nursing home](#)

Suggested Readings

- Kapp MB (1999) *Geriatrics and the law: Understanding patient rights and professional responsibilities*, 3rd edn. Springer Publishing Company, New York
- Kapp MB (2001) *Lessons in law and aging: A tool for educators and students*. Springer Publishing Company, New York
- Kapp MB (2003) *The law and older persons: Is geriatric jurisprudence therapeutic?* Carolina Academic Press, Durham, NC

Oral Health

Edward E. Best

Oral health is an essential part of a person's well-being. Oral health is integrated into general physical condition as oral disease can affect systemic health, and vice versa.

The oral cavity is an essential part not only of the physical well-being but also of the person's social and psychological condition. The social conditions are affected by the person's appearance as well as their speech. A warm smile will effect a positive impression on others, and obviously, the ability to articulate speech is essential to communication with others.

All people are aware of their appearance and their self-image may be affected by their esthetics. Everyone has seen the person with a guarded smile because they are ashamed of the appearance of their teeth. Missing anterior teeth have long been associated with lack of intelligence or social awareness, although the correlation is inaccurate.

Oral health depends on the condition of the teeth and their supporting and surrounding structures. The ideal dentition would consist of 32 teeth, 16 in each arch. The teeth are named from anterior to posterior and each arch would have two central incisors, two lateral incisors, 1st and 2nd bicuspid, and 1st, 2nd, and 3rd molars. Because modern humans have smaller jaws than their primitive ancestors, there is frequently insufficient room for the third molars (also called wisdom teeth). If these molars or other teeth fail to erupt through the bone and soft tissue, they are said to be impacted. These are frequently extracted before the patient is 25 years old to avoid the eruption cysts that may form at a later age.

The teeth themselves have multiple layers. The outer portion of the top of the tooth, the crown, is covered by enamel, and the root of the tooth is surrounded by cementum. The main portion of the tooth and of the root is dentin that consists of tiny tubules that radiate out from the center of the tooth. The center of the tooth is the pulp of the tooth and it consists of blood vessels, lymphatic vessels, loose connective tissue, and a nerve.

The enamel is the white portion of the tooth that protrudes through the gingiva, commonly called the gums, and the enamel is highly mineralized and is very hard. The dentin consists of small tubules that are filled with vital tissue called odontoblastic processes. Since these processes are vital tissue, when they are stimulated by cutting or by thermal change, they can produce pain. The soft central portion of the tooth, called the pulp, contains blood vessels, lymph vessels, loose connective tissue, and the nerve. The pulp occupies a space in the crown of the tooth called the pulp chamber, and extends in a canal down to the end or apex of the tooth. The blood vessels and nerve exit the apex through a small hole called the apical foramen.

Obviously, anything that penetrates the tooth to the pulp, such as decay (caries), a dental instrument, or a fracture of the tooth produces tremendous pain because it has directly contacted the nerve fiber in the center of the tooth.

When all the teeth are in place, the molars and bicuspid provide support for the lower face, which is the portion from the base of the nose to the bottom of the chin. The surfaces of the posterior teeth have projections called cusps. These cusps allow the teeth to crush and grind food.

The anterior teeth with their sharp edges cut and tear food, and because the upper teeth extend over the lower teeth, they cause posterior teeth to separate when the mandible moves forward or side to side. This separation protects the posterior teeth from lateral forces that may be destructive to these teeth.

Opening of the mouth is caused by muscles below the mandible that pull the mandible down. These are not powerful muscles because they just separate the jaws and teeth. The closing muscles, or muscles of mastication, are powerful muscles that close the jaws and cause the jaws to move in elliptical movements when chewing.

There are three sets of major salivary glands. The parotid gland is forward and below the ear under the skin and it empties into the mouth through a duct that is in the cheek beside the maxillary first molar. The submandibular and lingual glands are under the mandible in the floor of the mouth and they empty into the mouth through a duct that is under the tongue and in the back of the mandibular anterior teeth. These glands secrete a mucous that lubricates the mouth and aids in the movement of food when chewing. They also secrete an amylase enzyme that begins the digestion of starches.

The saliva contains minerals that may precipitate to form calculus or tartar deposits on the teeth. Because of the location of the ducts of the major salivary glands, the greatest deposits of calculus are on the inside of the mandibular anterior teeth and on the surface of the maxillary first molars next to the cheek. The flow of saliva aids in digestion, helps to wash away chemicals in the mouth such as sugar, and contains substances that inhibit the bacteria in the plaque. Anything that decreases the flow of saliva such as radiation, surgery, or some medications produce a condition called xerostomia, or dry mouth. Xerostomia frequently causes an increase in caries because of the lack of lavage of the teeth and the decreased plaque inhibition.

From birth, the mouth is filled with a large complement of bacteria. These bacteria are capable of attaching to the teeth and forming an organized white film called plaque. There are many kinds of bacteria in the plaque, but two kinds are notable for producing disease.

The first type is capable of producing an acid when it contacts food, especially refined carbohydrates such as sugar. Since the bacteria are stuck to the tooth, this acid burns into the tooth causing caries, or tooth decay. This can go through the enamel and into the dentin, and in severe cases into the pulp. When it reaches the pulp, it causes an abscess inside the tooth that produces tremendous pain. Left untreated this infection will progress down the canal of the root, out the apical foramen into the bone, and cause an abscess in the bone. If the abscess penetrates the bone into the soft tissue, it may, in extreme cases, progress upward into the brain, heart, or lungs; these latter conditions are frequently fatal.

The other type of bacteria of note are those that attack the gingiva and periodontal ligament anchoring the tooth. These bacteria, through destructive enzymes and through stimulation of a host inflammatory response, can cause redness, inflammation, and bleeding. If this inflammation is limited to the tissue around the tooth but above the bone, it is called gingivitis. If it progresses to the bone and periodontal ligament, it is called periodontitis and may cause a loss of so much of the alveolar bone that the teeth may become loose and are lost. This is a major cause of tooth loss in older adults.

The bacteria around the teeth, since they are under the edge of the gingival tissue, can get into the blood stream if the tissue is damaged. When a tooth is extracted or when the teeth are cleaned, some of these bacteria may transiently enter the blood stream. If there are irregularities in the blood vessels, especially in the heart, these bacteria may accumulate there, causing an infection. Such is the case with a damaged heart valve, and an infection inside the heart called bacterial endocarditis may result. This may destroy the valve, necessitating an artificial valve replacement, or it may be fatal. Similarly, artificial joint replacements such as hips or knees may become infected. Because of this possibility, if a patient has a heart murmur or a prosthetic joint, a dentist may give a patient a prophylactic antibiotic before a dental procedure if the procedure is likely to interrupt the gingival tissue.

Because of the constant presence of intraoral bacteria, conditions that reduce an individual's immune

response can precipitate an infection. If the person is to have chemotherapy, which reduces resistance to infection; or a surgical procedure on the heart; or a joint replacement, the surgeon may request a clearance from the person's dentist to reduce the chances of an infection during the healing after the surgery. This is especially important for transplant patients who are receiving a donor organ such as a kidney, since they will have an immune-suppressing drug in addition to the surgery.

Systemic diseases may cause effects in the mouth. Human immunodeficiency virus (HIV), which causes a reduced resistance to all infections, may precipitate periodontitis with a rapidly progressive alveolar bone loss, and a subsequent loss of teeth. Diabetic patients may find that gingival inflammation or other dental infections may make it harder to regulate their blood sugar levels. Diabetes also reduces a patient's ability to resist infections, and diabetic patients are more susceptible to periodontitis, and in some cases, to dental caries.

Some diseases, chemicals, or medications can cause soft tissue changes in the mouth. HIV infection can cause an intraoral malignancy called Kaposi's sarcoma. There is a well-established link between tobacco use and the increase of squamous cell carcinoma, a mouth cancer. These squamous cell carcinomas, especially on the base of the tongue, if not treated can metastasize rapidly and prove fatal. Any intraoral lesion that persists for more than 3 weeks is suspect and should be evaluated by a dentist immediately.

Certain medications can cause overgrowth of the gingiva that can cover portions of the crowns of the teeth. This can be caused by dilantin, an epileptic drug, by certain calcium channel blockers, and by cyclosporine, an immune-suppressant drug given to transplant patients. This tissue may be reduced surgically to a normal gingival architecture, and its recurrence can be reduced by meticulous oral hygiene.

Maintenance of oral health is a dual responsibility of the patient and the dental professionals. The major responsibility is that of the patient. Teeth and gingiva must be brushed with a soft brush to remove the bacterial plaque from the margin where the tooth meets the gums. Floss must be used to remove the plaque from between the teeth. Because plaque can re-establish disease, producing levels of the bacteria that produce caries and gum diseases in 24 hours, it is recommended that patients floss and brush thoroughly at least once a day. If food is eaten that is sticky or contains high levels of sugar, brushing should be done immediately after consumption. In the absence

of the ability to brush, rinsing with water to remove the residual food or sugar is recommended.

Patients should normally have dental visits twice a year. A dentist may recommend more frequent visits for patients with special needs. This will allow for early detection of oral lesions and for removal of dental calculus that harbors the bacteria producing gum diseases. This will also allow for early detection of dental caries. If the caries progresses into the tooth pulp the tooth may be saved by an endodontic filling that goes out to the apex of the tooth roots, the root canal. This may save the tooth, but the tooth will become brittle, and if it is a posterior tooth a crown is always recommended to cover the tooth to prevent fracture of the tooth. It is much easier and more cost effective to detect the caries early and restore the tooth with a regular filling of gold, silver amalgam, or composite resin than to have it progress to where it requires endodontics and perhaps a crown.

Missing teeth should be replaced quickly to prevent adjacent or opposing teeth from moving into the space. Teeth may be replaced by a removable partial denture or a cemented partial denture called a bridge. If all the teeth are missing, they may be replaced by a complete denture. Dental implants, which are cylindrical metal pieces, may be placed into the bone if there is sufficient height and width of bone remaining. The bone will adhere to these implants and they may be used to replace single teeth, multiple teeth, or stabilize removable dentures.

Although the maintenance of a person's oral health is the joint responsibility of the individual and the dental health professionals, the individual must assume the majority of the accountability. If individuals perform their daily oral hygiene and have regular visits to the dental office, their oral health should be maintained. This will contribute to the person's comfort, their general health, and their overall feeling of well-being.

Related Topics

▶ Dentures, ▶ Periodontics

Suggested Readings

Ash MM, Nelson S (eds) (2003) Wheeler's dental anatomy, physiology and occlusion, 8th edn. W.B. Saunders Company, New York
 Gottehrer N, Donley T (2001) A current protocol for non-surgical periodontal therapy. *Dentistry Today* 20 (July):76–81

Suggested Resources

Academy of General Dentistry. <http://www.agd.org>
 American Academy of Periodontology. <http://www.perio.org>
 American Dental Association. <http://www.jada.ada.org>
 Centers for Disease Control: <http://www.cdc.gov/OralHealth/>

Organ Transplantation

Brian D. Shames · Christopher P. Johnson

Once considered experimental, organ transplantation is now a commonplace occurrence, with more than 27,000 procedures performed in the United States in 2005 alone. Organ transplantation is indicated for irreversible or end-stage organ failure. Currently, organs that can be transplanted include the heart, lungs, liver, kidney, intestine, and pancreas. In this brief chapter we will discuss the magnitude of the problem of organ failure, the difference between living and deceased donor transplantation, and review indications and outcomes for transplantation of each organ.

As of February 2005, based on the United Network for Organ Sharing website, over 90,000 people in the United States are currently waiting for an organ transplant. The United Network for Organ Sharing (UNOS) brings together medicine, science, public policy, and technology to facilitate every organ transplant performed in the United States. UNOS assists transplant doctors and patients by helping to ensure that organs are procured and distributed in a fair and timely manner. The organ center matches donors to recipients and coordinates the organ-sharing process. UNOS also maintains the databases that track outcomes for every transplant occurring in the United States. Much of the data cited in this chapter comes from the UNOS website (see suggested resources).

Organs for transplantation are obtained from either deceased or living donors. Deceased organ donors are patients who have suffered an irreversible brain injury or brain death. The term brain death refers to a form of death defined as the complete and permanent absence of all brain function. In 2005, over 13,000 deceased patients donated organs resulting in 19,621 transplants. Live donation, in which a healthy person donates an organ or a portion of an organ, can be accomplished

safely for liver, kidney, lung, and pancreas transplants. In 2005, 6,331 live donor transplants were done, over 5,000 of which were kidney transplants. Despite increasing numbers of live donor transplants in recent years, there continues to be a shortage of organs in the United States, resulting in significant morbidity and mortality for patients who are waiting for transplants.

The overall incidence of renal (kidney) failure in the United States is 341 patients per million population and is most commonly caused by diabetes, hypertension, or glomerulonephritis (a medical disease involving the kidney). The incidence of renal failure in patients greater than 45 years of age ranges from 609 to 1,644 patients per million population. Options for patients with end stage renal disease include dialysis or organ transplantation. Due to the large number of patients with renal failure and the limited supply of donor organs, the waiting time for a kidney transplant now averages over 3.5 years nationally. Transplantation results in a significant survival benefit when compared to dialysis, regardless of the age of the patient. Furthermore, a living donor transplant allows patients to bypass the long waiting times and thereby improves outcomes. The results of kidney transplantation continue to improve and currently 5-year-patient-survival is greater than 80%. Chronic liver disease may result in cirrhosis and portal hypertension, which are associated with significant morbidity and mortality. Liver transplantation is widely accepted as an effective therapy for irreversible acute and chronic liver failure. Common causes of chronic liver disease include hepatitis C infection, alcohol abuse, primary biliary cirrhosis, and primary sclerosing cholangitis. Developments in surgical technique, anesthesia, and immunosuppressive drugs have resulted in 1-year survival rates that approach 90% following liver transplantation. Adult-to-adult as well as adult-to-child live donor liver transplantation can be done safely using a segment of the donor's liver. Outcomes for live donor liver transplantation appear to be equivalent to deceased donor transplants.

Pancreas transplantation is performed for patients with type 1 diabetes (juvenile onset diabetes), which is caused by destruction of the insulin producing beta cells in the pancreas. This is in contrast to type 2 diabetes (adult onset or noninsulin-dependent diabetes), which typically affects older patients and is associated with peripheral insulin resistance. Secondary complications of diabetes include kidney disease, nerve damage, eye damage, and atherosclerotic disease. Indications for

pancreas transplantation include the presence of secondary complications, hypoglycemic unawareness, and poor control of blood sugars. Oftentimes the pancreas is transplanted in conjunction with a kidney (simultaneous pancreas–kidney transplant) due to the fact that many patients will have associated renal failure. Long-term outcomes after pancreas transplantation have been favorable with patient and graft survival exceeding 80% at 5 years. Developments in immunosuppressive drugs and organ preservation have made it possible to perform a cellular transplant with pancreatic islet cells, which contain the insulin producing beta cells. Pancreatic islets are prepared from a deceased donor organ. The main benefit of islet cell transplantation compared to solid organ pancreas transplantation is that it is less invasive and avoids complications associated with surgery. However, long-term data for islet transplants is not yet available, and in most cases multiple transplants are required to cure the patient of their diabetes.

Heart failure is a condition where the heart cannot pump enough blood throughout the body. The most common causes of heart failure are coronary artery disease, diabetes, hypertension, and cardiomyopathy (a weakness of the heart muscle). About 5 million people in the United States have heart failure and the number is growing. Each year, another 550,000 people are diagnosed for the first time with heart failure and it contributes to or causes about 300,000 deaths each year. A heart transplant is indicated when all other treatments fail to control symptoms. Coronary artery disease, cardiomyopathy, and congenital heart disease are the most prevalent diagnoses in patients who require a heart transplant. Outcomes following heart transplantation are good, with 3-year-patient-survival currently between 73% and 80%.

Lung transplantation is most commonly done for emphysema, cystic fibrosis or idiopathic pulmonary fibrosis. For patients with severe functional impairment and limited life expectancy, lung transplantation offers the possibility of a markedly improved quality of life and longer survival. Medical and surgical complications are frequent in lung transplantation and limit long term graft function and patient survival. Three-year-patient-survival in the United States is currently 63%. Depending on the specific disease process, a single or double lung transplant can be performed.

Intestinal or small bowel transplantation is the least common of all organ transplants and accounts for less than 1% of all organ transplants done. Intestinal failure

most commonly occurs in children related to short bowel syndrome (a condition arising from surgical removal of major portions of the small intestine). In adults, intestinal failure is rare, but may be caused by functional disorders or short gut syndrome. Oftentimes in children, intestinal failure is associated with liver failure and the patient will require a liver and intestine transplant. Three-year-patient-survival in the United States following intestinal transplantation is currently 55–65%.

Related Topics

▶ Diabetes, ▶ Heart disease, ▶ Kidney disease

Suggested Readings

Kahan BD, Ponticelli C (2001) Principles and practice of renal transplantation. Blackwell Science Inc., Malden, MA
 Maddrey WC, Schiff ER, Sorrell MF (2001) Transplantation of the Liver, 3rd edn. Lippincott Williams & Wilkins, Philadelphia, PA
 Pierson RN, Barr ML, McCullough KP et al (2004) Thoracic organ transplantation. *Am J Transplant* 4(Suppl 9):93–105

Suggested Resources

International Pancreas Transplant Registry, Minneapolis, Minnesota (February 2005); <http://www.iptr.umn.edu>.
 United Network of Organ Sharing, Richmond, Virginia (February 2005); <http://www.unos.org>.
 United States Renal Data System, Minneapolis, Minnesota (February 2005); <http://www.usrds.org>.

Osteoarthritis

Fareed Ghaffoor · Lori B. Siegel

Osteoarthritis (OA) is one of the most common joint disorders in the United States, and is one of the leading causes of disability and pain in the elderly. Osteoarthritis affects approximately 20 million Americans, occurring mostly in adults older than 45 and in women. OA is known to have a predilection for weight-bearing joints in the hips, legs, and certain joints in the hand. The prevalence of OA in all joints

correlates strikingly with age. Half of all individuals aged 65 and older report having “arthritis.” Radiographic evidence of OA is seen in 27% of people aged 65–69 years, increasing to 51% for those aged 85 or older. Furthermore, before age 50, men are more likely to have OA than women. After age 50, women are more likely to be affected by OA. Because there is no cure for OA, the primary goal of therapy is to minimize pain, limit loss of function, and maintain joint mobility. In this chapter the pathogenesis, diagnosis, and treatment of OA will be discussed.

Pathogenesis

Cartilage provides a cushion between bones and forms the smooth gliding surface needed for normal joint function. Lubrication for frictionless movement of articular cartilage surfaces is provided by synovial fluid. Cartilage is composed of an extracellular matrix consisting of collagen and proteoglycans, water, and cells (chondrocytes), which lie in the matrix. More than 70% of articular cartilage is water.

The chondrocytes are responsible for synthesizing and maintaining the cartilage matrix. These matrix macromolecules are responsible for the tensile strength and compressive stiffness of articular cartilage. The initiation of osteoarthritis (OA) is not well understood; however, it is clear that damage to cartilage is induced by a complex interplay of genetic, metabolic, biochemical, and biomechanical factors along with components of inflammation. As a result, chondrocytes exhibit numerous abnormal metabolic features such as increased levels of proliferation, synthesis, and degradation. For example, when OA is initiated by damage to articular cartilage as a result of repeated injury due to physical force, the activated chondrocytes respond to this injury by releasing degradative enzymes. As a consequence, OA occurs because this degradative process is not balanced by an adequate repair response.

Another, but less common, initiating mechanism of OA is defective cartilage. This occurs when cartilage fails under normal joint loading, and is seen in some collagen gene defects and abnormal pigment deposits on cartilage, like ochronosis, that cause cartilage degradation. Overall, OA results from a gradual loss of articular cartilage combined with thickening of the subchondral bone, or sclerosis; osteophytes, or bony outgrowths at joint margins; and mild, chronic

nonspecific synovial inflammation. OA, once thought to be a normal consequence of aging and, therefore, termed degenerative joint disease (DJD), is now known to result from a complex interplay of multiple factors, including joint integrity, genetic predisposition, local inflammation, mechanical forces, and cellular and biochemical processes. However, advanced age is the strongest risk factor associated with OA. Other risk factors such as obesity, gender, occupation, genetic factors, trauma, and repetitive, small insults over time are also linked to OA.

Diagnosis

Diagnosing OA is often difficult due to a lack of specific physical or laboratory findings, and discrepancies between symptoms and radiographic data. It is frequently diagnosed by an overall clinical impression based on patient age, history and physical examination, the location of joint abnormalities, and characteristic x-ray findings.

The typical patient with OA is overweight, middle-aged or elderly, and presents with a complaint of joint pain and stiffness often affecting the knees, hips, spine, and fingers. They may also present with hard, bony swellings in the finger joints called Heberden's and Bouchard's nodes, which are typical of OA. Pain is usually exacerbated by activity and relieved by rest. Stiffness commonly occurs in the morning and resolves less than 30 min after the patient awakes; but may recur following periods of inactivity, a phenomenon called "gelling."

Clinical evidence for OA is characterized by bony enlargement, tenderness to palpation, decreased range of motion, crepitus, misalignment, occasional effusion (fluid leaking outside of joint), and some degree of local inflammation. Typical radiographic features (joint noise with motion) of OA include joint space narrowing, subchondral sclerosis, marginal osteophytes, and subchondral cysts.

Treatment

There is currently no cure for OA, but treatments are improving. However, the main goals of managing patients with OA include controlling pain and swelling, minimizing disability, improving the quality of life, preventing the progression of the disease process,

and patient education regarding his or her role in the management team. It is important that the management of OA be individualized to the patient's needs and expectations.

Three therapeutic interventions most commonly utilized for OA can be categorized as nonpharmacologic, pharmacologic, and surgical. The major nonpharmacological modalities used in the treatment of OA include weight loss, rest, physical therapy, bracing, and exercise. These therapies are generally begun first and may be used concurrently with pharmacologic and surgical therapy for OA. Obesity is perhaps the strongest modifiable risk factor associated with the development of OA. Studies have shown that obesity increases the risk for OA of the knee. Follow-up studies have also concluded that weight loss reduces the risk of the progression of OA and improves joint pain and function. Resting the affected joint may relieve pain; however, prolonged rest can lead to muscle atrophy and weakness; therefore, rest is recommended for only short periods of time, after which active and passive joint motion and exercises should resume. Physical therapy can improve flexibility and muscle strength, which is important for supporting the affected joints. By supporting more weight, strong muscles "unload" the joint and cartilage by improving mechanical forces during use. Braces and splints are useful for symptomatic relief of OA in certain joints. Knee braces can help reduce pain and improve function in patients with OA of the knee. Splints can be used for OA in the joints of the hand. Nevertheless, appropriate exercise is an important part of managing OA. It can be helpful in reversing and improving deficits in gait, strength, flexibility, aerobic capacity, and overall exercise tolerance.

The major pharmacologic and surgical modalities used in the treatment of OA include analgesics, nonsteroidal anti-inflammatory drugs (NSAIDs), intra-articular glucocorticoids, and total joint replacement. Pain relief is the primary reason for using pharmacologic agents in patients with OA. In patients who do not respond to non-pharmacologic interventions the nonopioid, simple analgesic acetaminophen (Tylenol), in doses of up to 4g/day, can be used as an initial treatment. It has few serious side effects, other than liver damage, which may occur in patients who concurrently consume large doses of acetaminophen and excessive amounts of alcohol. Nonsteroidal anti-inflammatory drugs (NSAIDs) may be useful in patients who do not respond to acetaminophen. NSAIDs such as ibuprofen,

naproxen, and ketoprofen are available over-the-counter, or by prescription, and are more efficacious than acetaminophen in relieving pain. Side effects of these medications include gastrointestinal (GI) problems such as gastritis and ulcers. These side effects may occasionally be serious and, can therefore, limit the patient's use. Rash and impairment of kidney, liver, and bone marrow function are rare but also can occur. Newer NSAIDs called COX-2 inhibitors (celecoxib and valdecoxib) have slightly fewer GI side effects compared to other NSAIDs. Opioid analgesics such as codeine, oxycodone, or propoxyphene should be limited to short-term use in patients with acute exacerbations of pain. There are a few studies that indicate the analgesic tramadol, alone or in combination with acetaminophen, may effectively help manage an OA flare when added to ongoing treatment with an NSAID or a Cox-2 inhibitor.

When NSAIDs do not provide sufficient pain relief or are contraindicated, injections of corticosteroids into the joint may be effective for short periods of time (e.g., weeks to months). Significant, short-term improvements have been shown to occur after corticosteroid injections in the knee. The efficacies of glucocorticoid injections at sites other than the knee are less certain. Injections into weight-bearing joints should be limited to 3 to 4 times per year.

Surgery is helpful in patients with significant limitations in performing activities of daily living and who have not been helped by other treatments. During surgery, attempts are made to preserve, or restore, articular cartilage. Joint replacement of the knee and hip provide marked pain relief and improved function in most patients with severe OA.

Related Topics

➤ [Back pain](#), ➤ [Chronic pain](#)

Suggested Readings

- Arroll B, Goodyear-Smith F (2004) Corticosteroid injections for osteoarthritis of the knee: Meta-analysis. *BMJ* 328(7444):869
- Berenbaum F, Cannon GW, Hochberg MC (2001) Osteoarthritis. In: Kippel JH, Stone JH, Crofford L (eds) *Primer on the Rheumatic Diseases*, 12th edn. Arthritis Foundation, Atlanta, GA, pp 13, 285–297
- Felson DT, Zhang Y (1998) An update on the epidemiology of knee and hip osteoarthritis with a view to prevention. *Arthritis* 41(18):1343–1355

- Messier SP, Loesser RF, GD Miller et al (2004) Exercise and dietary weight loss in overweight and obese older adults with knee osteoarthritis: The arthritis, diet, and activity promotion trial. *Arthritis Rheum* 50(1):1501–1510
- Rosenthal NR, Silverfield JC, Wu S, Jordan D, Kamin M (2004) Tramadol/Acetaminophen combination tablets for the treatment of pain associated with osteoarthritis flare in an elderly patient population. *J Am Geriatr Assoc* 52(3):374–380
- Zhang Y, Aliabadi P, Chaisson CE, Felson DT, Hayes MK, Niu J (2002) Prevalence of symptomatic hand osteoarthritis and its impact on function status among the elderly. *Am J Epidemiol* 156(11):1021–1027

Suggested Resources

- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion (2004, May). Facts about prevalence of arthritis: U.S., 2004. Fact Sheet. Retrieved May 1, 2005 from <http://www.cdc.gov/od/oc/media/pressrel/fs040513.htm>

Osteoporosis and Osteopenia

Bruce Long

Osteoporosis is a common bone condition in which bones abnormally weaken making them fragile and prone to breaking. Fracture is the medical word for any kind of break in a bone and is not meant to imply that the bone is merely cracked. Fractures are the most significant consequences of osteoporosis and a major cause of deformity, pain, disability, and premature death in older adults. Each year approximately 1.5 million people in the United States suffer a fracture due to osteoporosis. The most frequent areas of osteoporosis-related fractures occur at the spine (vertebrae), wrists (distal forearm) and hips (proximal femur). In 2002, it was estimated that 10 million Americans over the age of 50 have osteoporosis and an additional 34 million with “osteopenia,” or low bone mass, are at risk of later developing osteoporosis. By 2020, the US Surgeon General predicts that half of Americans over age 50 will have or be at risk of developing osteoporosis unless measures are taken to improve bone health. The yearly direct cost of treatment for osteoporosis fractures is in excess of \$18 billion. Osteoporosis is clearly a major public health

problem, one which is perpetuated by individual and systemic failure to take advantage of known preventive measures and to provide access to diagnosis and treatments that are now available.

Bone

Bone is an important tissue. Our bones provide protection to vital organs such as the brain, lungs, heart, and kidneys. The skeleton forms our overall structure and provides points of attachment for our muscles enabling us to move. Bone interacts with other body systems, houses the bone marrow where our blood cells are made, modifies the acid–base balance, and, particularly regarding osteoporosis, is involved with storing and releasing the critically important minerals calcium and phosphorus.

Bone has a cortical outer part of compact bone and an inner trabecular part of interconnecting bone lattice. This architecture makes healthy bone strong and light. Bone is a living tissue and changes on a continuous basis. On the microscopic level, old bone is broken down by cells called osteoclasts and new bone is formed by cells called osteoblasts. This process is called “remodeling” and affects the microarchitecture of cortical and trabecular bone. Maintaining our bone mass requires that the activity of the osteoclasts is in perfect balance with that of the osteoblasts. Unfortunately this is rarely, if ever, the case. During remodeling a little more bone is removed than is replaced. This usually is a slow process as we age, but there are many situations and conditions, such as the prolonged use of corticosteroid medicines, where this happens more quickly. Bone is lost and the microarchitecture deteriorates. Usually the microarchitecture of trabecular bone is more severely affected; and clinically, the bones having a greater proportion of trabecular bone, such as the vertebrae, wrist, and hip, are the most affected. Rarely are bones such as the skull, which has a high proportion of cortical bone, seriously affected by osteoporosis. The amount of bone present is termed bone mass and can be measured by bone density instruments. A deficiency of bone is called osteopenia, but as it becomes severe enough, it is called osteoporosis. The quality of the bone depends on the integrity of the microarchitecture, how well the bone is mineralized with calcium, and the rate of remodeling, or turnover. Bone strength reflects the integration of bone mass and bone quality.

Fracture and Bone Strength

Fractures result when the stress on a bone exceeds the bone strength. A minor injury or fall would not break a bone of normal strength, but could break a bone weakened with osteoporosis. Often the first clue that osteoporosis is present is fracturing a wrist. A loss of height may indicate a spinal compression fracture and surprise the individual because often there is no recollection of trauma, and in about two thirds of vertebral-fracture events there is little or no pain. Similar to a crushed beverage can, osteoporotic fractures of the spine result from collapse of the vertebrae, most commonly in the middle and lower part of the back. Sometimes the vertebra collapses unevenly resulting in a wedge shaped bone, which causes the back to curve and the person to be bent over. Vertebral height loss may lessen the space for the digestive organs or lungs, causing early satiety or making it harder to breathe. Other complications of vertebral fracture can include chronic pain, sleep disturbances and impairment of daily activities, as well as statistically increased risks of additional spinal fractures and an increased risk of death. Hip fractures are usually the result of a fall on the hip and often have serious consequences. Approximately one half of individuals who suffer a hip fracture are permanently incapacitated. Many require nursing home care. About one in five people die within 1 year of breaking their hip. Osteoporosis and its related fractures may induce psychological responses of fear of additional fractures, reduced self-esteem, anger, and depression.

Risk Factors

Many factors can influence bone loss that leads to osteoporosis. As mentioned above, the most common is aging. Gender is another factor. Although both men and women may develop osteoporosis, the incidence and severity is greater in women. The mortality however is greater in men, because men develop osteoporosis later in life and by that time may have developed other contributing comorbid conditions. Eighty percent of persons with osteoporosis are women. Hormonal status is important because female and male sex hormones (estrogen and testosterone, respectively) help maintain bone mass. Women lose the bone sparing effect of estrogen as they pass through menopause or if their ovaries are removed. Men do not have a similar period of rapid loss of sex hormone, but loss

of testosterone, such as with treatment of prostate cancer, or inability to convert to enough estrogen, is associated with bone loss. Just how genetics play a role is not fully understood, but a family history of osteoporosis confers a high risk to an individual.

What we eat, or do not eat affects our bones. Many nutrients besides calcium and vitamin D are important for bone health, but calcium and vitamin D are emphasized because most Americans do not consume enough calcium and the majority of elderly people have inadequate levels of vitamin D. Lack of either nutrient can have an adverse effect on bone. An adequate blood level of calcium is important particularly for the nervous system and muscles to function properly. If dietary calcium intake is too low, the body takes the needed calcium from the bone. Older persons need about 1500mg of calcium daily from either their diet or calcium supplements. Vitamin D is needed to help absorb calcium from the digestive tract, mineralize bone, and regulate bone turnover. Vitamin D is nicknamed the “sunshine” vitamin because it is generated in the skin on exposure to ultraviolet rays from the sun. However as we get older, we become less efficient in synthesizing vitamin D and many of us shun sun exposure because of concerns of skin cancer or spend more time indoors. Generally individuals over age 50 should have at least 400IU of vitamin D daily and those above age 70, 600IU. Persons at risk should have their vitamin D levels measured and may need higher amounts. Persons who have a sedentary lifestyle, low body weight, or use tobacco are also at a higher risk of developing osteoporosis. Other secondary causes for osteoporosis include use of certain medicines, particularly corticosteroids, hormonal conditions such as over-activity of the thyroid, adrenal, or parathyroid glands, inflammatory diseases such as lupus and rheumatoid arthritis, and digestive diseases and conditions such as celiac disease, Crohn’s and gastric bypass surgery.

The likelihood of a bone to break depends on the strength of the bone and the forces set against it. The most reliable indicator that a person’s bone is at a high risk of fracture is a history that it happened before. A good indication of bone strength can be determined by measuring bone density by x-ray tests or sound waves. The forces that cause most fractures, but not all, are incurred by falling and thus preventing falls is important. The propensity to falling can be due to many reasons. Common factors that contribute to people falling include poor vision, muscle weakness, arthritis, heart problems, drug side effects, or home hazards such as slippery surfaces, obstacles, poor lighting, and lack of good handrails.

Prevention and Treatment

There is much that people can do on their own to diminish their risks for osteoporosis. Begin by consuming a nutritious diet to help build and maintain bone. Adequate calcium and vitamin D are particularly important. Many foods are now fortified with calcium and vitamin D making it easier to meet the required intake. Individuals should know how to read the nutrition fact label on food products. They should initiate efforts to stop smoking. It is important to engage in an appropriate exercise program to improve balance and posture, decrease pain, strengthen muscles, and strengthen bone. Individuals can also take additional measures to prevent falls such as evaluating the home situation for safety. Referrals to a physical therapist and occupational therapist versed in osteoporosis may be helpful.

People should consult with their physician to assess medical conditions that influence bone health, predilections to falling, and review their medications. Treatment and prevention of osteoporosis has been revolutionized over the past several years with the availability of medications that can inhibit osteoclast activity and stimulate osteoblast activity. Surgical procedures have been developed to stabilize, and in some situations restore, collapsed vertebrae.

Related Topics

- Bone strength, ➤ Calcium disorders, ➤ Falling,
- Falls Prevention, ➤ Menopausal health, ➤ Vitamins

Suggested Reading

U.S. Department of Health and Human Services, Office of the Surgeon General (2004) Bone Health and Osteoporosis: A Report of the Surgeon General. Rockville, MD

Suggested Resources

International Society for Clinical Densitometry (ISCD). West Hartford, CT (October 6, 2005); <http://www.iscd.org/osteoblast/index.cfm>

National Institutes of Health. Osteoporosis and Related Bone Disease~National Resource Center. Bethesda, MD (February 2005); <http://www.osteoporosis.gov/default.asp>

National Osteoporosis Foundation (NOF). Washington, D.C. (2005); <http://www.nof.org>

Ovarian Cancer

David M. Boruta II · Janet L. Osborne

Ovarian cancer is the second most common gynecologic cancer in the United States affecting over 23,000 women each year. Over half of these women eventually die of their disease, resulting in the highest fatality-to-case ratio of all the gynecologic malignancies and the fifth leading cause of cancer related deaths in American women. Although primary ovarian malignancies may arise from any of the cells of the ovary, including germ cells and sex cord-stromal cells, the majority arise from epithelial cells.

Epidemiology and Risk Factors

Most epithelial ovarian cancers are diagnosed between the ages of 40 and 65, with a peak incidence at 56 years. Lifetime risk of a woman developing ovarian cancer is 1.5%. Women who have a first degree relative with ovarian cancer have a 5% lifetime risk and women with an inherited genetic mutation such as BRCA1 carry up to a 60% chance of developing ovarian cancer. However, up to 90% of ovarian cancers are sporadic, occurring in women with no apparent family history or known genetic mutation. Protective factors include use of oral contraceptive pills, multiparity, tubal ligation, and breastfeeding.

Clinical Symptoms

Although ovarian cancer is frequently described as the “silent killer,” the majority of women with the disease are able to recall symptoms predating their diagnosis by many months. These symptoms may include abdominal discomfort, bloating, increased abdominal girth, nausea, indigestion, bowel irregularities, urinary frequency, irregular vaginal bleeding, dyspareunia, and fatigue. Unfortunately, most of these symptoms are nonspecific and associated with other common ailments. In order to make a timely diagnosis of ovarian cancer, it is important that both women and clinicians have a high index of suspicion when these symptoms present or persist despite therapy directed at a more common, presumed diagnosis.

Screening

Epithelial ovarian cancer is curable in over 90% of women when it is confined to the ovary at the time of diagnosis. However, most women do not develop symptoms until after the cancer has spread to adjacent or distant organs. Annual gynecologic exam, including a rectovaginal bimanual examination, is essential, but limited in its ability to detect ovarian cancer early. Unfortunately, there is currently no effective screening test for the early detection of ovarian cancer. Measurement of serum CA-125 and pelvic ultrasonography for detection of ovarian abnormalities have been studied in large screening trials, but a survival benefit generally has not been found. Of additional concern is the high false-positive rate of abnormal studies. This can lead to undue anxiety and unnecessary expensive, invasive, and potentially morbid procedures in order to evaluate the abnormal screening test. Research exploring combinations of new tumor markers, along with improvements in radiological imaging are ongoing and offer promise for the future. Serum CA125 has a low sensitivity and specificity and should not be ordered as a screening test in the general population.

Diagnosis

Ultimately, the diagnosis of ovarian cancer is made based upon histological evaluation of tissue as there is no reliable noninvasive method to determine the malignant potential of an ovarian mass. The presence of a pelvic mass on abdominal or pelvic exam warrants further attention. In premenopausal women, a period of observation may be reasonable, as most masses in this age group are related to normal ovarian physiology and resolve spontaneously. Less than 10% of adnexal masses are malignant in menstruating women in contrast to 30–60% of those found in postmenopausal women. In general, if a mass persists or if the woman is postmenopausal, the mass should be removed. A solid, irregular, fixed pelvic mass is particularly suspicious for an ovarian cancer.

Pelvic ultrasonography and computed tomography (CT) are the most often used modalities for evaluation of a pelvic mass. Characteristics associated with malignancy include larger size, increased complexity of cysts with multiple, thick internal walls, mixed cystic and solid components, and increased blood flow; however, these are not diagnostic. Additional findings such as

the presence of free fluid within the abdomen and pelvis, thickening of the omentum, or elevated serum CA125 in conjunction with a pelvic mass should prompt consultation with a gynecologic oncologist prior to surgical exploration.

Surgical Management

Epithelial ovarian cancer commonly spreads by exfoliation of cells that implant on bowel and other surfaces within the peritoneal cavity. Spread of the cancer to lymph nodes within the pelvis and abdomen occurs often in advanced disease, as well as in approximately 30% of cases where disease appears confined to the ovary. Spread of the cancer within the bloodstream to the liver or lungs is found in only two to three percent of patients at the time of diagnosis.

Surgery is necessary for diagnosis, accurate staging, and removal of as much of the disease as possible (also known as debulking or cytoreduction). Thorough surgical staging is crucial because subsequent treatment recommendations and prognosis are dictated by the pathological or surgical stage of disease. Despite this fact, the majority of women in the United States with limited disease do not receive optimal surgical staging and treatment. The specialty of the surgeon has a significant impact on how adequately the staging is performed. In one study of women with presumed early stage ovarian cancer, 65% of patients evaluated by a general surgeon and 48% by a general gynecologist were inadequately staged compared to only three percent of those operated on by a gynecologic oncologist.

Unfortunately, approximately 75% of women with epithelial ovarian cancer will present with stage III or IV disease. The standard of care is cytoreductive surgery followed by chemotherapy. Optimal debulking surgery is a critical component in the successful treatment of advanced ovarian cancer. The amount of residual disease remaining after cytoreductive surgery correlates inversely with survival. Although the definition of optimal debulking of ovarian cancer varies in the literature, it is currently defined by the Gynecologic Oncology Group as leaving no residual individual tumor implant greater than 1 cm in diameter. Median survival is reported as 52 months and 22.7 months in patients with optimal versus suboptimal tumor debulking, respectively. Aggressive cytoreductive surgery may involve bowel resection, splenectomy,

diaphragm resection, and removal of lymph nodes or portions of the liver involved with tumor, in addition to resection of the uterus, fallopian tubes, and ovaries. Optimal cytoreductive surgery is achieved in 75% of women operated on by gynecologic oncologists compared to only 29% by other specialties.

Chemotherapy

With few exceptions, surgery alone is rarely curative. Most patients with ovarian carcinoma should receive platinum-based chemotherapy, usually in combination with a taxane (another family of chemotherapy drugs). Current standard treatment regimen in the United States is six cycles of paclitaxel and carboplatin given intravenously. The majority of patients will respond to chemotherapy and maintain a good quality of life during and after treatment. A complete clinical remission is achieved in 75% of women following optimal cytoreductive surgery and chemotherapy; however, 75% of those with a complete response will eventually relapse and die from their disease. Delivery of a portion of the chemotherapy directly into the abdominal cavity has been shown to improve survival in a subset of women with residual disease less than 1.0 cm following cytoreductive surgery. Increased treatment related toxicities have limited its utilization as first line therapy.

Role of Neoadjuvant Chemotherapy

Most women with epithelial ovarian cancer will benefit from initial surgery; however, some women present with malnutrition, poor performance status, disease that cannot be safely removed by surgery, or other comorbidities that significantly decrease the likelihood of achieving optimal cytoreduction or surviving a radical debulking procedure. In these patients, it is reasonable to establish the diagnosis of ovarian cancer by biopsy of a tumor mass or by identification of tumor cells within fluid removed from collections within the abdomen or chest cavity, followed by initiation of chemotherapy. The patient who responds to chemotherapy can undergo interval debulking surgery if she becomes a more appropriate surgical candidate. Those women with chemoresistant disease avoid aggressive surgery that ultimately would be of little to no benefit to them.

Impact of Aging in Management of Ovarian Cancer

As ovarian carcinoma is a disease seen primarily in postmenopausal women, the incidence is expected to increase as the aging population grows. Presently, approximately 50% of new ovarian cancer cases occur in women 65 years of age or older. This cohort is under represented in clinical trials that often determine the “standard of care.” Several population-based studies have reported that chemotherapy is less likely to be used in the elderly, even in the absence of significant comorbidities. Only 50% of women with ovarian cancer over the age of 65 were treated with platinum-based chemotherapy and the likelihood of receiving it was inversely associated with age. However, survival improved 40% in treated women and was similar to the benefits reported in randomized controlled trials with younger patients. Another study reported that patients older than 70 years had significantly more hematological toxicities, treatment delays, and dose reductions than younger patients, but response rates and severe toxicities were similar. Whether elderly patients are less likely to be offered or more likely to refuse chemotherapy is not known.

Elderly patients are also less likely to undergo primary debulking surgery. However, age was not a limiting factor in achieving optimal cytoreduction, particularly if the surgery was performed by a gynecologic oncologist. Elderly patients appear to be able to tolerate cytoreductive surgery well despite having more medical comorbidities. Aggressive cytoreductive surgery for ovarian cancer is associated with significant morbidity regardless of age.

Management of Recurrent Disease

Despite advances in the treatment of ovarian cancer, the majority of patients will relapse following chemotherapy. Risk factors for recurrent or persistent ovarian cancer include advanced stage, suboptimal debulking surgery, poor prognosis tumor variants (e.g. clear cell or mucinous histology), tumors with especially immature cellular features (e.g. poorly differentiated histological grade), and overall poor health. Advanced age also represents a risk factor for relapse and decreased survival, but some studies suggest that its association with poorer prognosis is related to less aggressive therapy offered or utilized in the elderly. The value of early detection of recurrent

disease is controversial as is the timing of when to initiate palliative chemotherapy. Treatment options for patients with recurrent ovarian cancer vary greatly. A major factor influencing management is whether or not the patient has platinum-sensitive disease. This is generally defined as recurrence of disease following a disease-free interval greater than 6 months from the completion of primary chemotherapy. Options for women with platinum-sensitive disease include secondary cytoreductive surgery or retreatment with paclitaxel and carboplatin. There are almost no published studies supporting combination chemotherapy for treatment of women with platinum-resistant disease; therefore, single agent therapy is most often utilized. Second-line chemotherapy agents, including liposomal doxorubicin, topotecan, and oral etoposide, have been shown to have response rates of 20–30% and these agents should be considered for initial therapy in women with recurrent platinum-refractory disease. Second remissions have been achieved but generally are not sustainable, and most patients with recurrent ovarian cancer will die of their disease.

Related Topics

▶ Abdominal pain, ▶ Breast cancer, ▶ Cancer, ▶ Cancer screening, ▶ Chemotherapy, ▶ Pelvic examination, ▶ Ultrasound

Suggested Readings

- Berek JS (2005) Epithelial ovarian cancer. In: Berek JS, Hacker NF (eds) *Practical gynecologic oncology*, 4th edn. Lippincott Williams & Wilkins Philadelphia, PA, pp 457–522
- DiSaia PJ, Creasman WT (2001) *Clinical gynecologic oncology*, 6th edn. C. V. Mosby, St. Louis, MO
- Ozols RF, Rubin SC, Thomas GT, Robboy SJ (2005) Epithelial ovarian cancer. In: Hoskins WJ, Perez CA, Young RC, Barakat RR, Markman M, Randall ME (eds) *Principles and practice of gynecologic oncology*, 4th edn. Lippincott Williams & Wilkins, Philadelphia, PA, pp 895–987

Suggested Resources

- American Cancer Society; <http://www.cancer.org>
- National Cancer Institute, U.S. National Institutes of Health; <http://www.cancer.gov>

Pain

Joseph P. Hanna

Older patients commonly report pain during office visits. One study reported pain prevalence of 25% in persons older than 60 years compared with 12.5% in those less than age 60. Other studies cite the prevalence of pain in the elderly at routine office visits from 36% to 88%. Nearly one-fifth of elderly Americans take analgesics at least several times per week and two-thirds of these persons take prescription analgesics for more than 6 months. Among nursing home residents, 49–83% perceive uncontrolled pain as a major concern.

We perceive pain when our body is threatened from either internal or external sources. Stimuli excite pain receptors in the skin, connective tissue, blood vessels, and bony surfaces, and most organs then travel via peripheral nerves and the spinal cord alerting the brain of impending injury. After exciting peripheral receptors, painful stimuli travel from nerves to the spinal cord and then to the brain. Simple processing of pain occurs within the segmental spinal cord allowing for the quick withdrawal of a limb from an adverse stimulus; for example, this is why you automatically remove your hand after you have touched a hot stove. Signals ascend within the lateral spinothalamic tract, enter the brain, and synapse within a region called the ventral posterior thalamus, where the severity of pain is realized.

Pain arising from internal organs is referred to various areas on the body surface creating confusion as to the pain's source. Referred organ pain includes left arm pain with heart attack and right shoulder blade pain from gallbladder disease. Pain also occurs when peripheral nerves are interrupted from trauma, infection or toxins, resulting in permanent sensory loss. Incessant burning and tingling called paresthesias and stabbing pain or neuralgias may arise after peripheral nerve injury, and are common expressions of neuropathic pain.

Injury to nerves in the arms and legs may result in persistent pain syndromes through heightened sensitivity of an extremity's sympathetic pathways resulting in a regional pain syndrome. Incessant burning at rest, hypersensitivity to light touch, and poor topographic discrimination are common characteristics. A common classification divides the complex regional pain syndromes into those with intact surface sensation, reflex

sympathetic dystrophy, and those without, causalgia. An overactive sympathetic nervous system causes local swelling or edema, dystrophic skin changes, heightened sweating, and bony loss, along with fluctuation in temperature and blood flow in the injured limb.

Understanding the cause for a person's pain should be the first step in care. Patients with pain often have associated depression. This component must be addressed separately from the root source of the pain. Lack of clear separation of the emotional from the physical components of pain interferes with finding its origin and rendering appropriate treatment.

Treatment of pain can be divided into three arenas: medical, surgical, and behavioral. Medical management stresses pharmacologic intervention. Surgical therapy includes both peripheral and central nervous system procedures along with implantation of analgesic pumps. Behavioral therapies include modalities such as biofeedback, exercise, and meditation.

Pain-reducing medications abound including over-the-counter and prescription analgesics. Acetaminophen, aspirin, and nonsteroidal anti-inflammatory medications such as ibuprofen and naproxen are the most commonly used and appropriate for initial therapy of most pain. They alleviate suffering by interfering in the inflammatory cascade commonly active at sites of local tissue injury.

Over-the-counter medications are unfortunately not without toxicity. Acetaminophen, the active ingredient in Tylenol, is the commonest cause of accidental liver failure. Daily dosing of 3–4 g and solitary doses of more than 200 mg/kg can proceed to death from liver failure. Aspirin predisposes to hearing loss and both aspirin and nonsteroidal anti-inflammatory medications may cause kidney failure along with significant stomach and upper intestinal irritation and ulceration.

Opiates, originally derived from poppies, produce analgesia and a sense of euphoria. Morphine, codeine, oxycodone, meperidine, fentanyl, and hydromorphone are among the common prescribed forms available. Administration can occur by most forms imaginable including by mouth (oral), across skin (transdermal), injections into veins (intravenous) or muscle (intramuscular), inhaled or via rectal suppository. Electronic pumps are also available that can be implanted under the skin for direct administration of opiates into the fluid surrounding, intrathecal, or space directly surrounding, epidural, the central nervous system.

Adverse effects are common with opiate use including nausea, constipation, and a feeling of uneasiness or dysphoria. Increasing doses lead to confusion, sleepiness, and depressed respirations. Opiate's failing effectiveness and eventual dependence develop with use in excess of several weeks by pain receptor up-regulation. A person who is dependent on narcotic analgesics should have careful review of their pain management program.

Additional agents complement the opiates and nonopiate analgesics. Medications to control seizures including carbamazepine, gabapentin, and pregabalin may be used predominately for neuropathic pain including trigeminal neuralgia, postherpetic neuralgia, reflex sympathetic dystrophy, phantom pain, and painful polyneuropathy. These medications mediate pain relief by stabilizing neural membranes. Tramadol, a non-narcotic that acts through opiate and serotonin receptors may also be helpful.

Antidepressants of the tricyclic class including amitriptyline and nortriptyline act as adjuvants to opiates for pain relief by blocking the reuptake after release of both serotonin and norepinephrine in the brain. These older agents cause drowsiness that may be desirable when sleep is disturbed by pain. Newer antidepressants such as duloxetine, a selective serotonin and norepinephrine reuptake inhibitors, have recently been approved to treat neuropathic pain.

Corticosteroids such as prednisone, effect pain related to local tissue injury similar to the nonsteroidal anti-inflammatory drugs. Additional benefits include increased energy and mood. However, significant side effects exist especially with prolonged use. Diabetes mellitus, bony thinning (osteoporosis), central obesity, hypertension, and gastroesophageal irritation are among the most common and serious complications. Careful surveillance for these ill effects related to corticosteroid use is essential with prolonged use.

Several ointments relieve pain. Liniments have been used for generations to alleviate joint and muscle pain through local vasodilatation resulting in warmth. Topical capsaicin ointment relieves superficial burning pain by first releasing and eventually depleting the stores of the pain-producing substance P from nerve terminals. Unfortunately, a temporary increase in pain may result in premature abandonment of an effective therapy. Lidocaine topical preparations are available to sooth painful skin and mucosal surfaces.

Surgical procedures to alleviate pain are available. Regional blockade through injection of local anesthetics along with corticosteroids into joints and the epidural space can reduce pain significantly. Cutting peripheral nerves or the sensory root involved in pain may be used in refractory cases. However, the pain that is relieved may be replaced by additional regional pain or "phantom pain" even though the nerves have been severed. Central nervous system operations for pain are usually reserved until all other mechanisms for pain relief have been eliminated. Cutting specific pain tract within the spinal cord or destroying pain regions in the area of the brain called the thalamus have been used successfully.

Other pain-modifying procedures also may be used. Electrical impulses applied to the skin surface may alleviate regional pain through pain gating blocking pain transmission at the site of large fiber activation. Acupuncture, cool and warm compresses, massage, and vibration are thought to act by a similar mechanism. Vigorous exercise relieves pain through central endorphin release. Internal neurotransmitters, enkephalins and endorphins, are believed to lessen pain by binding to opiate receptors. Psychic distraction in the form of meditation, biorhythm training, or prayer may also lessen pain both during and following the activity.

Although pain affects a large percentage of the population, particularly the elderly, there are many modalities currently available that can be successfully employed to mitigate or even eliminate this condition.

Related Topics

- [Back pain](#), ➤ [Chronic pain](#), ➤ [Pain management](#), ➤ [Regional rheumatic pain](#)

Suggested Readings

- Battista EM (2002) The assessment and management of chronic pain in the elderly. A guide for practice. *Adv Nurse Pract* 10(11):28–32
- Bernstein RM (2001) Injections and surgical therapy in chronic pain. *Clin J Pain* 17(S4):S94–S104
- Hoffert MJ (1999) The neurophysiology of pain. *Neurol Clin* 7(2):183–203
- Reid MC, Engles-Horton LL, Weber MB, Kerns RD, Rogers EL (2002) Use of opioid medications for chronic noncancer pain syndromes in primary care. *J Gen Intern Med* 17(3):173–179

Pain Management

Kathleen M. Wolner

Pain is an unpleasant sensation. It is a subjective experience in that there is no way for someone else to measure the amount of pain that the person is experiencing. Chronic pain may come and go or be constant. It affects a person's ability to function and can disturb sleep. It can lead to anxiety and depression, which worsen the pain. Pain can lead to legal problems outside home. For example, driving while using pain medication may cause an injury. The greatest fear among patients and physicians is the misuse or abuse of narcotic medications. However, addiction only affects 2% or less of the pain management patient population. A recent movement pushed the problem of pain management to the forefront by creating a movement called "Pain, the Fifth Vital Sign." It forced action by practitioners who may have been reluctant to prescribe pain medication.

If you are a person in pain, it is very important to give your physician a very clear picture of the pain. Explain when, how, what the circumstances were present when it began. Did it follow an operation or trauma? Is it an achy pain? Electrical? Stabbing? Describe how long the pain usually lasts, what makes it worse and what helps it to improve. Do you have weakness or burning associated with it? Do you have fullness in your abdomen or other pain? You should share with your physician how this affects your life, including your sleep, social life, work life, and personal life with your family.

If you have had other treatments for pain in the past, it is important to have them written out in advance for your physician, including surgeries, the dates, and any complications. Bring copies of records from other doctors who have treated you, and list medications you have taken and the reason for discontinuation. Your physician will ask many questions related to your emotional health in order to diagnose depression or anxiety. It is critical that any abuse of substances, including alcohol, marijuana, illicit drugs, or prescription narcotics be shared with the physician.

A patient's primary physician performs tests to arrive at the cause of pain and tries to treat it. Radiology studies and electrodiagnostic testing can be done to determine the cause of the pain. If the pain sounds neurological in nature, such as an electrical pain, it is

possible to do nerve blocks to see if that relieves the pain. The blocks wear off and thus are not permanent treatments, but this can provide very critical information to the physician. In order to engage in a successful pain management program, it is important for both the physician and the patient to make a commitment to solve the problem. It is important for the patient to attend his or her appointments and take the medications or physical therapies that are being prescribed. It is important to accurately document in the medical record the specifics of the type of pain, the treatment, and the outcome of each treatment. Chronic pain is often never entirely cured. In general, pain specialists provide initial assessments and stabilization, but do not manage patients over the long-term. If the diagnosis is difficult to define or there is concern about the management being used, the primary care physician may decide to ask a pain specialist for a second opinion.

Drug treatment of chronic pain is only one component of pain management. Some basic concepts in drug treatment are to give medications a chance to work. They need to be at certain levels for a certain period of time before the body reaches a steady state level. It is important not to give up too early, as the full effect can take many weeks to a few months. Mild side effects from medications that occur initially may resolve after a few weeks. It is important to not give up on a potentially helpful medication because of a mild problem early on. Talk to your physician to see if this side effect is expected, or should the dosage be reduced and increased later on. It is common to give medications that complement each other by working through different pathways. In severe tendonitis, for example, a drug that targets inflammation can be used along with medication that controls only the pain component. After an adequate trial, it is important to assess whether or not a drug has had the desired benefit. If it has not, it is appropriate to either stop or taper off the medication that failed to give the desired effect. However, medications have side effects and can interact with each other so only the medications that are truly helping you should be continued.

When a patient becomes used to a certain dosage of a drug and requires more to get the same beneficial affect, this is known as tolerance. Physical dependence implies that if the drug is stopped the person will go through a withdrawal phase. This can generally be avoided by tapering the medication. Addiction occurs

when obtaining the medication becomes a driving force in the patient's life. The fear of addiction among physicians is generally overrated, as most persons in pain generally do not become addicted. Those who have a history of addiction, however, do experience pain and do have serious operations requiring pain control. Treatment of patients with a history of opioid addiction always runs the risk of causing a relapse in their recovery, and referral to a pain center may be appropriate in this situation.

Nonsteroidal anti-inflammatory drugs (NSAIDs) include over-the-counter medications and prescription medications. Aspirin, ibuprofen, naproxen, and a number of other medications are included in this group. NSAIDs are useful for pain that is caused by inflammation but they do not generally help neuropathic pain. Some of their major side effects are bleeding of the stomach and other parts of the gastrointestinal tract and kidney problems. Use of these drugs with a daily aspirin, commonly used in the treatment of heart disease, can result in significant bleeding problems. If a person has kidneys that are not healthy as in normal people, is dehydrated, or is elderly, the addition of an NSAID can result in significant worsening of kidney function. It has recently been found that ibuprofen takes away the heart protective benefit of the low-dose aspirin. In general, lower doses of any medication are better, especially as one ages.

A very common drug in another family of drugs is acetaminophen. It is very useful and safe when used appropriately. Alcoholics should not use this drug at high dose, but can safely take moderate doses. No one should take more than 4 g over 24 h, which is the same as eight extra-strength tablets. This drug is commonly paired with other components such as narcotics in combination pills because it does provide additional pain relief. It is important to make sure that the liver and kidneys are healthy if you use this since overdose of acetaminophens can lead to liver failure.

Opioids include drugs such as morphine, hydromorphone, oxycodone, codeine, methadone, propoxyphene, fentanyl, and others. These medications come in many forms and are used for different types of pain. Certain medications such as fentanyl can be administered through the skin while other medications can be administered through rectum so that a person who is unable to take anything orally can use the medication rectally. Although they are very effective, they also have many side effects and some drugs have special problems. Meperidine, used frequently in the past, was found to

cause an increased risk of seizures due to accumulation of the drug in the body. Methadone, commonly used in chronic pain management, provides excellent pain management although it does have many drug interactions that need to be watched for.

Side effects of narcotics are common and patients need to be aware of them. The most common and bothersome side effect is constipation. It is critical that patients be on adequate treatment for this. It is helpful to take fiber supplements and drink lots of water. Stool softeners and other forms of laxatives are also helpful. Major negative side effects that patients can experience are an unpleasant mood with depression (dysphoria), delirium, confusion, and suppression of breathing.

It is common to use certain antidepressants to treat pain including amitriptyline and other drugs called selective serotonin reuptake inhibitors (SSRIs.) SSRIs include fluoxetine (Prozac) and sertraline (Zoloft) among others. Amitriptyline is one of many medications in the group called tricyclic antidepressants. The tricyclic antidepressants can have side effects including sedation, inability to urinate, drying of oral secretions, and heart effects. Many of the drugs used to treat neuropathic pain are also used to treat seizure disorders. Some of the common drugs include phenytoin, carbamazepine, and newer drugs known as "second generation" including gabapentin and topiramate. This is a very effective group of medications, but they, too, have side effects. Topiramate carries a risk of kidney stones while skin problems can be seen with lamotrigine. A very unique drug is capsaicin, which is made from red peppers. It causes the nerve endings to release substance P, a pain chemical, which initially causes burning until all the substance P is depleted from the nerve ending. This results in some relief.

It is beneficial for patients to do everything that they can to aid in their own improvement. Physical therapy, massage therapy, and relaxation skills are all extremely helpful in chronic pain management. Talking with friends and family members is another way to cope, as well as being thankful for the many positive aspects of one's life.

In the case of chronic opioid use, many physicians will ask the patient to sign a written agreement stating that he or she will comply with some basic concepts. One of these is that only one person will provide narcotics to the patient. Some pain contracts state restrictions on early refills and replacements of lost medication. Pain contracts vary and it is important

that both the physician and the patient have a clear understanding of the contents of the contract.

Low back pain is a very common problem. The majority of back pain is not dangerous and is referred to as mechanical as it is commonly due to the usual wear and tear on the back as we go through our daily lives. Mechanical back pain gets worse throughout the day and is relieved by lying down. Low-back pain of this type tends to be recurrent, and recurs with varying degrees of intensity. It is always the goal to get back on one's feet and back to work. Smoking does worsen any back pain, presumably due to the effect of chemicals on the blood supply to the back.

In summary, pain management is based on the least amount of drug therapy that allows the person to function. Conservative measures such as massage, bio-feedback, and physical therapy are very useful. However, some persons cannot achieve control without medications. Side effects should be assessed and watched for, and the physician should share with the patient any common potential side effects. If narcotics must be used, they should be used in the least amounts that are effective. If the diagnosis is unclear or if there are concerns about the management plan, referral to a center of excellence in pain control is appropriate.

Related Topics

➤ [Acupuncture](#), ➤ [Back pain](#), ➤ [Chronic pain](#), ➤ [Massage](#), ➤ [Neuropathy](#)

Suggested Readings

- Fishman SM, Berger L (2000) *The war on pain*. Harper Collins Inc., New York
- Rapaport AM, Sheftell FD (1996) *Manage and prevent pain*. Little Brown and Company, Boston
- Sternbach RA (1995) *Mastering pain: A twelve step program for coping with chronic pain*. Ballantine Books, New York

Suggested Resources

- American Academy of Family Physicians. 2005. Leawood, KS; www.aafp.org
- American Academy of Pain Management. Sonora, CA; www.aapainmanage.org
- American Pain Society. 1996–2005. Glenview, IL; www.ampainsoc.org
- The National Pain Foundation. 2005. Englewood, CO; www.nationalpainfoundation.org

Palliative Care

Linda Blust

Palliative care is an interdisciplinary team approach to patients and families living with life-threatening or terminal illness. The goals are to assure physical comfort, provide psychosocial and spiritual support, and coordinate care regardless of the stage of disease or the need for other therapies. On the basis of the hospice model, an interdisciplinary team of physicians, nurses, chaplains, social workers, and mental health providers work together to meet the individual needs of patients and families. This care can be delivered in an acute hospital setting, in an outpatient clinic, or in the patient's place of residence.

Statistics: What do People Want at the End of Life?

Over 2 million people over the age of 55 die every year in the United States. For most, the last year of life is a time of accelerating medical care, declining quality of life, and increasing financial expenditure. As much as 65% of an individual's lifetime health care expenses are incurred in the 12 months before death.

These large financial and medical burdens do not often enhance quality of life. Most people surveyed indicated that good health care at the end of life should include symptom management, opportunities for spiritual and personal growth, and should take place in a familiar environment surrounded by loved ones. Furthermore, to accomplish these goals, people require understandable medical information to make self-determined treatment choices, and confidence that one will not be a burden to family members.

Patients can interface with the palliative care team at any point throughout the course of their illness. Initial referrals are often made for distressing symptoms; as the illness progresses, the family, patient, and team actively discuss prognosis, risks, and benefits of continued treatment, and advanced care planning.

Quality of Life and Care of People at the End of Life

Palliative care continues to grow rapidly as a specialized field of medicine. Currently, one in five hospitals

in the United States provide palliative care services, and the number of physicians and nurses seeking certification in palliative care increases annually. Similarly, the number of hospice programs that deliver palliative care in the patient's place of residence continues to grow.

To ensure that uniform, quality care is delivered throughout the United States, organizations such as the National Hospice and Palliative Care Organization (NHPCO) have recommended specific interventions and outcomes. As per the NHPCO guidelines, patients and families should be entitled to self-determined treatment and life closure, safe and comfortable dying, and effective grieving. This directly reflects the wishes expressed on national surveys as well as by individual patients and families.

Domains of Palliative Care

The services offered by a palliative care team flow naturally from its interdisciplinary nature. Medical, psychological, social, and spiritual support is available to patients and families dependent upon individual needs. Key domains of care addressed by the team include clear communication of medical information, support for decision making, advanced care planning, relief of physical and emotional distress, and bereavement care.

Medical information is often overwhelming for patients and families. To empower patients to make informed decisions regarding treatment and quality of life, palliative care teams often coordinate care conferences. This allows patients and physicians to clarify realistic treatment goals and come to a joint understanding of patient life values.

Patients and families often struggle deciding among different goals of care. Palliative care providers offer assistance with choices regarding cardiopulmonary resuscitation, continuing difficult therapy, and artificial nutrition. By clarifying the risks and benefits of treatments in the face of a life-threatening illness, patients and families are better able to make decisions that are in concert with their life goals.

Advanced care planning allows a patient to communicate his or her wishes in a legal document. A living will allows a patient to document his or her wishes regarding medical interventions. A power of attorney for health care designates a surrogate medical decision-maker of the patient's choosing in the hope that his or her wishes will be honored.

Physical and emotional suffering are common experiences with life-threatening illness. Palliative care addresses the distress experienced not only by the patient, but also by his support system as well. Medical specialists are especially skilled in managing pain and other symptoms, such as shortness of breath and delirium. The psychosocial members of the team address issues such as anger, loss, sadness, and conflict. By managing distress, it is hoped that the patient is able to make appropriate choices, and that unfinished life work can be completed.

Bereavement care begins the moment a palliative care team becomes involved. Anticipatory grief is actively addressed, and the patient and family are assured that what they experience is common. Losses of function, independence, and identity may occur, diminishing hope for a meaningful life and death. Grieving those losses and reframing hope for quality time with loved ones are central tasks for the team. After death, support services remain available to families and loved ones.

Self-determined life closure requires true interdisciplinary teamwork. Patients and families have options regarding level of medical care and support for emotional and physical suffering. A skilled palliative care team will advocate for patients and families regarding those choices and empower people to have more control over the circumstances of their deaths.

Related Topics

- [Death](#), ➤ [Death with Dignity Act](#), ➤ [End-of-life care](#), ➤ [Euthanasia](#), ➤ [Family relationships](#), ➤ [Long-term care](#), ➤ [Physician-assisted suicide](#), ➤ [Quality of life](#), ➤ [Religion](#)

Suggested Readings

- Lunney JR, Foley KM, Smith TJ, Gelband H (eds) (2003) Describing death in america. The National Academies Press, Washington, D.C.
- Minino AM, Smith BL (2001) Deaths: Preliminary data for 2000. National Vital Statistics Reports, Volume 49(12). National Center for Health Statistics, Hyattsville, MD
- Steinhauser KE, Christakis NA, Clipp EC, McNeilly M, McIntyre L, Tulsky JA (2000) Factors considered important at the end of life by patients, family, physicians, and other care providers. *JAMA* 284(19):2476–2482
- Teno JM (2001) Quality of care and quality indicators for lives ended by cancer. In: Foley KM, Gelband H (eds) Improving palliative care for cancer. National Academy Press, Washington, D.C.

Suggested Resources

American Academy of Hospice and Palliative Medicine; www.aahpm.com

National Hospice and Palliative Care Organization; www.nhpco.com

Pancreatitis

Ilche T. Nonevski

Pancreatitis is an inflammation of the pancreas, the gland located behind the stomach that is responsible for secreting digestive enzymes and the hormones insulin and glucagon that regulate how the body metabolizes carbohydrates. There are roughly 17–24 per 100,000 new cases per year of pancreatitis in the United States with 100,000 hospitalizations and an annual cost of \$2.1 billion. While most cases are mild, around 25–30% of patients will develop severe or life-threatening complications that require intensive care support. Five to ten percent of patients hospitalized with pancreatitis will die from the disease or associated complications.

Pancreatitis is commonly distinguished as acute pancreatitis (AP) or chronic pancreatitis (CP) based on the number of episodes, laboratory abnormalities, and anatomical changes to the pancreas noted on imaging studies. Acute pancreatitis is caused by the premature activation of digestive enzymes within the pancreas that results in the digestion of the pancreas and surrounding tissues. With repeated episodes of acute pancreatic injury, the cells and ducts of the pancreas will begin to develop permanent and chronic changes, and hence CP.

The two most common causes of acute pancreatitis are direct injury of the organ by alcohol and impairment of the drainage ducts by gallstones. Other risk factors for developing AP include certain medications, markedly elevated calcium or triglycerides, hereditary pancreatitis, trauma, and complications from procedures involving the biliary or pancreatic tracts. Ten percent of people who develop pancreatitis are not found to have any cause.

Symptoms of acute pancreatitis are usually mild and self-limited but can be severe and life threatening in 20% of cases. Acute pancreatitis sets with a sudden onset of severe mid-upper abdominal (epigastric) pain

that can radiate to the back. The pain may persist for several days and is often associated with nausea, vomiting, and anorexia. Other physical findings include fever, rapid heartbeat, and low blood pressure. Patients with pain from pancreatitis often require a visit to the emergency room, and physical exam reveals a tender abdomen with sluggish or absent bowel sounds.

Diagnosing pancreatitis is based on a combination of clinical, laboratory, and radiographic findings. Elevation of the pancreatic enzymes amylase and lipase in the bloodstream greater than three times the upper limit of normal supports the diagnosis. Amylase and lipase are elevated due to leakage of the pancreatic gland (acinar) cells, with absorption into the circulation. These enzymes usually rise within hours of the injury and can remain elevated for several days. Other initial diagnostic tests include x-rays of the abdomen to rule out other sources of abdominal pain such as bowel obstruction or perforation. In mild cases of AP, an ultrasound of the abdomen is the first test done as it allows for rapid determination of gallstones as the potential cause.

In moderate to severe pancreatitis, the test of choice is contrast-enhanced computed tomography (CT) of the abdomen. The pancreatic tissue is examined for any evidence of dead tissue (necrosis), fluid collections, or abscesses that increase risk for complications and confer a poorer prognosis. Other tests that can be used in specialized cases include endoscopic ultrasound and magnetic resonance cholangiopancreatography (MRCP).

The treatment for acute pancreatitis is primarily supportive. This includes resting the pancreas by restricting oral intake, ensuring adequate pain control, and minimizing the risk of complications. Patients with AP are at risk for losing significant amount of volume from their circulation, and require aggressive hydration with up to several liters of intravenous fluids. Pain is controlled with intravenous narcotic pain medication.

The degree of severity of pancreatitis is calculated at admission and during the initial 48 h using Ranson criteria. The Ranson criteria attempts to predict the degree of pancreatitis based on several factors such as age, laboratory abnormalities, volume loss, and oxygenation. A higher Ranson score indicates a poorer prognosis and increased risk for developing multiorgan complications.

As pain decreases and hunger returns, patients are given a clear liquid diet that is advanced slowly. Carbohydrate-rich foods are initially started, as they are

less likely to stimulate the pancreas compared to fat or protein-rich foods. If the pain persists for more than 5–7 days, or the pancreatitis is more severe, then patients often have a feeding tube inserted in the small intestine at a distance far enough away to prevent the pancreas from being stimulated.

Patients with severe AP are admitted to the intensive care unit for aggressive fluid resuscitation and prevention of kidney, lung, and general multiorgan system failure. Patients who develop pancreatic necrosis are at increased risk for developing infection of the dying pancreatic tissue. Broad-spectrum antibiotics are often initiated in seriously ill patients to decrease this risk. Confirmation of infected pancreatic necrosis is made using ultrasound or CT-guided aspiration of the necrotic area. Surgical removal of the necrotic pancreas is indicated when there is no response to supportive treatment and antibiotics. In severe pancreatitis caused by obstructing gallstones, endoscopic removal can be done in a procedure called endoscopic retrograde cholangiopancreatography (ERCP).

With repeated injury, the pancreas undergoes permanent damage and irreversible scarring; a condition called chronic pancreatitis (CP), and often results in gradual loss of pancreatic function. The main symptoms of CP include abdominal pain similar in description to AP but may persist for several days to weeks. Nausea, and vomiting can also accompany these painful episodes. As the tissue damage progresses, there is a gradual decrease in enzyme production that leads to decreased fat absorption in the gastrointestinal tract and increased fat in stool, a condition called steatorrhea. Steatorrhea becomes clinically evident after more than 90% of the pancreatic function is lost. Progressive pancreatic “burnout” also affects production of insulin and glucagon, causing brittle diabetes with severe fluctuations in blood glucose. Gradual weight loss is also seen and is attributed to a combination of malabsorption, nausea, anorexia, and fear to eat.

The major cause of chronic pancreatitis is significant and prolonged use of alcohol. Patients with alcohol-induced CP typically have had several years of recurrent episodes of acute pancreatitis, and their symptoms tend to be more severe than other causes of CP. However, while alcohol is the major cause of CP, only a small subset of patients who drink heavily will develop chronic pancreatitis, suggesting an environmental and genetic predisposition may amplify the damage caused by alcohol. Other causes of CP are rare and include gene mutations as seen in cystic fibrosis,

nutritional deficiencies in developing countries (tropical pancreatitis), markedly elevated calcium, and obstruction of the pancreatic duct by certain types of cancer. CP can also be associated with autoimmune diseases, and in 10–30% of patients no causes can be found. This unknown (idiopathic) form can present in childhood with severe abdominal pain or in middle-to-late adulthood with less pain and more gland insufficiency.

ERCP and endoscopic ultrasound (EUS) are often able to detect changes in CP earlier than MRI and CT scans. In each study, the changes of CP that are often seen include irregularity of the pancreatic ducts, the presence of cysts or calcifications. Chronic pseudocysts are benign, walled off collections of pancreatic fluid that are thought to result from obstruction of the main pancreatic duct. Typically, pseudocysts are present with increased abdominal pain over baseline. As pseudocysts enlarge, they can impinge on the bile duct or small intestine and cause biliary or gastric outlet obstruction, respectively. Large pseudocysts can also cause an abnormal communication with the lung and abdominal contents, called a fistula, and result in fluid accumulation. Pancreatic cancer develops in up to 4% of patients with long-standing CP.

The pain of CP is often debilitating and difficult to treat and requires a multidisciplinary approach. Initial management involves abstaining from alcohol, which can worsen pain and accelerate disease progression. Non-narcotic analgesics such as acetaminophen, nonsteroidal anti-inflammatory agents (ibuprofen, naproxen) are used as first line agents. If symptoms persist, a trial of mild narcotics such as codeine is warranted. Many patients with CP will experience pain with normal functional activity (somatosensory pain) that may be helped with psychotherapy or specialized pain medications. Endoscopic decompression of large ducts provides some benefit in patients with obstruction. Surgical removal of all or part of the pancreas and intestinal diversion can also be tried if pain continues despite conservative treatment.

Treating maldigestion in patients with pancreatic insufficiency is done with pancreatic enzymes at meals. These enzymes are safe, well tolerated, and permit adequate fat absorption through the gastrointestinal tract. They may be augmented by medications that reduce stomach acid. Patients who develop brittle diabetes require frequent checks of their blood sugar, as they are prone to very high blood sugar levels (requiring insulin) and very low values that require glucose supplementation.

Related Topics

▶ Abdominal pain, ▶ Chronic pain, ▶ Pain management

Suggested Readings

- Banks PA (1997) Practice guidelines in acute pancreatitis. *Am J Gastroenterol* 92:377–386
- British Society of Gastroenterology (1998) United Kingdom guidelines for the management of acute pancreatitis. *Gut* 42 (suppl2):S1–S13.
- Everhart JE (ed) (1994) Digestive diseases in the United States: Epidemiology and impact (NIH Publication No. 94–1447). U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases. U.S. Government Printing Office, Washington, D.C.
- Niederaue C Grendell JH (1985) Diagnosis of chronic pancreatitis. *Gastroenterology* 88:1973–1995
- Stevens T, Conwell DL, Zuccaro G (2004) Pathogenesis of chronic pancreatitis: An evidence based review of past theories and recent developments. *Am J Gastroenterol* 99:2256–2270
- Warsaw AL, Banks PA, Fernandez-Del Castillo C (1998) AGA technical review: Treatment of pain in chronic pancreatitis. *Gastroenterology* 115:765–776

Suggested Resources

<http://www.clevelandclinicmeded.com/diseasemanagement/gastro/acutepan/acutepan.htm>

<http://www.clevelandclinicmeded.com/diseasemanagement/gastro/chpan/chpan.htm>

Pap Test

Karen Ashby

The Pap test or Pap smear is currently the most cost-effective test to screen for cervical cancer. In the developing world, cervical cancer is a major public health problem; many women die in the advanced stage of the disease. The majority of women diagnosed with cervical cancer are between 35 and 55 years. Cervical cancer is still a concern for older women, and about 20% of women diagnosed with cervical cancer are older than 65 years. In many parts of the world, women are not screened regularly and the delayed diagnosis of cervical cancer is often fatal. A virus known as human papilloma virus (HPV) causes most cervical cancers. Human papil-

loma virus is a highly contagious sexually transmitted disease. There are many subtypes of HPV; some are responsible for invasive cervical cancer, while other subtypes may cause warts or cervical dysplasia.

The Pap test involves using a small spatula or brush to remove cells from the cervix during a speculum exam. This is generally a painless procedure. Most Pap tests can be placed onto a slide or in a liquid-based medium for analysis. Additionally, Paps collected in liquid-based media can also be used to detect the subtypes of HPV and determine if potential cancer-associated subtypes are present.

Young women who are sexually active and not consistently using barrier methods are at risk for HPV infection. Invasive cervical cancer is very rare in teenagers, although HPV infection is common. As women age, their risk for acquiring HPV infection actually decreases. The current recommendations are that women should be screened with annual Pap tests starting by age 21 or 3 years after the onset of sexual activity. Women who have had a series of normal Pap smears may be screened less frequently. Women older than 65 years who have had normal Pap smears may stop screening. Women who have had a hysterectomy for benign indications such as fibroids or endometriosis and have had no history of abnormal Pap smears need not be screened.

The goal of cervical cancer screening is to detect early disease. The majority of abnormal Pap smears is not cancer, but may indicate a precancerous change. Abnormal Pap tests may be classified into several categories: atypical cells of undetermined significance (ASCUS), low-grade dysplasia, high-grade dysplasia, or cervical cancer. The ASCUS category is divided into two different groups based on HPV typing. HPV testing can determine whether or not a woman has been exposed to high-risk HPV subtypes and if further testing is warranted. A woman who has Pap smear results reported as ASCUS but is negative for high-risk HPV does not require any further testing. Pap smear results that indicate ASCUS and that are positive for high-risk HPV, low-grade dysplasia, or high-grade dysplasia require further evaluation with colposcopy. Colposcopy is an office procedure that visualizes the abnormal areas of the cervix. When an abnormal area is identified, a small piece of tissue called a biopsy is removed and sent to the laboratory. Treatment decisions for abnormal Pap smears are based on colposcopy and biopsy results, and not the Pap test. Treatment for dysplasia can include freezing, removal

of the abnormal area with a cone biopsy, or electric loop procedure; mild abnormalities may be observed because most will resolve without any treatment. Women with high-grade or severe lesions who have completed their childbearing may be offered a hysterectomy. This group of women should continue to have regular Pap tests.

Related Topics

🔗 [Cancer screening](#), 🔗 [Pelvic examination](#)

Suggested Resources

Medem, Inc. Medical Library, San Francisco, CA (2004–2005); www.medem.com

National Cancer Institute. National Institutes of Health, Bethesda, MD; www.cancer.gov

National Women's Health Information Center. U.S. Department of Health and Human Services, Office of Women's Health; <http://womenshealth.gov>

Parasuicidal Behavior

Michelle M. Cornette

Clearly defining parasuicidal behavior is no simple task. Historically, there has been much controversy surrounding the definition and conceptualization of parasuicide, suicide, and other suicide-spectrum phenomena. To further complicate matters, the term “parasuicide” continues to be used inaccurately, especially in clinical circles, to refer exclusively to intentional self-injury that is not a suicide attempt (i.e., without suicidal intent). J.M.G. Williams provided a concise, operational definition of parasuicidal behavior: “any non-fatal, serious, deliberate self-harm with or without suicide intent.”

Internationally, parasuicide occurs most frequently in the first half of the life cycle (in ages 15–44), and in most countries, rates among women exceed those among men. Yet, older adults are also at risk for parasuicidal behaviors; the Epidemiological Catchment Area study revealed a lifetime prevalence of 1.1% among adults aged 65 and older, and some believe that parasuicidal behaviors may be underidentified in older

adults. In addition, older adults are the demographic at highest risk for completed suicide, with the highest rates occurring among men aged 75 and older.

Epidemiological and empirical work has uncovered important differences in parasuicidal behaviors in older adults. For example, the ratio of attempted to completed suicide is considerably smaller among older adults; estimates range from 8:1 to 20:1 for younger adults versus 4:1 for older adults. Some have suggested that this pattern reflects a higher degree of suicidal intent in older adult with parasuicidal behavior, and that older adults who have engaged in parasuicidal behaviors may share more risk factors in common with suicide completers than is true among younger adults. A history of parasuicidal behavior also appears to be a greater risk factor for completed suicide among older adults. In a study of parasuicidal older adults who ultimately died by suicide, the method used in previous nonfatal attempts was often similar to the method used in the completed suicide, suggesting previous nonfatal attempts may reflect unsuccessful efforts at completed suicide, rather than interpersonal manipulation or cries for help. Older adult parasuicides present with higher intent to die, are more likely to use more lethal methods, take greater precautions against discovery, and are more likely to leave suicide notes.

Depressive disorders are more common (and substance abuse disorders less common) among older adult completed suicides. Similarly, one pilot study revealed that parasuicide in older adults is characterized by a rate of depressive symptoms comparable to individuals who complete suicide. Preliminary research also suggests that older adults with depression admitted for parasuicide events experience later onset of their depression than is true for depressed nonparasuicidal patients. Other work suggests that somatic symptoms may occur at higher rates among parasuicidal older adults relative to controls.

Life stressors, including social isolation and being unmarried, also appear to confer important risk for parasuicide among older adults. One pilot study found that 40% of parasuicidal older adults possessed a serious physical condition. Yet physical illness has been identified as a perceived risk factor less consistently by parasuicidal individuals. Some research has suggested that it may be the combination of psychosocial risk factors and physical health factors such as pain and

perceived limitations secondary to illness that predict parasuicide.

In general adult samples, there is strong support for the role of social-cognitive risk factors for parasuicide. Studies of older adults appear to support this link. For example, research supports an association between hopelessness and past parasuicidal behaviors among older adults. One study revealed that a high degree of hopelessness after depression remission appeared to be associated with past parasuicidal behaviors, predicted premature treatment termination, and suggested future risk for parasuicide and suicide. Another study revealed that parasuicidal older adults had greater difficulty in generating solutions to interpersonal problems than did adults in the community, and the association could not be fully accounted for by depression.

Studies demonstrating effective treatment of parasuicidal behaviors are limited. In a recent review, four psychotherapy approaches (dialectical behavior therapy, cognitive-behavioral problem solving, psychodynamic interpersonal therapy, and home visits to address non-compliance) and one pharmacotherapy approach (intramuscular antipsychotic) demonstrated significant reductions in parasuicidal behavior. Common elements among some of the psychosocial treatments include a problem-solving focus, specific attempts to address therapy noncompliance, and home-based services.

Consistent with the greater risk for completed suicide following parasuicide among older adults, some research suggests that treatment resources may be allocated accordingly. In a study comparing parasuicide in older versus younger patients presenting to an emergency room, older patients were more likely to be admitted to the hospital, to be assessed by a mental health specialist, and to be offered mental health after-care as either an inpatient or outpatient. Another study revealed that older age was associated with a discharge recommendation of subsequent mental health treatment. Because attempted suicide is among the strongest predictors of completed suicide, prevention of parasuicidal behaviors among older adults—a high-risk group for completed suicide—is of paramount importance.

Related Topics

[▶ Cognitive behavior therapy](#),
 [▶ Depression](#),
 [▶ Mental illness](#),
 [▶ Mood disorders](#),
 [▶ Personality disorders](#),
 [▶ Suicide](#),
 [▶ Violence](#)

Suggested Readings

- Abdul-Hamid W, Smith M, Sivakumar K (1999) Deliberate self-harm in the elderly: A comparison with younger adults. *Arab J Psychiatr* 10(2):92–98
- Comtois KA (2002) A review of interventions to reduce the prevalence of parasuicide. *Psychiatr Serv* 53(9):1138–1144
- Diekstra RFW (1993) The epidemiology of suicide and parasuicide. *Acta Psychiatrica Scandinavica Suppl* 371:9–20
- Moscicki EK (2001) Epidemiology of completed and attempted suicide: Toward a framework for prevention. *Clin Neurosci Res* 1:310–323
- Pearson JL (2000) Suicidal behavior in later life: Research update. In: Maris RW, Canetto SS, McIntosh JL, Silverman MM (eds) *Review of suicidology*. Guilford Press, New York, pp 202–225

Suggested Resources

- American Association of Suicidology; <http://www.suicidology.org/>
- American Foundation for Suicide Prevention; <http://www.afsp.org>
- National Strategy for Suicide Prevention (NSSP); <http://www.mentalhealth.samhsa.gov/suicideprevention/>
- Suicide Prevention Action Network USA; <http://www.spanusa.org>
- Suicide Prevention Resource Center; <http://www.sprc.org/>

Parkinson's Disease

John Sanitato, Jr.

Parkinson's disease (PD) is a chronic neurodegenerative disorder of unknown cause, which typically affects people in middle to late life. Parkinson's disease, named for Dr. James Parkinson, who first described the disorder over 180 years ago, is distinct from Parkinsonism, a descriptive term applied to various features of the disease. Parkinsonism applies to the syndrome of hand tremor, muscle rigidity, slowed body movements, and unsteady posture and gait. Medications, illicit drugs, infections of the central nervous system, toxins, PD, and other neurological disorders all can cause Parkinsonism.

A diagnosis of Parkinson's disease implies that the Parkinsonism is of unknown cause, is chronic and progressive in nature, and that other prominent neurological dysfunction is absent.

PD is newly diagnosed in approximately 5,000 Americans each year. It is believed to affect 1 million Americans presently and 1 to 2 per 1,000 people will likely develop the disease. For those over 60 years of age, the prevalence is roughly 1%. The incidence of PD is expected to rise as the population continues to age. Up to 50% of those aged 85 and older may have some measure of Parkinsonism. Disease onset is often between the ages of 55 and 65, and three men are affected for every two women. Less than 5% of all cases are in people under 40 years, with many such cases having a genetic link.

Nerve cells in the midbrain, which produce the neurotransmitters dopamine and norepinephrine, are known to degenerate in PD, although the reason for this is unclear. The decline in these neurotransmitters yields decreased stimulation of the brain's motor cortex, and thus the resulting core symptoms of the disease.

Cardinal features of PD can be recalled via the mnemonic "TRAP"—tremor, rigidity, akinesia, and postural abnormalities. Patients typically exhibit a hand tremor at rest, often more pronounced unilaterally. Rigidity or stiffness of the arms, legs, and neck is quite common. Akinesia, the absence of spontaneous motor movements, or bradykinesia, a slowing of the body's overall motor activity, may be the most striking feature of the illness. Patients with PD can appear statue-like with expressionless faces, in extreme cases. They frequently have postural abnormalities as well, such as impaired balance and unsteady gait. The presence of two or more such signs or symptoms make the diagnosis quite likely.

Other common symptoms can severely diminish quality of life and require multimodal treatment. These include constipation, urinary incontinence, sexual dysfunction, difficulty in swallowing, weakened speech, sleep disorders, and visual disturbances. Psychiatric illness is common as well, with rates of depression and psychosis as high as 40% and 10%, respectively. Dementia, notable for impoverished and slowed thinking and recall, is seen in later stages of illness in approximately 40% of the patients. Half of all patients may experience pain as a result of their disease. Muscle or joint pains from abnormal posturing, headaches, gastrointestinal upset, and sleep-related discomfort are fairly common.

Treatment includes both lifestyle modification and medications. Patient and family education is essential. Routine exercise, dietary advice, a review of optimal sleep hygiene, and referrals for physical, speech, or occupational therapy as indicated, are also vital. Pharmacological treatments are focused on decreasing symptoms, enhancing mobility, slowing the progression of illness, and minimizing frequently encountered side effects. Commonly used medications aim to enhance the amount of dopamine receptor stimulation in the brain. This can be accomplished by (a) direct dopamine replacement (carbidopa/levodopa); (b) synthetic dopamine agents (bromocriptine, pergolide, ropinarole); and (c) blocking the clearance of available dopamine (amantadine). Levodopa therapy is widely considered the most effective treatment for PD.

Potential side effects from medication treatments include motor tics, delusional thinking, hallucinations (often visual), anxiety, restlessness and agitation, nausea, confusion, sedation, decreased blood pressure with an increased risk of falls, and other cardiac side effects. In treatment-refractory cases, neurosurgical procedures may be considered. Options include resection, or more recently, implantable electrode stimulation, of different deep brain regions collectively known as the basal ganglia. A partial response or better is reported in up to 90% of patients with such procedures. However, potential complications include infection, hemorrhage, or stroke.

Limited evidence exists to support the role of medicines such as selegiline or vitamin E in the prevention of PD. New strategies for treatment currently undergoing further study include the use of drugs that target novel neurotransmitter sites, such as adenosine A2A antagonists, and transdermal (placed on the skin) patch delivery systems for dopamine agonist medications. Such skin patches would ideally minimize medication non-adherence and distribute medication into the bloodstream and to the brain more evenly across the day.

Related Topics

▶ [Dementia](#), ▶ [Depression](#)

Suggested Readings

- Aminoff MJ (2001) Parkinson's disease and other extrapyramidal disorders. (Harrison's Online, Pt. 14, sec. 2, chap. 363)
- Hermanowicz N (2001) Management of Parkinson's disease. (Postgraduate Medicine Online). McGraw-Hill, New York
- Kaufman DM (2001) Clinical neurology for psychiatrists. W.B. Saunders, Philadelphia
- Nutt JG Wooten GF (2005) Diagnosis and initial management of Parkinson's disease. [Review]. *N Engl J Med* 353(10):1021–1027

Patient–Provider Communication

Mark T. Wright

Interpersonal communication involves the exchange of information via a number of cognitive, psychological, sensorimotor, and social processes. Patient–provider communication is one of the most fundamental aspects of health care. When patients and their health care providers communicate effectively, basic information needed to improve the health of the patient is exchanged and a positive therapeutic relationship is formed. Older adults receive health-care services from a wide array of providers, and effective communication is essential. Problems with communication between an elderly patient and a provider can originate with either party or be caused by extrinsic factors. When causes of communication problems are understood, corrective measures can benefit patients, providers, and health care systems.

Impediments to Communication

Impairment in sensory capacities may diminish an elderly patient's reception of information. Aging-related decrements in visual and auditory capabilities can inhibit communication. Disease-related sensory (e.g., diabetic retinopathy) and motor-speech (e.g., hypophonia and dysarthria secondary to Parkinson's disease) impairments are more common in older adults than they are in younger people and can therefore make communication difficult. Likewise, cognitive changes associated with normal aging, such as a mild decrease in speed of information processing, can

have a negative impact on communication. The significant changes in memory, language, and other cognitive abilities seen with illnesses such as Alzheimer's disease can be a major barrier to communication.

Psychological and social factors can also interfere with communication between older adults and their health care providers. Advanced age can be associated with beliefs and attitudes that can negatively impact communication with caregivers. Some older adults believe that suppression of anger and avoidance of conflict are beneficial to health and are reluctant to question or challenge health care providers. The elderly sometimes view health care encounters as unchangeable and assume a passive stance; conversely, some elderly patients may fear loss of control and attempt to control the health care encounter by controlling the amount of communication. Some elderly patients are distrustful of younger caregivers. Older adults may underreport concerns and symptoms due to a belief that illness is a normal part of aging, or fear of being labeled a complainer. Discomfort with sensitive subjects such as sexual dysfunction and incontinence can inhibit reporting of embarrassing symptoms.

Caregivers' beliefs and attitudes about aging can also influence communication with elderly patients. Stereotyped views of the aged can lead to overaccommodation such that patients' concerns are responded to with a patronizing style, or underaccommodation where patients' concerns are dismissed and vital information may be withheld. Ageism can also lead to underemphasis of wellness and disease-prevention strategies.

Extrinsic factors in communication Contextual factors extrinsic to the patient–provider relationship can have a major impact on communication. Health care is delivered in a number of settings such as clinics, hospitals, nursing homes, and over the phone; the environment where interaction between the patient and the provider take place can influence communication.

Additionally, the current health care system is more oriented toward brief, episodic care than chronic care, a bias that may do a disservice to older adults who have a number of chronic health problems. Concerns have been raised in the era of managed care regarding brief durations of health care visits and the challenge of maintaining long-term patient–provider relationships; these factors can have a significant impact on communication. The duration of time a patient and provider

have worked together is directly related to a patient's trust of a provider, and trust has a positive effect on communication. The increasing illness-burden associated with aging means elderly patients will require more specialist care, and communication with unfamiliar specialists may not be as effective as that with a well-known primary-care physician.

Sensory impairment, cognitive impairment, and other problems mentioned above can necessitate the involvement of family members, friends, and professional caregivers in health care communication. Surrogate communicators can facilitate health care by helping make the patient's concerns and needs known. However, they can also impede health care by interfering with patient–provider interaction or misrepresenting the patient's thoughts.

Improving Communication

A number of steps can be taken with patients, providers, and health care systems to improve intergenerational health encounters. Efficiency and effectiveness of health care visits can be maximized when patients with sensory impairment are reminded to wear aids like glasses and hearing aids to their health care appointments. Many older adults find it helpful to prepare lists of questions and concerns before health visits and to take notes during visits. Since elderly patients often take a number of medications, and discussion of medications is a prominent part of many health care encounters, bringing medication bottles or a list of medications to health care visits can facilitate care. Patient training guides such as the National Institute on Aging's *Talking with Your Doctor: A Guide for Older People* can help empower older individuals to state their needs clearly, ask questions, and become a more active partner in their health care.

Care of cognitively impaired individuals is usually greatly facilitated by having the patient's closest caregiver participate in health care visits. Health care providers should receive training in the special concerns of older adults. Sensitivity training can help providers identify and eliminate ageist stereotypes and view elderly patients as individuals. Learning to better appreciate the perspective of the elderly patient is essential. A compassionate, empathic approach is an important part of care of elders, as patient perceptions of a caregiver's honesty can influence communication.

Communication with the elderly can be greatly enhanced by teaching providers to avoid jargon. When providers elicit and impart information, use of active listening and techniques such as facilitation, clarification, paraphrasing, and summation can be helpful. Providers accustomed to working in a diagnosis-oriented health care system should be taught that elderly individuals value preservation of functioning more than diagnostic labeling of problems. Enthusiastic encouragement by physicians and other providers can have a positive impact on lifestyle and compliance with disease prevention measures. The National Institute on Aging also provides a training manual for providers entitled *Working with Your Older Patient: A Clinician's Handbook* that discusses these issues.

Health care systems can facilitate effective patient–provider communication in a number of ways. Taking steps to give caregivers more time with elderly patients can improve patient and provider satisfaction and effectiveness of visits. Maintaining long-term patient–provider relationships can improve care by building trust. Health care systems can improve communication by providing alternate means of communication (e.g., hearing-assist devices, interpreters) when needed. Supplemental communication occurring outside the patient–provider encounter (e.g., automated telephone appointment reminders) can also help.

Benefits

Improving communication between older adults and their health care providers can have a number of benefits, not the least of which is improved patient–provider satisfaction. Improved understanding of patients' needs will decrease the prescribing of redundant and unnecessary medications, a significant source of morbidity and mortality in older adults. Improved communication will lead to increased use of preventive services and better compliance with medications and other treatments. Since many malpractice suits stem from communication problems between patients and providers, improving communication can also decrease liability risk. All of these benefits can decrease health care costs.

Related Topics

- ▶ Ageism, ▶ Caregiving and caregiver burden,
- ▶ Communication disorders, ▶ Doctor–patient relationship

Suggested Readings

- Bethea LS, Balazs AL (1997) Improving intergenerational health care communication. *J Health Commun* 2:129–137
- Fox SA, Roetzheim RG, Kington RS (1997) Barriers to cancer prevention in the older person. *Clin Geriatr Med* 13:79–95
- Parchman ML, Burge SK (2004) The patient-physician relationship, primary care attributes, and preventive services. *Fam Med* 36:22–27
- Root MJ (1987) Communication barriers between older women and physicians. *Public Health Rep* 102:152–155
- Weitzman PF, Weitzman EA (2003) Promoting communication with older adults: Protocols for resolving interpersonal conflicts and for enhancing interactions with doctors. *Clin Psychol Rev* 23:523–535

Suggested Resources

- National Institute on Aging 2005 Bethesda, MD; <http://www.niapublications.org/pubs/talking/index.asp>
- National Institute on Aging 2004 Bethesda, MD; <http://www.niapublications.org/pubs/clinicians2004/index.asp>

Patients' Rights

Anne R. Simpson

“Every human being of adult years and sound mind has a right to determine what shall be done with his own body,” was the formal statement of a US federal judge in 1914. Today, this deeply held commitment to self-determination in our society is acknowledged as critical, especially in health care. During times of illness, it is not uncommon to be confronted with health care decisions that are complex, distressing, and beyond one’s usual scope of knowledge. Patients sometimes find themselves feeling as though they have little or no power as they approach these issues, and for this reason it is particularly important that patients know the rights they have in the context of their personal health care.

Many standards, regulations, and laws exist to support and advocate for patient rights. In 1990, the Patient Self-Determination Act was enacted as part of the Omnibus Budget Reconciliation Act of 1987. This law applies to all institutional providers that receive Medicare or Medicaid funding. The law requires that

- ▶ each of those covered by the Act provide every patient with written information describing that person’s rights under state law to make an informed decision concerning medical care, including the right to accept or refuse medical treatment or surgical treatment and the right to formulate advanced directives. The state law that must be described to patients is not just state statute law; the explanation given to patients must include a description of the law recognized by the courts of the state as well as an explanation of any right to die statute, durable power of attorney statute, or other relevant statute.

The Patient Self-Determination Act has placed the health care provider and the health care recipient in a face-to-face position to address the views and values of the patient, where issues of current treatment and advance care planning are concerned. This provides the patient an opportunity to define his or her values in relation to health care, standards for quality of life, and preferences regarding whom they will entrust with the position of surrogate decision maker (should the patient lose his or her decision making capability).

The American Hospital Association developed widely embraced guidelines in support of patient rights, entitled “The Patient Care Partnership.” The Patient Care Partnership is a document, which lists some of the general expectations of a hospitalization. Issues that the document addresses are care quality, environmental safety and cleanliness, patient participation with the decision making process, privacy protection, discharge planning, and the financial aspect of the hospitalization.

Patients’ rights are also extensive, they have been announced, acknowledged, and explained in several laws, including The Rights of Minors; The Americans with Disabilities Act of 1973; The Child Abuse Prevention of Treatment Act of 1974; The public Health Service Act; The Uniform Determination of Death Act; and The Uniform Anatomical Gift Act. Under the Omnibus Budget Reconciliation Act of 1987, residents of long-term care facilities received a host

of rights, which included the right to be free of physical and chemical restraints. These are further reflections of the multiple rights afforded to patients. A recently implemented right is the Health Insurance Portability and Accountability Act, also known as the HIPAA Privacy Rule. This rule defines the terms for disclosure of a patient's personal health information. It contains regulations that all health care providers must comply with in order to protect the patient's privacy. It has been said that rights give "dignity and protection," and it is important that patients understand their rights and exercise them fully as they seek medical treatment.

Related Topics

[Ethics](#), [Informed consent](#), [Long-term care](#),
[Patient-provider communication](#), [Patient Self-Determination Act](#)

Suggested Readings

- Annas GJ (1989) The rights of patients: The basic ACLU guide to patient's rights. Southern Illinois University Press, Carbondale, IL
- Devettere RJ (2000) Practical decision making in health care ethics: Cases and concepts, 2nd edn. Georgetown University Press, Washington, D.C.
- Fremgen BF (2002) Medical law and ethics. Prentice-Hall, Upper Saddle River, NJ
- Furrow BR, Greaney TL, Johnson SH, Stoltzfus Jost T, Schwartz RL (eds) (2000) Health law, 2nd edn. Hornbook Series West Group, St. Paul, MN

The Patient Self-Determination Act

Janet L. Lowder · Sandra J. Buzney · Lisa M. Montoni

The Patient Self-Determination Act (the Act), a federal law in effect since December 1, 1991, requires hospitals, nursing homes, home health-agencies, hospices, and Health Maintenance Organizations (HMOs) receiving Medicare or Medicaid funding to provide information on advance directives to their patients

when first admitted for treatment or beginning a program with the institution.

Congress' intent in passing the Act was to recognize and strengthen a patient's decision making authority when facing either critical or noncritical medical situations. The Act was designed to empower patients by ensuring they are provided all the essential information necessary for considering the role of advance directives in their health care plans and allowing them to make decisions about advance directives in the context of their personal values and goals.

Advance directives, also known as advance health care directives, are instructions, usually written and witnessed, that either (1) direct the scope of care when one is terminally ill, or (2) appoint another individual to guide health care decisions. Examples of advance directives include living wills, powers of attorney for health care, declarations of preferences for mental health treatments, and organ donation acknowledgements. The instructions contained in these documents may cover a variety of health care issues such as medical conditions or levels of functioning in which one would want or not want life-sustaining treatment, organ donation wishes, and preferences regarding pain control, comfort care, and place of care.

The Act requires the health care providers to

1. give the patient a written summary of his or her health care decision making rights under state law and the institution's policies with respect to recognizing advance directives,
2. ask the patient if he or she has an advance directive and document that information in the patient's medical record,
3. educate the institution's staff and the local community about advance directives, and
4. prohibit discrimination against a patient based on whether or not he or she has an advance directive.

Institutions violate the law if they require a patient to either have or not have an advance directive.

The community education component of the Act is intended to demonstrate the value of advance directives to individuals and their families when faced with difficult medical intervention dilemmas. Individuals must be aware of their rights as patients regarding consent and refusal of treatment and how their state governs the use of advance directives. Potential patients may explore various methods of health care decision making in an educational setting free from the pressure of emotionally difficult and technically confusing

treatment options. This self-reflection facilitates realistic health care decisions made within the important context of personal values regarding quality of life, the process of dying, and medical intervention.

Advance directives may only be executed by a mentally competent adult; the documents become effective at the onset of incapacity. Nearly every state in the United States authorizes some form of advance directive; however, each state has its own laws addressing the use and required content. Several low-cost and no-cost resources for documents and forms with suggested statutory language are available from state and local bar associations and medical societies, agencies on aging, and senior citizen centers.

If an individual makes the important decision to execute an advance directive, copies should also be provided to the individual's primary physician and the named surrogate decision maker. One's medical provider should be made aware of the directive and receive a copy of the document upon the patient's admission to a health care institution. The contents and location of the directives should be shared with family members and or close friends in case the individual is not able to speak for himself upon admission for treatment. Markers, such as pocket cards for a purse or wallet, should be used to indicate to medical personnel that an individual has executed an advance directive if family members are not available for consultation during an emergency situation. These markers should also indicate where copies of the directives may be found. Copies should be left at work and at home in places such as a top desk or dresser drawer, or with other important legal and health related documents. Individuals may even keep a set of copies in the glove compartments of their cars. Some jurisdictions allow for the documents to be made part of the public record by recording them in a procedure similar to how property deeds are recorded, and there are proprietary services with which to store the documents and make them available when needed.

Congress enacted the Patient Self-Determination Act to preserve and encourage personal autonomy when making important health care decisions. The Act is an "unfunded mandate;" Congress set requirements for the covered entities without providing any funds for implementation of the requirement. This lack of funding limits some institutions' ability to fulfill the intent of the law, and the result is that the institutions perfunctorily provide the written forms containing the disclosures described in the Act but go

no further. Institutions should engage patients in a dialogue about proposed medical interventions and personal rights related to consenting or refusing treatment, both at the time of patient admission, during the course of treatment, and through community education. Individuals should consider how they feel about certain medical interventions in light of their personal values, and execute advance directives to guide medical providers and surrogate decision makers when the individual is unable to provide that direction for himself.

Related Topics

- ▶ Advance directive,
- ▶ Capacity,
- ▶ Medicaid,
- ▶ Medicare

Suggested Resources

- American Bar Association (ABA) Law for Older Americans: What is the Patient Self-Determination Act? 2005 Chicago (May 1, 2005); http://www.abanet.org/publiced/practical/patient_self_determination_act.html
- American Bar Association (ABA) Reaching the community: Putting a legal house in order Health Care Advance Planning 2005 Chicago (May 1, 2005); http://www.abanet.org/publiced/law-day/community/health_care.html
- Krohm Carol MD, Summers Scott (2002) Advance health care directives: A handbook for professionals, 1st edn. American Bar Association, Chicago, Illinois
- Ulrich Lawrence P, University of Dayton The Requirements of the Patient Self-Determination Act 1998 Dayton, Ohio, (June 2005); <http://academic.udayton.edu/LawrenceUlrich/315psdame.htm>
- United States Code Service (2006) Title 42 Sections 1395cc(f) and 1396a(w)

Pedestrian Injuries

Bettina A. Rausa

Walking is an important form of transportation for older adults both because of reduced driving rates as people age, as well as being an important type of physical activity that can reduce many of the symptoms of chronic diseases, which compromise the quality of life in later years. Unfortunately, walking can also be a dangerous activity for many older adults because of the pedestrian's environment and, due to health and physical factors many people experience as they age.

Collisions involving older adults have consistent patterns: older pedestrians are more likely to be involved in a collision at a marked crosswalk, and are most likely to be struck at an intersection rather than at mid-block. These collisions typically occur during daylight, in good weather, in familiar surroundings, and near the pedestrians' homes.

The risk of injury and death for older pedestrians is higher than for any other age group. Older adults often experience a wider range of injuries, and once injured, they are more likely to die from complications of their injuries. Yet, most pedestrian safety efforts focus on children. Fatality rates for people over age 65 are three times that for young children. Nationwide, pedestrians aged 70 and older are 53% more likely to die from injuries resulting from a collision with a motor vehicle than pedestrians between the ages of 40 and 69.

Minimal research has been conducted specifically on elderly pedestrians, but a few studies illustrate that behavior and more limited physical ability puts this demographic group at high risk. Older pedestrians tend to have physical reductions in flexibility, agility, and strength. The elderly lose agility and endurance as a result of muscular and skeletal weakening; arthritis sufferers experience restrictions on their ranges of motion; changes in perceptual, cognitive, and motor abilities can affect an elderly person's judgment and performance when in a crossing situation; and older pedestrians also have difficulty in accurately determining the distance and velocity of oncoming traffic. Once a collision occurs, the frailty of older pedestrians reduces their ability to withstand the impacts and recover from an injury.

Recommendations to improve the walking environment for older pedestrians include educating older people about ways to improve their own safety while crossing streets; changing the design of vehicles to make collisions less harmful to older pedestrians; prioritizing sidewalk maintenance to improve safety and accessibility of the walking environment; and expanding pedestrian access including sidewalks, creating trails in urban environments, and traffic calming and control devices. For example, creating wider median strips that allow pedestrians to stop safely halfway across a busy street, redesigning wider sidewalk corners so that motor vehicle drivers have improved chances of seeing pedestrians waiting to cross, and extending traffic light timing to allow more time for pedestrians to cross the road.

Related Topics

- ▶ Accidents, ▶ Falling, ▶ Transportation services, ▶ Traumatic injury, ▶ Wandering

Suggested Resources

- Center for Injury Prevention Policy and Practice, San Diego State University (2004) Older Pedestrian Safety in California, A Fact Sheet (Online). San Diego, CA (2005); <http://www.eldersafety.org/pdfs/PedFactSheet040823-final.pdf>
- Kelly LA, Hempstead K (2005) Older Pedestrian Fatalities in New Jersey, 1999–2000. (Online). New Jersey Department of Health and Senior Services, Center for Health Statistics, Trenton, NJ (1996–2005); <http://www.state.nj.us/health/chs/topics0403.pdf>
- State of Hawaii Department of Transportation (2003). Elderly pedestrians literature review (Online). SMS Research & Marketing Services Inc., Honolulu, HA (2005); <http://www.hawaii.gov/dot/publicaffairs/safecommunities/reports/seniorpedestrians/seniorpeds-litreview.pdf>
- Surface Transportation Policy Project (STPP) (2002) Pedestrian safety in California: Five years of progress and pitfalls. Washington, D.C. (1996–2005); http://www.transact.org/ca/ped_safety_2002_finalreport.htm

Pelvic Examination

James F. Carter

The pelvic examination is the most important part of the overall gynecologic examination. While the gynecologist must approach the patient from a broad viewpoint, the purpose of the pelvic examination is to screen for abnormalities of the cervix, pelvic masses, including abnormalities of the patient's uterus, fallopian tubes, and ovaries, as well as observing any abnormalities in pelvic support structures, such as the ligaments supporting the bladder. At its best, the pelvic examination should be performed in a thoughtful, compassionate method instilling upon the patient a sense of trust that should never be violated. At its worst, the thoughtless, hurried physician can traumatize the patient in ways that may never be overcome. This trust should weigh heavily on the gynecologist's thoughts while performing this important aspect of the gynecologic examination.

Once the patient has been examined from the sitting to the lying position and from the head to the abdomen, the patient is then placed in the lithotomy position with her feet in the stirrups, ideally covered with stirrup warmers. The examiner now sits in front of the patient

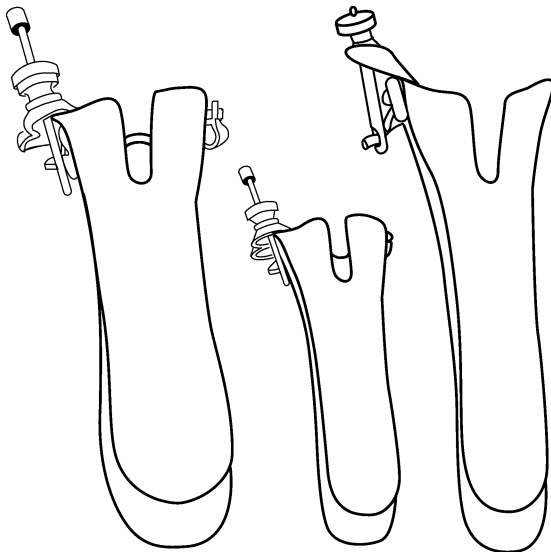


Figure 1
Different Speculum Sizes: Left to right a. Medium Graves
b. Medium Pedersen c. Large Pedersen

with a suitable flexible light source and appropriately drapes the patient covering her except for her introitus, or opening into the vagina. Before introducing the previously warmed speculum (that may be a variety of sizes, see [Fig. 1](#)), the examiner should inspect the external anatomy, including the lower abdomen, the external genitalia including the mons veneris (area of hair bearing at the pubic bone), vulvar skin, labia majora and minora, prepuce and clitoris, introitus, hymeneal or vaginal opening. The examiner should explain to the patient during and before each step what he or she is doing and why. This should be a reinforcement of his or her previous discussion in the consultation room when the patient was fully clothed. It is important to explain the procedure since patients tend to retain more information in the office setting. Separating the labia, the examiner should continue to inspect the anatomy including the urethral meatus (opening of the urethra), the anoperineal area (area between the anus and vaginal opening) for abnormal hair distribution, pigmentation, skin lesions, or any generalized abnormalities (such as inflammation, ulcers, atrophy, etc.), displacement and/or pelvic relaxation (where there is dropping of the uterus and/or bladder further into the vagina than normal). The perineal body may be depressed, so having the patient cough will help the examiner to inspect for any evidence of pelvic relaxation or leaking.

While separating the labia and depressing the perineal body the speculum should be introduced, usually

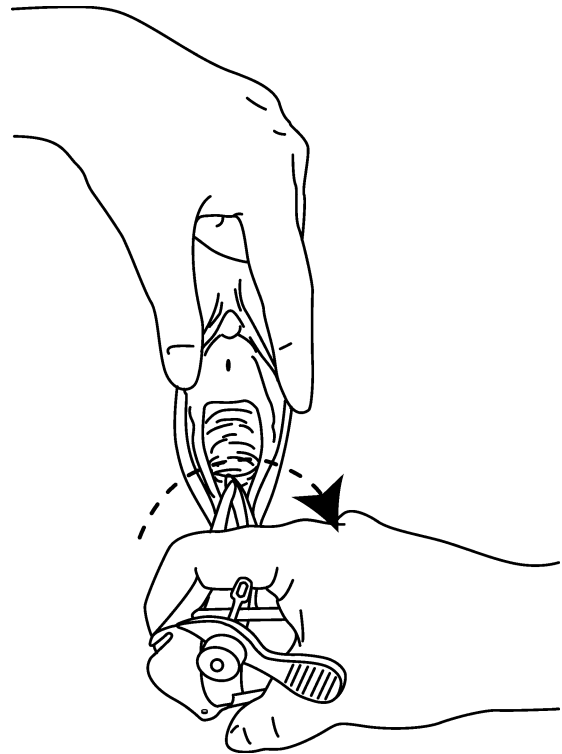
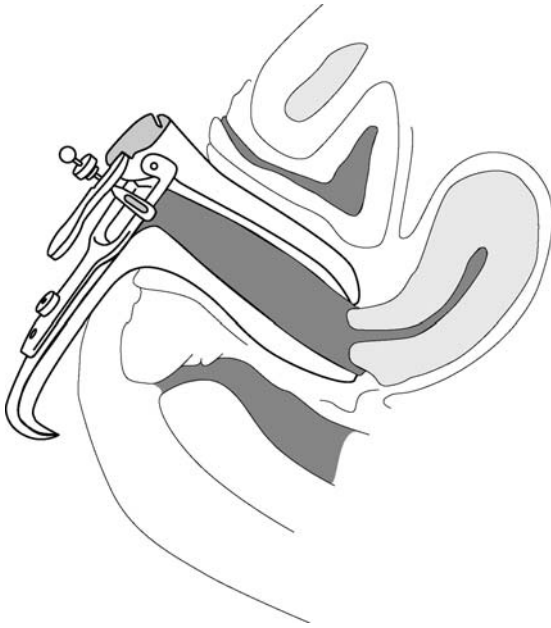
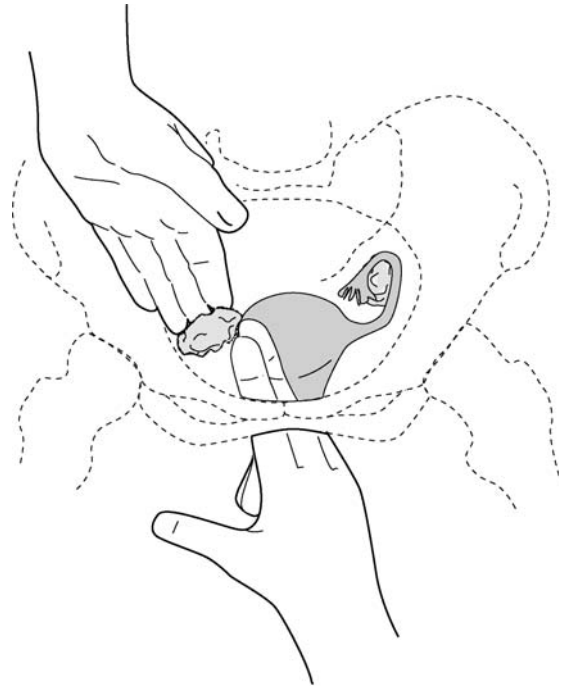


Figure 2
Technique for carefully placing speculum; once in rotating 90
Degrees clockwise

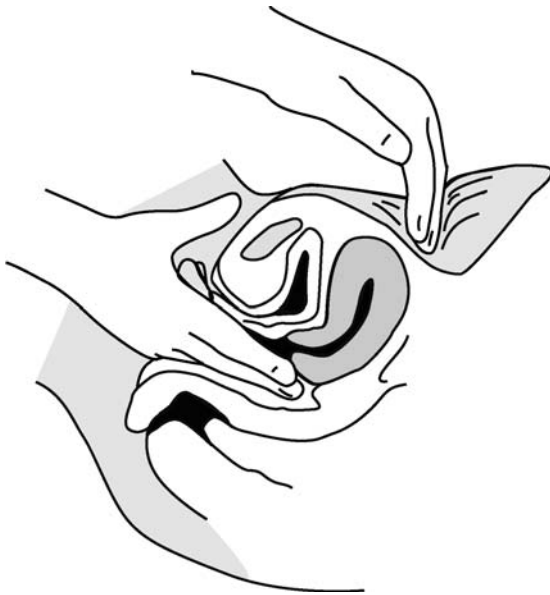
in a vertical fashion keeping continuous pressure on the perineal body posteriorly so as to avoid the more sensitive anterior structures (such as the urethra and bladder). The speculum should be carefully rotated to its bivalve function as it is introduced, always mindful of the patient's labia to avoid inadvertent discomfort. This is accomplished best with insertion at the proper angle, posterior pressure, and the slightly rotating technique ([Fig. 2](#)). Once the speculum is inserted to its full length, the speculum blades are then opened exposing the cervix at the apex of the vagina. One should open the blades only enough to clearly visualize the cervix without causing undue discomfort ([Fig. 3](#)). The Pap smear may then be performed with the standard thin prep technique or using the time-honored slides. A cotton swab may be used to facilitate collection of the sample, as needed. The inspection of the lateral vaginal walls may be accomplished at this time. Any abnormalities of the cervix should be biopsied since the Pap smear is a screening test for a normal appearing cervix. Any discharge should be examined for evidence of vaginitis, vaginosis, or other lesions. As the speculum is withdrawn (repeating the careful rotation), the anterior and



■ **Figure 3**
Sagittal view: Speculum in vagina to visualize the cervix for Pap Smear



■ **Figure 5**
Showing the bony pelvic structures in relation to pelvic exam



■ **Figure 4**
Sagittal view: Demonstrating Bimanual exam with outside hand and internal exam outlining the pelvic organs

posterior fornix (the area of the vagina around the cervix) may be inspected.

Attention should be turned to the bimanual aspect of the pelvic examination. This is accomplished by

placing one or two fingers of one's dominant hand (i.e., the hand the examiner feels most comfortable and proficient in palpating any body part) into the hymeneal or vaginal opening while using the opposite hand on the external lower abdomen (▶ Fig. 4). The fingers should be inserted at the proper angle (similar to the speculum) while depressing the perineum (which will further expose any weakness in the perineal support [pubococcygeal muscles] or confirm their strength), the length of the vagina, palpating the vaginal wall, and external aspect of the cervix as this is carried out. The cervix is gently palpated and lifted while the external hand gently palpates the fundus of the uterus as it is lifted up by the internal palpation. The examiner should then begin to outline the size, consistency, mobility, contour and position of the uterus, ovaries, and any palpable pelvic masses. The vaginal vault and adnexa structures (the ovaries and fallopian tubes) are then palpated in a similar fashion. The vaginal fingers are then turned laterally to feel the pelvic walls (▶ Fig. 5). It should be noted that it may not be possible to palpate normal ovaries and fallopian tubes even under the best of conditions. In the obese patient, even enlarged ovaries and fallopian tubes may

be missed; thus, in the modern gynecologist's office, there is frequent use of the vaginal ultrasound. Palpation of "normal sized" ovaries (approximately $3 \times 2 \times 2$ cm) in the premenopausal woman with active ovarian function is certainly to be expected. However, palpation of ovaries in the postmenopausal woman may not be normal. Certainly, further investigation, including use of ultrasound with or without blood drawn to test for "tumor markers" such as CA-125, AFP, BHCG, is required. If an enlarged ovary is suspected in either pre- or postmenopausal women, an ultrasound would be the next step.

Finally, the rectal–abdominal bimanual examination is accomplished. This portion of the examination is to look for external and internal hemorrhoids, fissures, fistulas, or anorectal polyps or tumors. The uterus is palpated bimanually with the index finger in the vaginal orifice and the middle finger in the rectum. With a posterior uterus, that is, a uterus that is tipped back toward the rectum (found in 15–20% of women), only now will the fundus be palpated. The ovaries and particularly the cul-de-sac, uterosacral ligament areas and the paravaginal and paracervical areas are palpated. These areas are best palpated rectally and here the diagnostic findings of endometriosis or spread of cervical carcinoma may be found. With one finger in the vagina and another in the rectum the rectovaginal septum can be appreciated, and having the patient strain may further discover any pelvic support weaknesses including the presence of an enterocele (hernia of the rectovaginal pouch) or rectocele (hernia of the rectum). When the bimanual examination is completed, the examiner may use his or her rectal digit to place a rectal specimen on a hemocult card to check for blood (and a further screening for colon cancer) in the older patient. One should not collect this specimen if the patient is menstruating or if the cervix had blood on it without changing gloves, alternatively, the gynecologist can just give the patient a set of three stool cards to take home with instructions to bring the cards back for testing.

Once the pelvic examination has been completed, the gynecologist should assist the patient to return to the sitting position. The gynecologist should then have the patient return to his or her office to discuss the findings and to allow for any questions the patient may have. Thus the pelvic examination, which is screening the patient for cervical cancer and pelvic pathology, has been completed. Giving the patient some time to collect her thoughts and to discuss the

findings, we think, is the optimal mode to complete this very important medical exam.

Related Topics

▶ Cancer, ▶ Endometrial polyps, ▶ Hemorrhoids, ▶ Human papilloma virus, ▶ Pap test, ▶ Pelvic organ prolapse

Suggested Readings

Ryan KJ, Barbieri RL, Berkowitz RS (1999) Kistner's gynecology and women's health, 7th edn. Mosby, St. Louis, MO

Suggested Resources

The North American Menopausal Society. Cleveland, OH (2005); <http://www.menopause.org>

Pelvic Organ Prolapse

Michael R. Lund · Julianne R. Newcomer

As women grow older, many develop a common condition of the reproductive tract known as pelvic organ prolapse. Prolapse means that the normal supporting tissues of the uterus and/or vagina become weakened or damaged, allowing the uterus and vaginal walls to press down or even fall out of the vaginal opening, also known as the introitus. Prolapse affects roughly 40% of menopausal women, and every year more than 300,000 women have surgery for this condition.

Definitions and Description

Pelvic organ prolapse can be best described by identifying the affected organs. For example, weakening of the anterior vaginal wall allows the bladder to bulge into the vagina (or outward through the vaginal introitus). This is referred to as a cystocele. Weakening of the posterior vaginal wall can allow the rectum to bulge forward into the vagina (or again, outward through the vaginal intro-

itus). This is referred to as a rectocele. Vaginal apex prolapse occurs when the topmost, or apical, portion of the vagina loses support and falls downward. If the uterus is still present, this is referred to as uterovaginal prolapse. Finally, an enterocele forms when the small intestine and peritoneum (inner lining of the abdomen) push downward between the vagina and the rectum.

Etiology and Risk Factors

All of the following are known to be risk factors for pelvic organ prolapse: vaginal delivery, operative vaginal delivery (e.g., forceps or vacuum delivery), obesity, advancing age, lack of estrogen, and previous vaginal surgeries (e.g., hysterectomy). In addition, patients with neurological disorders, connective tissue disorders, or conditions that increase intra-abdominal pressure (such as constipation or chronic cough) may have an increased risk of pelvic organ prolapse.

Symptoms

Symptoms of pelvic organ prolapse vary from woman to woman. Most commonly, the patient describes a heavy feeling in the lower abdomen, back, or pelvis or a feeling of something “pulling” downward. The woman with a cystocele may have to urinate frequently, as she may not be able to fully empty her bladder because of the distortion created by the prolapse. A rectocele may lead to incomplete or difficult defecation. Some women may need to “splint” (or push back on) the vagina with their fingers in order to remedy this condition. Other women with prolapse will develop difficulty during sexual intercourse. If pelvic organ prolapse becomes advanced, the individual may be able to feel or see a bulge between the labia. In complete prolapse (or procidentia), the entire vagina and/or uterus fall through the vaginal opening.

Urinary Incontinence and Pelvic Organ Prolapse

Urinary incontinence and pelvic organ prolapse are often coexistent. Early cystocele formation can change the angle of the urethra, leading to leakage of urine with coughing or sneezing (i.e., stress incontinence). However, as the cystocele grows larger, the urethra may

become obstructed or kinked, making it difficult for the woman to completely empty her bladder.

Non-Surgical Treatment Options

There are several options for the treatment for pelvic organ prolapse. Observation is generally an acceptable option, as the condition itself is not harmful. The woman should consider further treatment when the symptoms bother her enough to do so. Pelvic floor exercises, biofeedback, and physical therapy may be of some use in preventing further progression of symptoms, but typically will not relieve symptoms already present. For the individual who wishes to avoid surgery or in whom surgery may be dangerous, a pessary may be a very good option. Pessaries are made of latex or silicone, and they can be worn in the vagina to support the vaginal walls. They are available in many different shapes for different types of prolapse and require fitting by a health care provider.

Surgical Treatment Options

Surgery is another option for treating pelvic organ prolapse; the particular procedure that is necessary depends on the degree and type of prolapse noted. A careful physical examination should be done in the office to determine the extent of the prolapse surgery required, as well as to evaluate for urinary incontinence (as surgeries for both can then be completed simultaneously). Historically, these procedures have been done vaginally, but there is growing support for laparoscopic (e.g., small abdominal incision) surgery for prolapse. Cystoceles are repaired by anterior colporrhaphy or paravaginal repair, through which the weakened vaginal wall is repaired and reattached to its natural support. Rectoceles are repaired by posterior colporrhaphy, a similar procedure used on the posterior vaginal wall. Apical prolapse requires the reattachment of the vagina to another structure (e.g., sacrospinous colpopexy, abdominal sacrocolpopexy, or uterosacral suspension). Pelvic organ prolapse may recur in up to 30% of patients having surgery, but these rates appear to be improving as our understanding of the condition improves and materials available for surgery improve.

Related Topics

- ▶ Abdominal Pain, ▶ Hysterectomy, ▶ Obesity,
- ▶ Urinary Incontinence

Suggested Readings

DeLancey JO, Strohbehn K (2003) Pelvic organ prolapse. In: Scott JR, Gibbs RS, Karlan BY, Haney AF (eds) *Danforth's obstetrics and gynecology*, 9th edn. Lippincott Williams & Wilkins, Philadelphia, PA, pp 792–818

Koduri S, Sand PK (2000) Recent developments in pelvic organ prolapse. *Curr Opin Obstet Gynecol* 12(5):399–404

Suggested Resources

Kohli N, Goldstein DP An overview of the clinical manifestations, diagnosis, and classification of pelvic organ prolapse. Up To Date Online, 2005, Version 13.3 (August 2005); www.uptodate.com

Maher C, Baessler K, Glazener CM, Adams EJ, Hagen S Surgical management of pelvic organ prolapse in women. *Cochrane Database of Systematic Reviews*, 2004; www.thecochranelibrary.com
Web MD, "Pelvic Organ Prolapse;" www.webmd.com

Pension

Kristin A. Cassidy

Pensions are retirement plans in which the employer makes the contributions for the employee. Pension plans set up by an employer for their employees and their survivors are referred to as qualified plans. Employees do not pay taxes on the assets of these types of plans and the earnings contributed to the plans are tax deferred. In addition, employers receive a tax deduction for their contributions to the plans. According to the Employee Benefit Research Institute, 53% of Americans who worked in 2004 worked for an employer or union that sponsored a pension or a retirement plan and 42% of those who worked in 2004 participated in those plans.

There are two general categories of qualified pension plans. The first is a defined benefit plan in which

the retiree is paid a specific amount each month. This is the traditional pension plan. The amount may be a predetermined specific dollar amount or it may be the result of a formula that takes into consideration factors such as years of service and salary. The benefit payment is made in regular intervals (e.g., monthly, quarterly, semiannually, etc.) for the rest of the employee's life. This type of payment plan is referred to as a life annuity. A qualified joint and survivor annuity (QJSA) must be available for married employees. This ensures that after the death of the employee, the spouse will continue to regularly receive at least half of the amount of the periodic payment for the rest of his or her life.

Defined benefit plan payments are protected by the Pension Benefit Guaranty Corporation (PBGC). This federally chartered corporation was created as part of The Employment Retirement Security Act (ERISA), which was passed by Congress in 1974. ERISA sets the minimum standards for the management of pensions in private industry and protects the employee pensions of companies that have gone out of business or bankrupt, or are bought by other companies.

The second category of qualified plans is the defined contribution plan. This type of benefit does not specify an amount to be paid. Instead, the employee, the employer, or both contribute to the employee's individual account on a pretax basis. Sometimes this is done at a specific rate, like 5% of the employee's annual salary. The contributions are then invested on behalf of the employee. When the employee retires, he or she receives the contributions plus or minus the investment gains or losses. Employee stock ownership plans, profit-sharing plans, 401(k) plans, and 403(b) plans are all examples of defined contribution plans. In addition to the ERISA rules, each of these plans has additional guidelines of their own. A money purchase plan is a type of defined contribution plan, which requires the employer to contribute a fixed amount to the employee's account. Money purchase plans have additional rules and regulations. With the exception of money purchase plans, all defined contribution plans may pay benefits either in a lump sum or in any way the plan chooses. If a life annuity option is offered by the plan, it is also covered by the QJSA rules determined by ERISA.

Individual retirement accounts (IRA) are generally not considered to be pension plans as they are established and contributed to by the employees themselves. The exceptions to this rule are the simplified employee

pension (SEP) plan and the savings incentive match plan for employees of small employers (SIMPLE), which is similar to a defined contribution plan in that the employer contributes to the employee's individual account. However, in an SEP or SIMPLE plan, the employee must set up and maintain their own IRA for the employer to contribute to. Once the contributions have been made, the account is treated as a traditional IRA. Approximately 28% of all IRA contributions go into SEP plans and 13% into SIMPLE plans.

The rules of pension plans vary with regard to when a person may begin receiving their benefits. ERISA sets the minimum standards for the earliest a person may begin receiving benefits and the latest they must begin receiving them.

If an employee leaves the company before retiring, they are entitled to the full amount of their own contributions plus any investment earnings from that portion of the plan. However, the employee may be required to have worked a certain number of years to be "vested" in the contributions of the employer in order to receive that portion of the plan. Employers may choose the number of years of employment required in order to be fully vested as long as they meet the minimum standard set by ERISA. With only a few exceptions, all of the years the employee has been with the employer (after the age of 18) must be taken into account when determining how much of the benefits are vested.

In the year 2000, US Congress established a permanent pension counseling program under Title II of the Older Americans Act (OAA). This legislation was based on the previous success of the Administration on Aging's (AoA) pension counseling and information demonstration programs, which had been funded by a 1992 OAA Title IV amendment. Currently, six regional counseling projects serving 23 states are managed by AoA. Each of the projects provides counseling and assistance in understanding and enforcing pension and retirement savings plan rights; help with locating lost plans from companies that are difficult to track down due to name changes, moves, merges, closures, or having had their pension programs trusted by the PBGC; referrals to legal and financial services, government agencies, and advocacy programs; outreach and program information throughout the service regions; and data on procedures and outcomes to help develop a comprehensive nationwide pension information and referral system.

Related Topics

- [Defined benefit plan](#), ➤ [Defined contribution plan](#),
- [Early retirement](#), ➤ [Employment](#), ➤ [Financial planning](#),
- [Individual retirement account](#), ➤ [Retirement](#),
- [Social Security](#)

Suggested Readings

Craig Copeland and Employee Benefit Research Institute (October, 2005) "Employment-Based Retirement Plan Participation: Geographic Differences and Trends, 2004"; http://www.ebri.org/pdf/briefspdf/EBRI_IB_10-20051.pdf

U.S. Department of Labor Employee Benefits Security Administration—What You Should Know...about your retirement plan; <http://www.dol.gov/ebsa/pdf/wyskgreenbook.pdf>

Suggested Resources

Administration on Aging (AoA)—Pension Counseling; <http://www.aoa.gov/prof/aoaprogram/pensioncounseling/pencounseling.asp>

Pension Benefit Guaranty Corporation; <http://www.pbgc.gov>

Pension Rights Center—serves as AoA's National Pension Assistance Resource Center; <http://www.pensionrights.org/>

Peptic Ulcer Disease

Kathleen M. Wolner

Gastroesophageal reflux disease (GERD) is a disease that affects 20% of the population of the United States. The most common symptom associated with GERD is "heartburn," which is a burning sensation in the upper chest. GERD also involves the reflux of stomach contents, including acid, into the esophagus. Others do not have symptoms in spite of having acid lying directly on the lining of the esophagus. Stomach acid can damage the esophagus and result in a condition called erosive esophagitis. Over time, the acid on the esophageal lining can burn the tissue and cause scarring known as a stricture. Esophageal stricture causes dysphagia, which is difficulty in swallowing. Food

“hangs up” in the esophagus as a person tries to swallow it. Another problem that can develop with long standing reflux is called Barrett’s esophagus, where the cells that line the esophagus change to a different type.

When you have symptoms compatible with GERD, including heartburn, difficulty in swallowing, and reflux of gastric contents into the back of the throat, you should seek care from your primary care physician. It may be necessary for the gastroenterologist to do an endoscopic examination of the esophagus and the stomach. If the heartburn and dysphagia is of recent onset, it is appropriate to try lifestyle modifications and treatment with medication. Lifestyle changes include careful attention to diet and avoidance of many foods associated with the letter “C”: carbonated beverages, coffee (both decaffeinated and regular), citrus fruits, and chocolate. These and many other foods cause relaxation of the sphincter at the bottom of the esophagus, where it meets the stomach. Certain medications also relax the sphincter. When this sphincter relaxes and a person lies down, the food and acid have an easy route back up and into the esophagus. Because of this, it is important to wait 3 h or more before lying down. This will allow the stomach time to empty and reduce the amount of stomach contents that are available to go back up into the esophagus. Another way to encourage the food to stay in the stomach is to elevate the head of the bed. This can be done by filling coffee cans with about 4–5 in. of sand and putting the legs at the head of the bed into the coffee cans. This will elevate the entire bed at an angle to allow gravity to help the contents to stay in the stomach. Proton pump inhibitor drugs are costly, but very effective. It is extremely important to treat this problem of GERD very aggressively and eradicate the symptoms so that there are no long-term problems, such as strictures, Barrett’s esophagus, or cancer. There is a surgical option for treatment, called fundoplication. In this procedure, the base of the esophagus where it enters the stomach is made tighter so that acid stays in the stomach.

The acid from the stomach can also spill over into the lungs and cause asthma-like symptoms. In order to know if acid is the cause of the asthma, it is important to take one of the proton pump inhibitor drugs for a few months to reduce the acid to see if the breathing problems clear. GERD can also cause persons to be very hoarse, have a chronic cough, and wheeze.

Two entities cause 80–90% of peptic ulcers. The first is *Helicobacter pylori* (*H. pylori*) infection and the second is nonsteroidal anti-inflammatory drugs (NSAIDs), including but not limited to ibuprofen and naproxen, among others. *H. pylori* infection causes 50–80% of peptic ulcers. It is also related to 80% of gastric (stomach) cancers and is highly linked with a type of lymphoma that occurs in the stomach. It is felt that *H. pylori* causes inflammation in the lining of the stomach and may increase acid secretion. It eventually causes ulceration and cancer or lymphoma as mentioned above. *H. pylori* infection occurs in childhood, and unless treated remains in the stomach. There are two ways to diagnose it. The first is through the endoscope in which the ulcer is cultured and multiple tests carried out. The other way is through a blood test called an antibody test. Your physician will determine the most appropriate way in your situation. Treatment of *H. pylori* dramatically reduces the risk of recurrence of peptic ulcer disease. There are several different ways to treat *H. pylori* and most involve taking three or four medications for up to 2 weeks. The identification of *H. pylori* as a cause of much of the peptic ulcer disease in the world dramatically changed our understanding of ulcers.

The second major cause of peptic ulcer disease is NSAIDs. These drugs are commonly used for many types of pain and are easily obtained over the counter. At any given time when a person is on chronic NSAID therapy, there is a 15–20% chance of developing an ulcer. It is extremely common for persons using nonsteroidal drugs to have red, eroded areas in the lining of their stomachs, although only a much smaller percentage actually develops ulcers from their NSAIDs. It is unclear why although so many people actually have erosions, only 1–4% develop significant ulcer disease. The process by which NSAIDs cause ulcers is through damaging the lining of the stomach. The chemicals within NSAIDs not only affect the production of the protective layer within the lining of the stomach, but also cause direct toxic injury to the lining of the stomach. In general, higher doses of NSAIDs place the patient at increased risk of ulcers. However, even the small 81-mg dose of aspirin used for heart protection can cause an ulcer. Therefore, there are no safe doses of these drugs. Smaller doses simply carry lower risks.

What risk factors are associated with NSAID-induced peptic ulcer disease? Persons over 60 years are more at risk of developing ulcers from taking these drugs. As with many other conditions, if a person has a history of having an ulcer, he or she is at an increased risk of developing another. Sometimes, people take different types of NSAIDs at the same time, which is not a good idea as it can increase the risk of an ulcer. High doses of NSAIDs also increase the risk. Certain medications, such as glucocorticoids (one type being prednisone), can increase the risk of bleeding and the anticoagulant drug called warfarin in combination with aspirin can cause ulcers to develop and bleed. After a person develops an ulcer from taking NSAIDs, it is important to stop taking them and use a drug to heal the stomach, such as ranitidine or a proton pump inhibitor, such as omeprazole. There are some patients, however, who must take the NSAID therapy so they can be given a proton pump inhibitor to reduce the risk of ulcer formation. It is important to understand that while the proton pump inhibitor drug is commonly used to prevent ulcers in people on NSAIDs, the only drug approved specifically for this purpose is misoprostol.

Dyspepsia

The definition of dyspepsia is pain or discomfort in the upper abdomen. This is a very common complaint and accounts for many visits to primary care physicians every year. Many problems, such as ulcers, GERD, gallstones, cancer, and others, can cause pain in the upper abdomen. However, most people with dyspepsia have no identifiable cause of their pain. A common means of diagnosing the cause of pain is via endoscopy, where a lighted scope is inserted into the stomach.

Related Topics

▶ Cancer, ▶ Endoscopy, ▶ Gastroesophageal reflux disease

Suggested Readings

Barker LR, Burton JR, Zieve PD (eds) (2002) Principles of Ambulatory Medicine, 6th edn. Lippincott Williams & Wilkins, Philadelphia

Suggested Resources

Centers for Disease Control and Prevention (December, 2005). *Helicobacter pylori* and Peptic Ulcer Disease. Atlanta, GA (2005); www.cdc.gov/ulcer

Jackson Gastroenterology. General patient education. Camp Hill, PA (2005); www.gicare.com/pated/ucdgs09.htm

National Digestive Diseases Information Clearinghouse (October, 2004). *H. pylori* and Peptic Ulcer. National Institutes of Health, Bethesda, MD (2006); www.digestive.niddk.nih.gov/ddiseases/pubs/hpylori

Perception

Anita Vijayakumar

Perception is the process of acquiring, interpreting, selecting, and organizing physical information into psychological information. There are different elements of perception that include, but are not limited to, sensory stimulation, the subject's past experience, attention and readiness to respond to a stimulus, memory, motivation, and the subject's emotional state.

Perception and Aging

Sensory perception affects the way we view our world, as our myriad of senses change over time, so does our perception of what we see, hear, feel, smell, and taste; our interpretation and response to these sensations also change.

As we age, our bodies undergo natural changes in biology. The lenses in our eyes harden, the cilia in the cochlea of our ears become fewer, our threshold for taste sensation becomes higher, and our skin often becomes tougher, not allowing as easily for the sensation of touch. These changes, however, are not as drastic as most people think; they occur in a slow progression, subtly altering the person's cognition and understanding of his or her world.

The prevalence of sensorineural hearing loss from 57 to 89 years is 83%; nearly 16 million Americans are affected by at least some hearing loss, with about 30% of all adults aged between 65 and 74 years being affected, increasing to 50% for adults aged 75–79. The prevalence of vision abnormalities also increases with age: affecting 3.1 million (17%) men and women

between ages 65 and 74 years and 4.3 million (26%) aged 75 years and older. Losses in taste and smell are also high; it is not quite known what percentage affects the elderly versus other vulnerable groups, but it is estimated that 2 million adults in the United States have some disorder of taste or smell. Tactile loss proves to be the hardest of the five senses to measure.

Vision

There are various causes for the change in perception people experience as they age. The most common causes for changes in visual perception are medical conditions such as age-related macular degeneration, glaucoma, cataract, and diabetic retinopathy. These conditions can manifest as blurry vision and color confusion, but can also extend further down the spectrum of misinterpreted stimuli from negative symptoms to positive symptoms, such as visual hallucinations. These hallucinations can take the form of secondary to either medical illness or mental illness, such as schizophrenia or mania.

Hearing

One experiment conducted with elderly versus younger listeners demonstrated that speech-comprehension difficulties of older adults primarily reflect a decline in hearing rather than in cognitive ability. Similarly, more than 90% of change in hearing is due to normal progressive sensorineural deafness, which usually results from damage to the hair cells of the cochlea; therefore, perceptual abnormality can simply be the result of mild hearing loss. However, more extreme changes in auditory perception such as auditory hallucinations, which also can be noted in mental illnesses such as schizophrenia or even severe depression, can also occur.

Smell, Taste, and Touch

Sensations of smell, taste, and touch also change with age. Numerous sources state that any abnormalities in these senses as we age are part of a normal aging process. These changes do not have to be significant or alter a person's cognition or lifestyle much, but, as

with any perceptual abnormality, their extremes can lead to conditions such as depression, lack of interest, and severe weight loss. Often these abnormalities are due to straightforward medical conditions like nasal allergies, injured nerve tissue, or a viral upper respiratory illness, but can also result from much more concerning medical problems such as brain tumor, seizures, or undiagnosed or uncontrolled mental illness.

One extreme form of perceptual abnormality is called hemi-inattention, or hemispatial neglect, and is a prominent manifestation of a nondominant cerebral hemisphere injury, usually caused by a stroke. Affected individuals ignore virtually all sensory stimuli originating from the left side of their bodies, and thus fail to perceive or interpret objects in their visual field. This can lead to people not dressing the left side of their body, not shaving the left side of their face, and most concerning, not be at all aware or concerned about the deficiency.

Conclusion

It is important to bear in mind that mild perceptual abnormalities are a natural part of the aging process, but they could also be a symptom of an underlying disorder. Supposed cognitive decline may in reality be a result of presbycusis; visual hallucinations could actually be manifestations of cataracts, but just as importantly, these perceptual abnormalities could stand on their own and be symptoms of undiagnosed mental illness. If one experiences these or other distortions, especially with sudden onset, they should be addressed and further explored by a medical specialist.

Related Topics

▶ [Blindness](#), ▶ [Cataract](#), ▶ [Glaucoma](#), ▶ [Vision](#)

Suggested Readings

- Bertoni JM (2001) Hearing loss. In: Professional guide to signs and symptoms, 3rd edn. Springhouse Publishing, Springhouse, PA, pp 286, 370–375
- Fukunaga A, Uematsu H, Sugimoto K (2005) Influences of aging on taste perception and oral somatic sensation. *J Gerontol A Biol Sci Med Sci* 60(1):109–113
- Hein G, Schubert T (2004) Aging and input processing in dual-task situations. *Psychol Aging* 19(3):416–432

- Kaufman DM (2001) Aphasia and related disorders. In: Clinical neurology for psychiatrists, 5th edn. W. B. Saunders Company, Philadelphia, PA, pp 187–189
- Leonard R, The Arlene R Gordon Research Institute of Lighthouse International (2001) How many middle aged and older adults report some form of vision problem? In: Statistics on vision impairment: A resource manual, 4th edn. Lighthouse International, New York
- Moscicki EK, Elkins EF, Baum HM, McNamara PM (1985) Hearing loss in the elderly: An epidemiologic study of the Framingham Heart Study Cohort. *Ear Hear* 6(4):184–190
- Pichora-Fuller MK (2003) Cognitive aging and auditory information processing. *Int J Audiol* 42(Suppl 2):2526–2532
- Schneider BA, Daneman M, Murphy DR (2000) Listening to discourse in distracting settings: The effects of aging. *Psychol Aging* 15(1):110–125
- Schneider BA, Pichora-Fuller MK (2000) Implications of perceptual deterioration for cognitive aging research. In: Craik FIM, Salthouse TA (eds) *The handbook of aging and cognition*, 2nd edn. Lawrence Erlbaum Associates, Mahwah, NJ, pp 155–219
- Tuorila H, Niskanen T, Maunukela E (2001) Perception and pleasantness of a food with varying odor and flavor among the elderly and young. *J Nutr, Health* 5(4):266–268
- Valentijn SA, van Boxtel MP, van Hooren SA et al (2005) Change in sensory functioning predicts change in cognitive functioning: Results from a 6-year follow-up in the Maastricht Aging Study. *J Am Geriatr Soc* 53(3):374–380

Periodontics

Edward E. Best

The clinical science that deals with the periodontium in health and disease is periodontology, and the practice of this discipline is called periodontics. Periodontium literally means “around the tooth.” Periodontics deals with the intraoral tissues that surround and support the teeth. These are the tissues that anchor the teeth to the jaws and provide the teeth with the ability to function and remain healthy.

The portion of the tooth that functions to chew is called the crown and its outer surface is enamel, which is highly mineralized and hard. The root of the tooth is surrounded by a thin layer of cementum, which is a mineralized but porous material. The junction of the cementum of the root and the enamel of the crown is called the cemento-enamel junction. The bone surrounding the root is called alveolar bone. The root is anchored to this bone by a ligament of dense connective

tive tissue called the periodontal ligament, which extends from the cementum of the root to the alveolar bone and is embedded in both.

There is a portion of the root of the tooth that extends above the bone but below the cemento-enamel junction so that there is a space between the top of the bone and the beginning of the crown. This area is filled with dense connective tissue with fibers that anchor the cementum of the root to the bone and the rest of the soft tissue. This area is called the gingival fiber apparatus. The surface of this tissue is covered with epithelium and the whole complex surrounds the crown of the tooth like a turtle neck sweater. This tissue is the gingiva, commonly called the gums. The epithelium is anchored to the tooth at the bottom of the enamel near the cemento-enamel junction and this attachment is called the junctional epithelium. The tissue extending above the junctional epithelium is called the marginal gingiva and this is against the tooth but not attached to it.

The epithelium surrounding the teeth contains a substance called keratin, a substance that makes the tissue thicker and more durable, and it also contains cells that can produce pigmentation. This gingival tissue above the bone and around the teeth is generally pink and attached to the tooth and bone, so it is immobile.

Lining the cheeks, lips, and the floor of the mouth is a thin mucosa that has loose elastic connective tissue and lacks the keratin that is in the gingiva. This is called alveolar mucosa or lining mucosa. This is less durable than the gingiva and it is mobile. The point where the mucosa meets the gingiva is called the mucogingival junction. In some cases, a tooth may have no gingiva attached and the alveolar mucosa is directly attached to the tooth. Because this is less durable tissue the attachment is weak, and there may be recession of the tissue exposing the root, which could predispose the tooth to be lost.

Diseases of the periodontium are generally classified as gingival or periodontal. Gingival diseases affect only those tissues above the bone, whereas periodontal disease affects the tissue above the alveolar bone, the bone itself, and the attachment of the tooth to the bone, the periodontal ligament. If this attachment and the alveolar bone are lost, the teeth become mobile and may require extraction.

Most of the diseases of the periodontium, whether gingival or periodontal, are related to interactions between the bacteria and the host immune response. Bacteria in the dental plaque, which are under the gingival tissue, and those in the porous surface of calculus, which is deposited on the teeth, are in contact with the gingival tissue. In most cases of gingival or periodontal disease the bacteria may elicit enzymes that break down tissue, or they may initiate an inflammatory host response that damages the tissue.

The first line of defense against these bacteria is to remove them daily before they cause any damage. Brushing may remove the surface bacteria and flossing may remove the bacteria under the tissue and between the teeth. Some of the surgical procedures, such as gingivectomy, the removal of excess gingiva and bone surgery with movement of all the gingival tissues and the mucogingival junction toward the apex of the teeth, an apically positioned flap, are to restore an architecture that can be maintained with brushing and flossing. Dental visits for root planing and scaling will remove the calculus that harbors bacteria on the teeth and roots, and allow for better bacteria removal by the flossing and brushing.

Bacterial control by antibacterial chemicals in mouthwashes has been tried. A number of chemicals have been used such as alcohol, quaternary ammonium compounds, chlorhexidine, and several others. The most successful of these has been chlorhexidine, but these generally do not get below the gingiva, where most of the damage occurs. Locally applied antibiotics, mostly tetracyclines, have been placed under the gingiva in a transfer medium that allows the tetracycline to leach out over a period of days or weeks. These have had some success in isolated areas to control inflammation. Systemic antibiotics are also used to kill bacteria below the gingiva with some success. Because the bacteria recolonize after removal, these measures are effective for maintenance but should not be considered as a cure, as periodontitis is chronic disease.

Damage initiated by the presence of bacteria may be increased by applying too much force on individual teeth. The periodontist may adjust the teeth to even out the force or fabricate a bite splint for better force distribution. The combination of the presence of bacteria and excessive force may cause bone loss around specific teeth varying from a wedge shaped defect to a trough, all the way around the tooth. Bacterial control and reduction of the force may stop the progression of

the disease, but it will not reverse the damage already done.

To repair the bony defects, the periodontist may place a graft into the defect. The graft may be the patient's own bone, an autogenous graft, donor bone from another human, an allograft, bone from another species such as a cow, a xenograft, or a synthetic material, an alloplastic graft. A barrier may be placed over the graft to stop the ingrowth of connective tissue, so that the bony defect fills with regenerated bone.

Periodontists are doing cosmetic procedures such as soft tissue grafts when keratinized gingiva or connective tissue is taken from the palate to cover a root with recession, or to place keratinized gingiva over a root whose margin is nonkeratinized alveolar mucosa.

Implants are cylindrical pieces of metal placed into the bone where a tooth is missing, and to which the bone attaches, are being placed by periodontists. The implant must have sufficient height and width of bone to be placed successfully. If there is insufficient bone, bone may be removed from another area, such as the chin or posterior mandible, and grafted to the area where the implant is to be placed. After the bone has sufficiently healed, nine months to a year, an implant may be placed in this site.

Periodontics in today's world involves not only the healing and maintenance of the tissues around the teeth, but also the regeneration and restoration of these tissues. These procedures not only preserve the natural teeth, but also provide for replacement of teeth lost to either previous periodontal disease or other disease processes.

Suggested Resources

Centers for Disease Control: <http://www.cdc.gov/OralHealth>

Perimenopause

Vanessa M. Barnabei

■ Table 1

Stages of reproductive aging in women (Reprinted from Soules et al 2001 With permission from American Society

Menopause as defined is the absence of menses for 12 months in the absence of other causes; therefore, the diagnosis is usually made in retrospect. The average age of menopause in North America is approximately 51 years with a wide normal range of 45–55 years. The transition into menopause, described by the terms “climacteric” or “perimenopause,” may last anywhere from 2 to 8 years, and may begin as early as the late thirties for some women. It encompasses the time from the beginning of menstrual irregularity and ends 1 year after the final menstrual period when a woman is then considered menopausal. However, there is no single defining moment or event that marks the menopause. Women with significant menstrual irregularity in their late thirties should undergo an evaluation for other etiologies, such as thyroid dysfunction, other endocrinopathies, and genetic abnormalities as the cause of oligomenorrhea (decreased frequency of menstrual periods) or amenorrhea (absence of menstrual periods). Women who become menopausal before age 40 (about 1% of the population) have premature ovarian failure, by definition, and require evaluation.

The Stages of Reproductive Aging Workshop (STRAW) participants developed criteria for staging reproductive aging in women in an attempt to provide a framework for future discussion and research into the perimenopause. They utilized menstrual cyclicity and early follicular follicle stimulating hormone (FSH) levels as the primary determinants of each stage. According to the model developed at the workshop, there are five stages (–5 to 0) that precede the final

menstrual period and two stages (+1 and +2) that follow it. These are depicted in the chart below (▶ [Table 1](#)). It is important to note that the two stages that precede the last menstrual period are extremely variable in length.

For the most part, the physiologic basis of the menopause transition can be attributed to changes within the ovaries. Menopause is the end result of depletion of ovarian follicles, which leads to decline in ovarian production of progesterone, estradiol, and testosterone, in that order chronologically. *The most reliable sign of the menopausal transition is menstrual irregularity.* Other symptoms, besides menstrual irregularity, that are commonly associated with the climacteric will often begin during this phase of the transition. Symptoms such as hot flashes and night sweats are reported by approximately 75% of perimenopausal women.

Many women start noticing subtle changes in the timing and duration of menses in their early forties. These may include slightly longer or shorter cycle interval and change in amount or duration of menstrual bleeding. Declining progesterone levels result in luteal phase abnormalities, decreased fertility, and menstrual changes such as heavier and irregular bleeding. Luteal phase abnormalities are defined by a deficiency of progesterone production from the ovary in the second half of the menstrual cycle, which may affect cycle length and fertility. Shorter cycle length is believed to be one of the first signs of the perimenopausal transition. This occurs because ovarian resistance to stimulation results

in increased FSH levels leading to a shorter follicular phase of the cycle. However, the pattern of ovarian response is not predictable from month-to-month, so there may be extreme variability in cycle length. Estrogen levels in this phase of the transition may be normal, lower than, or higher than normal. However, because of wide variability from month-to-month and even day-to-day, neither estradiol nor FSH levels measured during this phase are helpful in predicting the onset of menopause. Over-the-counter menopause predictor kits, which measure urinary FSH, are not reliable until very late in the transition. At that point in time, menstrual irregularity may be a better predictor. Later in the menopausal transition, as the ovaries become increasingly resistant to the effects of FSH stimulation, estradiol levels fall below normal, premenopausal levels and menstrual bleeding will decrease.

A 2003 study reviewed the literature and summarized the results of research on various signs and symptoms as predictors of menopause and perimenopause. Both objective and subjective variables were studied including vasomotor symptoms (such as hot flashes and night sweats), vaginal dryness, mood changes, smoking, incontinence, and levels of FSH and inhibins, which are local ovarian transforming growth factors. No single factor was powerful enough to confirm or predict the probability of being perimenopausal. Another recent study that sought to predict time to menopause based on menstrual variability found that the best predictor was lack of menses for 60–90 days. Over 60 days of amenorrhea had a positive predictive value of 89% for menopause within 4 years. This is consistent with the STRAW model of the menopausal transition.

The age at menopause is probably genetically predetermined and has increased slightly over the past 150 years whereas the average life expectancy has increased dramatically. The only environmental factor known to alter the age at menopause is cigarette smoking, which decreases the age of onset of menopause by about 2 years. Even the age of menopause of first-degree family members has been debated as a strong predictor. Other symptoms, such as hot flashes or night sweats, are poor predictors of menopause, as these symptoms may begin many years before the menopause and occur in about 75% of North American women. Therefore, age may be the most important predictor of menopausal status. For women in their late forties with symptoms and menstrual irre-

gularity, perimenopause is the likely diagnosis. And while fertility is low in this age group, a woman must be counseled about appropriate contraceptive options until she has completed one year of amenorrhea.

Symptoms frequently drive women into the health care system at this time of life. Vasomotor symptoms may begin many years before the final menstrual period and will be debilitating in a minority (~10–15%) of women. Other symptoms that women report include vaginal dryness, urinary changes such as increased urinary frequency or increase in bladder infections, mood changes, and change in memory or concentration ability. Depression has been variably linked to the menopause transition, but is probably more related to age and life stage than menopausal status. Treatment for symptoms should be targeted to the most concerning symptom from a quality of life perspective. Options include lifestyle changes such as weight management, stress management, and increased exercise; low-dose birth control pills, especially for women with menstrual irregularity who require continued contraception; low-dose hormone therapy; and low-dose selective serotonin reuptake inhibitors if vasomotor and mood symptoms predominate.

Making the Diagnosis of Menopause

- Average age of menopause is 51 years.
- Best predictors of menopausal status are age and amenorrhea of >60 days duration.
- Cigarette smoking decreases age at menopause.
- Blood tests are generally not helpful in predicting menopausal status except in women younger than 40 years of age.
- Symptom management may be needed before the final menses.

Related Topics

[Emotions](#), [Hormones](#), [Menopause](#)

Suggested Readings

Bastian LA, Smith CM, Nanda K (2003) Is this woman perimenopausal? *JAMA* 289:895–902

Soules MR, Sherman S, Parrott E, Rebar R, Santoro N, Utian W, Woods N (2001) Executive summary: Stages of reproductive aging workshop (STRAW). *Fertil Steril* 76:874–878. <http://www.asrm.org/Professionals/Fertility&Sterility/straw.pdf>

Taylor SM, Kinney AM, Kline JK (2004) Menopausal transition: Predicting time to menopause for women 44 years or older from simple questions on menstrual variability. *Menopause* 11:40–48

Permanent Make-Up

Sana Loue

Permanent make-up is like a tattoo in that it involves the implantation of color into the skin and is equally permanent. Procedures are currently available to embellish or create eyebrows, eyeliner, beauty marks, lips, lip color, and areola pigmentation. Permanent make-up is often considered as an option by individuals with allergies to ingredients common to cosmetics, to individuals whose vision is impaired, and to persons who are suffering from diseases that may affect their motor abilities and, consequently, their ability to apply makeup on a regular basis. These illnesses may include severe arthritis, Parkinson's disease, multiple sclerosis, and the after-effects of a stroke. Permanent make-up may also be an adjunct to reconstructive surgery, particularly of the face and the breast. Older adults, in particular, may be candidates for permanent make-up because they may have illnesses or impairments that make daily application of non-permanent makeup difficult or impossible.

Consumers should follow the same precautions (as follows) that they would in choosing a tattoo artist and a tattoo parlor:

- Make sure that all of the equipment, such as the needle, is new. Have the technician unwrap it from its package in front of you.
- Ink should not be poured into a cap that has been dipped into for use with other people. Even if the ink is fresh, the cap may be contaminated from its use with a previous customer.
- Ask to see samples of the technician's work. Many of them keep a book of photographs of previous customers. You can ask if there are previous customers whom you can contact for references.
- Ask to see the technician's certifications and qualifications to perform the procedure.

- Make sure that the artist or the technician uses gloves when performing each procedure.

The most common problem with permanent make-up is dissatisfaction. This may occur as the result of misplaced pigment, fading of the color over time, and migration of the color beyond the original site, resulting in a blurred appearance. Additionally, if surgery is performed after permanent make-up is applied, the makeup may appear distorted. This may occur, for instance, if an individual decides to have a facelift after having had permanent eyebrows or eyeliner done.

In addition to dissatisfaction, the Food and Drug Administration has identified various risks associated with permanent make-up. These include infection, such as hepatitis, due to the use of unsterile equipment in performing the procedure; allergic reactions to the pigment; the formation of nodules (granulomas) around particles of the pigment, because the body perceives them as foreign matter; the development of keloids (raised scars); and complications with magnetic resonance imaging (MRI), such as burning or swelling at the site of the makeup.

Various techniques are available for the removal of permanent make-up. Laser treatments must often be repeated several times to remove the pigment. The results often vary, however. Some individuals experience allergic reactions following laser treatments for the removal of the pigment because the laser treatment may cause allergenic substances in the ink to be released into the body.

Other approaches to permanent make-up removal include dermabrasion, salabrasion, scarification, surgical removal, and camouflaging. Dermabrasion involves abrading layers of skin with a wire brush or diamond fraise (a type of sanding disc); this procedure may leave a scar. Salabrasion utilizes a salt to remove the pigment and is often used in conjunction with dermabrasion. Scarification removes the pigment through the use of an acid solution, but this also leaves a scar. The surgical removal of permanent make-up often relies on the use of tissue expanders. These are balloons that are inserted under the skin, so that when the pigmented area is cut away, there is less of a scar. Camouflaging requires the addition of new pigments in order to cover the old one or to form a new design or pattern.

Suggested Resources

U.S. Food and Drug Administration, Tattoos and Permanent Make-up, <http://www.cfssan.fda.gov/~dms/cos-204.html>
<http://www.mayoclinic.com/health/tattoos-and-piercings/>

Personality Disorders

Amy S. House · Josephine Albritton

The Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), defines a personality disorder as an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment. The DSM-IV defines these disorders categorically, and requires that a certain number of established criteria be met before the diagnosis is made. Individuals who meet the criteria for a diagnosis of a personality disorder are often diagnosed with other mental disorders, especially mood disorders, anxiety disorders, and substance abuse or dependence. There are ten recognized personality disorders in all, which the DSM-IV groups into "clusters."

Cluster A includes personality disorders characterized by oddness or eccentricity: paranoid, schizoid, and schizotypal. Paranoid personality disorder is characterized by basic distrust and suspiciousness, while schizoid and schizotypal personality disorders are both characterized by social detachment. However, those with schizotypal personality disorder also exhibit odd beliefs (e.g., clairvoyance and telepathy), odd behaviors, and peculiar perceptual experiences.

The Cluster B personality disorders are characterized by dramatic, emotional, or self-centered behavior: antisocial, borderline, histrionic, and narcissistic. Those who exhibit antisocial personality disorder consistently violate the rights of others, and often use aggression, dishonesty, and criminal behavior to meet their goals. Individuals who meet the criteria for borderline personality disorder have their lives characterized by a pattern of instability of behaviors, emotions, relationships, and self-image. They tend to be impulsive and may repeatedly engage in self-injurious behavior or

attempt suicide. Histrionic personality disorder is characterized by attention seeking and dramatic emotional expressions, speech, and gestures. The primary features of narcissistic personality disorder are an inflated sense of self-importance, a need for excessive admiration, an expectation of special treatment from others, and a lack of empathy.

The personality disorders in Cluster C are characterized by anxiety and fear: avoidant, dependent, and obsessive-compulsive. The primary features of avoidant personality disorder are a perception of oneself as socially inadequate and a fear of being rejected or criticized. Dependent personality disorder is characterized by an excessive need for nurturance and support, which leads to passivity and fears of separation from others. Individuals who meet the criteria for obsessive-compulsive personality disorder are very rigid in their thinking and activities, and are preoccupied with orderliness and perfectionism.

The best available data indicates that the personality disorders have prevalence rates between 0.5% and 3% in the general population. Borderline personality disorder (BPD) is one of the most common personality disorders among individuals seeking mental health treatment, and is seen in approximately 8–11% of mental health outpatients and 14–20% of psychiatric inpatients. Prevalence rates of personality disorders according to race, ethnicity, and culture remain largely undetermined.

There is also a lack of adequate research regarding personality disorders across the life span and the course of these disorders in late life. The best available data suggests that personality disorders persist into late life, particularly the disorders in clusters A and C. In addition, personality disorders are especially prevalent among depressed elderly persons, and the presence of a personality disorder negatively impacts the treatment of late-life depression. Personality disorders have the potential to adversely impact the overall health and well-being of the elderly, in part because the rigid and maladaptive behavior associated with the disorder may interfere with both seeking and cooperating with needed medical care.

Suicide is one of the greatest public health problems associated with personality disorders. Suicide is one of the ten leading causes of death in the United States, and up to 40% of people committing suicide meet the criteria for a personality disorder. The personality disorder most associated with both attempted

and completed suicide is BPD, with 5–10% of those meeting criteria for BPD committing suicide.

The development of effective and proven treatments for personality disorders has lagged behind advances in the treatment of other mental health problems, in part because of a belief that these disorders were untreatable. Currently, pharmacological treatments focus on the management of symptoms that may be associated with a personality disorder, such as cognitive-perceptual disturbances, mood dysregulation, aggression, and impulsivity. However, pharmacological treatments alone are inadequate for the treatment of personality disorders, and therefore psychotherapy is the recommended treatment method. Treatments for borderline personality disorder are among the most studied. “Dialectical behavior therapy” is the type of outpatient psychotherapy for BPD that currently has the most evidence for its effectiveness. Avoidant personality disorder has been shown to respond well to behavioral treatments, including systematic desensitization and social skills training. “Multisystemic therapy” has been demonstrated to be effective for adolescents exhibiting behaviors associated with antisocial personality disorder. A few published studies have suggested that cognitive therapy may be effective in the treatment of several personality disorders, including borderline, antisocial, narcissistic, dependent, and avoidant.

Related Topics

◆ Mood disorders, ◆ Parasuicidal behavior, ◆ Psychotherapy, ◆ Substance use, ◆ Suicide

Suggested Readings

- American Psychiatric Association (1994) Diagnostic and statistical manual of mental disorders, 4th edn. American Psychiatric Association, Washington, D.C.
- Birren JE, Sloane RB, Cohen GD (eds) (1992) Handbook of mental health and aging, 2nd edn. Academic Press, San Diego, CA
- Linehan MM (1993) Cognitive behavioral treatment of borderline personality disorder. Guilford Press, New York
- Morse JQ, Lynch TR (2004) A preliminary investigation of self-reported personality disorders in late life: Prevalence, predictors of depressive severity, and clinical correlates. *Aging Ment Health* 8(4):307–315
- Young JE, Klosko JS (1993) *Reinventing your life: How to break free from negative life patterns*. Dutton, New York

Suggested Resources

Geriatric Mental Health Foundation; www.gmhfonline.org
National Alliance for the Mentally Ill; www.nami.org
National Education Alliance for Borderline Personality Disorder; www.neabpd.org

Pets

JannatFay Clark

Pet ownership in the later stages of the life cycle can promote physical health. Evidence suggests that pet ownership is associated with fewer visits to physicians. In addition, studies show relationships between pet ownership and lowered blood pressure and triglyceride levels. In regard to coronary artery illness, pet ownership has been shown to promote increased rates of survival in persons who have had heart attacks and return home after being hospitalized. In a follow-up study, out of 93 patients who returned home from the hospital after being treated for heart attacks, 6% of those with pets died compared to 44% of those without pets. These results occurred independent of other social relationships.

Stressors that are common in later years include loss of loved ones, separation from children and previous coworkers, and social role changes. The likelihood of living alone also increases with age. Change in such social supports can lead to increased stress levels. Pet ownership promotes a decrease in response to such stressors, which can lead to reductions in physiological arousal such as increased blood pressure and heart rates. Increased physiological arousal caused by stress can cause excessive release of the hormones cortisol and adrenal cortical stimulate. This process can create strain on the function of other bodily systems.

Psychological benefits of pet ownership include decreases in depressive symptoms, support in coping with grief and loss, and a decrease in feelings of isolation and loneliness. Isolating circumstances of homebound older people can lead to depression, which can lead to increased susceptibility to illness. Socially isolated older pet owners indicate that they tend to have lower levels of depression than those without pets. During periods of emotional isolation due to separation or

transitions such as spousal bereavement, pets can decrease the feeling of loneliness. The presence of pets increases feelings of happiness, security, and self-worth. Overall, pets can help people maintain psychological equilibrium.

An important factor in determining how much emotional benefit a person gains from pet ownership is pet attachment. One study shows evidence that pets can be seen as family members. There are specific factors that can be used to identify whether a person is attached to their pet or not. These include how emotionally close one feels to their pet, a sense of being loved and accepted by a pet, sometimes feeling closer to one's pet than to other family members, identified decreases in loneliness because of pet ownership, a belief that one's pet is loyal, recognizing a pet's dependence on the owner, and seeing a pet as one's closest companion during certain periods of time. In addition, a pet owner's response to caregiving suggests an additional means of gauging whether or not pet attachment is present. Factors that indicate this include time spent with and activities directed toward the pet, interest in and affect toward the pet, knowledge about the pet and its care, and behavioral responses to the pet and its needs. Supporting older persons to gain knowledge about how to care properly for their pets may act to promote pet attachment. If care for the pet becomes cost prohibitive, there may be programs in the community which provide reduced costs for specific types of pet care such as spaying and neutering. Some pet medicines can be purchased at pet shops or through pet supply catalogues, which can further reduce the chances of accruing costly veterinary bills.

Pet loss can precipitate grief and mourning as well as intensify feelings of anxiety, depression, and anger. Separation from a pet, or threat of separation, can also promote negative emotions including separation anxiety. These factors deserve careful consideration when older persons are forced to leave pets behind. Reasons for leaving a pet can include moving to a house, condominium, or apartment where pets are not allowed, or not being able to care for a pet because of health-related or economic reasons. As our aging population increases, it is important that policies be enacted in favor of older persons being able to keep their pets.

Studies have provided behavioral data demonstrating that pets stimulate social interactions. Dogs, for example, are unique companions as they are virtually

available at almost all times to their owners. Social benefits of pet ownership in the aging population include an increase in reported walks taken each day. According to one major study, pet owners are shown to keep a pattern of taking their dogs for a walk twice a day, whereas those without pets show a pattern of taking a walk by themselves only once per day. In addition, dogs appear to support the process of promoting conversations between persons. Dogs clearly play a role in capturing the attention of passersby. It is hypothesized that ways in which pets can positively affect social interactions include providing novelty, which begets the attention of others, providing a source of common interest, which can give structure to the beginning of a conversation, the pet acting as social facilitator in which an instant topic for discussion is at hand, and acting as an ice breaker to promote initial engagement in a conversation. Other ways that dogs promote conversation is through a pet owner's tendency to engage in one-way verbal interactions with their dogs. In one study, over 96% of elderly pet owners reported that they talk to their pets. Even when the dog is not present pet owners will frequently make reference to their dog.

Related Topics

- ▶ Bereavement
- ▶ Coping
- ▶ Depression
- ▶ Exercise
- ▶ Loneliness

Suggested Readings

- Rogers L, Boltz R (2001) The role of pet dogs in casual conversation of elderly adults. *J Soc Psychol* 133(3):265–277
- Sable P (1995) Pets, attachment, and well-being across the life cycle. *Soc Work* 40(4):334–340
- Suthers-McCabe M (2001) Take one pet and call me in the morning. *Intimacy and Aging Summer*:93–96

Suggested Resources

- American Animal Hospital Association Pets for Senior Citizens. Lakewood, CO (2005); http://www.healthypet.com/library_view.aspx?ID=12&sid=1
- Baptist Memorial Health Care Corporation (1997) Pets for the Elderly—the Benefits. Memphis, TN (2005); <http://www.bmhcc.org/health/library/agin3394.asp>

Physical Examination

Kathleen M. Wolner

The concept of the adult physical examination has changed significantly in the past several years. As compared to many years ago when having a “physical” meant an annual hour-long history and physical examination, medical care has changed to consist of a series of visits where a broad array of issues are addressed. The care is tailored to the patient’s gender, health history, and family history. Screening for illnesses for which the patient is at risk, counseling for problems that the patient is at risk of, and immunizations are addressed during the visits. The extent of the physical examination is based on the clinical situation. The purpose of the physical examination is to allow the patient to express concerns and explain symptoms he or she is experiencing. It allows the physician to investigate physical complaints further as he or she examines the patient. It is an opportunity to not only obtain further history, but also share a variety of information between the patient and the physician.

What is a Comprehensive Examination?

A critical part of every physical examination is an assessment of the vital signs. This includes the pulse, respiratory rate, and blood pressure. Blood pressure is an extremely important part of any physical examination. An elevated blood pressure of greater than 140 systolic should be repeated with the patient at rest for 5 min to confirm that it is real and not due to anxiety. Before starting antihypertensive medication, at least three abnormal readings should be obtained. The target blood pressure will vary based on the patients’ diseases, for example, a diabetic person’s systolic blood pressure should be less than 130. Body temperature should be checked if you are ill. Weight and height are also very important as they allow the body mass index (BMI) to be calculated. The BMI correlates with body fat.

Any skin lesions should be assessed and if the patient has any complaints regarding his or her hair or scalp, a thorough examination of the entire scalp, skull, and face should be done. The hair and nails can provide early clues to the presence of medical illness.

The physician will continue to examine the skin through the remainder of the physical examination. A comprehensive examination of the eyes is generally done in an ophthalmologist or optometrist’s office. The primary care provider, however, does need to assess the position, alignment, and movement of the eyes in addition to the health of the eyelids and conjunctiva of each eye.

Examination of the ears allows one to inspect the eardrums, canals, and external ears. The sinuses are examined by palpating the areas above the eyebrows in the midline (frontal sinus) and the maxillary sinuses (below each eye). Palpation may reveal tenderness and provide clues to the presence of infection. A light and speculum is used to look into the nose to evaluate the lining (or mucosa), septum, and turbinates, the internal structures of the nose. If hearing is impaired, a referral to an audiologist is indicated. Cerumen, or wax in the ear canal, should be removed before referring the patient to an audiologist for formal testing with an audiogram since excessive wax buildup can impair hearing.

Examination of the mouth and throat includes a check of the lips, oral mucosa, gums, teeth, and tongue. A thorough examination of the oral mucosa, gums, tongue, palate, and tonsils is especially important in persons who use tobacco or alcohol as they are at increased risk of oral cancer. Abnormal spots or non-healing sore areas should be evaluated by a dentist or otorhinolaryngologist (ear, nose, and throat specialist) for possible biopsy. Routine dental examinations and treatment are critical for keeping teeth healthy and pain-free for a lifetime.

Lymph nodes are present in both the front and the back of the neck. Nodes are located in the front of each ear, behind the ear (pre and postauricular) and at the base of the skull (occipital). Small nodes beneath the chin are called the submental nodes while those under the jaw line are the submandibular nodes. Toward the back of the jaw line and below the ear are the tonsillar nodes. Enlarged nodes should be reported to your physician immediately. They can be caused by infection, benign growths, or malignancy (cancer). Normal sized but very tender or hard nodes should also be checked by your physician. The thyroid gland rests in the middle of the neck in the midline and is palpated to check for enlargement or nodules.

Examination of the chest is done using visual inspection, palpation of the chest wall, and listening with the stethoscope. The purpose of listening with the

stethoscope is to identify any abnormal sounds that might indicate bronchospasm (wheezing) or crackling sounds that would be consistent with fluid in the lungs or infection.

Examination of the female breasts is done usually with the patient's arms relaxed and then elevated. It is also helpful to bring her hands to her hips and ask her to press down on the hips so that it may make any abnormalities more prominent. Men with breast pain or swelling should be examined in the same manner. Each quadrant of the breast needs to be fully examined both superficially and with deep palpation. Breast tissue extends up into the axilla under the arm and this portion should also be checked.

The musculoskeletal system examination includes assessment of the arms, legs, shoulders, neck, and the temporomandibular joint, where the mandible (or jaw) connects with the skull. It is important that any painful joints be palpated and an evaluation of the range of motion of the joint be done. Examination of the back includes inspection and palpation of the spine and back muscles. Tapping on each side of the lower end of the rib cage is used to assess inflammation of the kidney and surrounding structures. Tenderness elicited here is referred to as costovertebral tenderness. The "costo-" refers to the ribs and the "vertebral" to the spine.

To fully evaluate the heart, it is important to look at and palpate the carotids, which are the large arteries in the neck. One may listen for carotid bruits, which are muffled sounds, indicating possible obstruction in the vessels. The heart examination starts with inspection and palpation of the chest. Enlargement of the left ventricle can be felt as a "tap" during this part of the examination. Examination of the heart is done by listening to all areas of the heart that coincide with the four heart valves. Your physician is checking for the heart rate, regularity of the rhythm, and murmurs. Murmurs are harsh sounds created by the blood flowing across tight valves (stenosis) or when blood falls backward through a leaky valve (regurgitation).

When examining the abdomen it is important for your health care provider to first look, then listen for the presence of bowel sounds. After bowel sounds are identified, it is appropriate to percuss (tap) the abdomen to identify the size and span of the liver. At this point, the examiner can examine the entire abdomen lightly and then more deeply with the fingers. The kidneys are very deep and covered by the lining of the abdominal wall, and thus cannot be felt on examination.

The aorta is a very large vessel that courses along the back wall of the abdomen before it splits to supply blood to the legs. It can be felt in persons with low abdominal fat or in the case of an enlargement in the aorta (aneurysm).

The genitalia and rectal examination in women is performed with the woman in the stirrups. The external genitalia are examined along with the vagina and cervix. A Pap smear is obtained and palpation of the uterus and the adnexa (ovaries) is done. As long as a woman has had normal pap smears at appropriate intervals during her lifetime, she may stop having them when she reaches age 65. If she is at high risk for cervical cancer, this recommendation does not apply and pap smears should be done at intervals based upon her risk factors. In men, the genital and rectal examination begins with inspection of the perianal areas. A rectal examination allows the examiner to check the anal canal, prostate gland, and rectum. Penis and scrotum are checked along with examination for hernia if the patient voices any concerns about these areas.

The examination of the legs includes evaluation of the vessels, nerves, muscles, and bones. An important part of the examination is palpation to check for swelling in the legs, also known as edema. The pulse on the top of the foot is known as the dorsalis pedis and is one way to assess the adequacy of blood flow to the feet. The ability to move the hips, knees, and ankles through the normal motions is assessed. Joints are checked for redness, swelling, or enlargement. The size and bulk of muscle groups are noted along with unusual movements such as twitching, which is seen in some neurologic diseases.

A neurologic examination assesses the health of the cranial nerves, which are the nerves that supply sensation to the face, head, and neck. The cranial nerves can be checked by looking for the patient's sense of smell, strength of the jaw muscles, corneal reflexes, which are the reflexes of the eye when touched, facial movements, the gag reflex, and the strength of the muscles in the neck. Muscle strength testing is part of the neurologic examination, as is sensation and the evaluation of balance to further assess the cerebellar system. The patient's walking pattern, or gait, should be observed. Deep tendon reflexes are checked by tapping the specific tendons with a small hammer. Muscle health is assessed first by checking the appearance of muscle groups. Are they symmetric in size? Strength is tested and each side is compared to the other. Consideration

is given if a person is right or left handed or has a history of an injury that permanently weakened a part of the body. Sensation, another part of the neurologic examination, is checked in different ways. Light touch is checked using a thin piece of nylon filament. Position sense and testing checks for spinal cord problems is done by having the patient close his eyes while the examiner checks to see if he know where his toes or fingers are being moved. Vibration sense is checked using a tuning fork. The examiner sees if the patient feels the “buzz” or vibration as long as he or she should feel it.

The mental status examination is completed using observation throughout the history and examination. There are formal tests that can be administered quickly in the office to assess thought content, insight, judgment, memory, and abstract thinking.

The appropriate depth of a physical examination clearly must be based upon the patient’s age, his or her known health problems, and the complaints. The depth of an examination for a healthy 70-year old with no symptoms is very different from the depth of an examination given to a 60-year old with several medical conditions. Generally speaking, however, adults over the age of 65 have more medical conditions and thus usually require more frequent and in-depth medical care. In general, what has been described above is a very comprehensive examination and not necessarily what is indicated for each patient at each visit.

A normal physical examination is no guarantee of normal health as it simply allows the physician to evaluate that person on that day. However, a person with no symptoms can become ill shortly after having a normal physical examination. Although this makes the point that a physical examination is no guarantee of sound health, it is a great opportunity to identify and evaluate symptoms. There are other populations of patients who are disadvantaged, either due to homelessness, mental illness, or being in abusive situations. Many times these patients have difficulty keeping appointments, thus, when they do present for care, as much care should be given to them as possible.

Related Topics

- ➊ Cancer screening, ➋ Diabetes, ➌ Pelvic examination, ➍ Preventive care

Suggested Readings

- American College of Physicians (2003) The Medical Knowledge Self assessment Program 13. American College of Physicians, Philadelphia, PA
- Barker LR, Burton JR, Zieve PD (eds) (2003) Principles of Ambulatory Medicine, 6th edn. Lippincott Williams & Wilkins, Philadelphia, PA
- Bates B (1995) A guide to physical examination and history taking, 6th edn. JB Lippincott, Philadelphia, PA
- Carlson KJ, Eisenstat SA, Frigoletto Jr FD, Shift I (1995) Primary care of women. Mosby, St. Louis, MO

Physical Therapy

Paula L. Hensley

Physical therapy as a profession started in the late 1800s to early 1900s as a way of aiding rehabilitation of patients with poliomyelitis, which first affected children in the United States in 1894. One of the first people to practice physical therapy as a profession was a woman named Mary McMillan, who later served in World War I. She and other physical rehabilitation specialists and reconstruction aides, as they were called then, founded the American Women’s Physical Therapeutic Association in 1921. The next year, the name of the organization was changed to the American Physiotherapy Association, and men were admitted. Current practitioners are physical therapists and physical therapist assistants. In the year 2000, approximately 31% of a US physical therapist’s time was spent treating individuals aged 55 and over; by the year 2020, this number is expected to increase by 10%.

Patients are referred to physical therapy for a variety of reasons—some conditions include orthopedic complaints (back, neck pain), orthopedic injuries or surgery, traumatic brain injury, stroke, congenital disorders (in children), and urinary incontinence (especially in women). Physical therapy services typically require prior authorization from insurance companies, and services are not covered in all plans. According to the American Physical Therapy Association, physical therapy includes several steps. First, the physical therapist or physical therapy assistant examines and evaluates patients with disabilities, impairments, functional limitations, and health conditions to formulate a diagnosis, prognosis, and intervention. Impairment refers

to the loss of a psychological, physiological, or anatomical structure or function. Disability means a loss in the ability to perform activities of daily living (ADLs). The person referred for physical therapy may undergo a specialized physical examination by the physical therapist or assistant to evaluate the functional limitation that is of concern.

Second, the physical therapist or assistant designs, implements, and modifies therapeutic interventions to lessen existing impairments and functional limitations. Examples of interventions include therapeutic heat, therapeutic cold (cryotherapy), therapeutic ultrasound, ultraviolet light or laser light, hydrotherapy (using whirlpools and aquatic pools), traction devices, continuous passive motion, compression, and electrical stimulation. Examples of the use of these interventions are discussed below.

Third, the physical therapy professional helps people prevent injury and disability by promoting the maintenance of fitness, health, and quality of life. Fourth, the professional engages in consultation, education, and research.

Age-related physical changes may lead some individuals to needlessly limit physical activities. Pain and a decrease in mobility do not necessarily accompany normal aging. Physical therapists receive training in the anatomical and physiological changes of aging, so they can be wonderful resources in preventing disability and restoring high levels of functioning.

Many people are referred to physical therapy treatment when an injury occurs, often leading to pain. Therapeutic heat is frequently utilized to ease pain, reduce muscle guarding and spasm, and aid tissue elasticity. Heat application may be superficial (e.g., using hot packs, whirlpool, and paraffin) or deep (e.g., using ultrasound or electromagnetic radiation in nonionizing form). Cryotherapy, or cold therapy, helps manage pain, edema, and muscle guarding or spasm. Cold packs, cool whirlpool, and ice massages are three cryotherapy agents. Cold therapy is used for acute injuries, as heat may increase inflammation during the acute period.

Ultraviolet light has been useful in the treatment of dermatological conditions including psoriasis; lasers have been helpful in promoting tissue healing and treating pain. Whirlpool therapy has several clinical uses, including pain relief, wound debridement, wound cleansing, and stimulation of circulation. Traction techniques, such as cervical traction and lumbar traction, are useful in conditions that may benefit from

an increase in the space between vertebrae, such as disk herniation, muscle spasm, and arthritis of the spine. Traction works by applying a pulling force via either free weights or a traction machine to the spine.

Continuous passive motion is a type of passive motion, which is produced using a mechanical device. It is often used postoperatively for joint injuries and reconstructions and is best started within the first postoperative week. Mechanical compression units are another type of motorized device that is used in physical therapy. Such devices deliver compression intermittently to reduce edema. Typically, patients wear compression garments between treatments to maintain improvement.

Lastly, electrical stimulation is used to help manage pain, strengthen muscle, stimulate denervated muscle, and ease edema. It is also beneficial in encouraging circulation, wound healing, and fracture repair. A device called a transcutaneous electrical nerve stimulation (TENS) unit has been especially helpful in the management of pain.

In summary, physical therapy is useful in the prevention and treatment of disability and physical limitation. Multiple techniques are employed by the physical therapy professional to achieve the goals of therapy.

Related Topics

- ▶ Activities of daily living, ▶ Back pain, ▶ Disability, ▶ Occupational therapy, ▶ Pain, ▶ Rehabilitation

Suggested Readings

- Behrens B, Michlovitz S (1996) *Physical agents: Theory and practice for the physical therapy assistant*. FA Davis Company, Philadelphia, PA
- Rothman J, Levine R (1992) *Prevention practice: Strategies for physical therapy and occupational therapy*. WB Saunders Company, Philadelphia, PA
- Scott R (2002) *Foundations of physical therapy: A 21st century-focused view of the profession*. McGraw Hill, New York

Suggested Resources

- American College of Sports Medicine Active Aging Partnership, Urbana, IL; www.agingblueprint.org
- American Physical Therapy Association 2005 Alexandria, VA; www.apta.org

Physician-Assisted Death

Rien M. J. P. A. Janssens · Michelle Champoir

Definitions

Belgium and the Netherlands are the only countries in the world where euthanasia is now a legal practice. In both countries euthanasia is defined as “the intentional life terminating action by someone other than the person concerned, at the request of the latter.” This means that use of the term “euthanasia” presupposes that (1) there is a voluntary request of a person, (2) there is an act of active termination of the person’s life, and (3) this act is carried out deliberately, that is, the act is performed with the intention to end the life of the patient. In the Netherlands, and contrary to Belgium, the law also applies to physician-assisted suicide. If the patient himself or herself swallows the lethal dose this is defined as physician-assisted suicide (PAS). The differences between euthanasia and physician-assisted suicide are, from an ethical point of view, minimal. In both situations, the physician intends to terminate the patient’s life, either by injecting a lethal dose of euthanasia or by providing a lethal dose of medication to the patient. The only ethical difference may be that the patient’s autonomy is better safeguarded in the case of assisted suicide. This however is a contested assumption.

In Belgium, the legislative process took only 4 years, from 1999 until 2002. In the Netherlands however, pleas for legalization of euthanasia started already in the late 1960s. Since 1990, large-scale empirical research studies have provided insight in the Dutch practice of euthanasia and PAS. The last study is from 2001. The study results have caused amazement in other countries and often gave rise to a vehement, often polarized, international debate. Before we sketch out what we believe are the most salient ethical aspects of this international debate, we will first describe the history of the Dutch policy and analyze some of the empirical study results.

History of Euthanasia and PAS Debate in the Netherlands

In 1969, a remarkable booklet appeared with the title *Medical Power and Medical Ethics*. The author,

J.H. van den Berg, who was a psychiatrist, was one of the first who had perceived that application of medical technology could, under circumstances, do more harm than good. He concluded that in an era of increasing technological interventions, able to prolong patients’ lives endlessly, it should no longer be the doctor who decides. The doctor’s medical power should be handed over to the patient or to the incompetent patients’ loved ones. The choice to be kept alive by medical technology is theirs and they should have the power to, either passively or actively, end their lives. Euthanasia, according to the author, is a logical result of the medical technological development. He thus predicts “Not that it already happens: the new medical ethics is still too young. But it will happen. It has to happen.” Hence, for example, in the United States the ethical debates are focused on withholding and withdrawing treatment whereas in the UK the hospice movement originated, and in the Netherlands euthanasia has been a central topic ever since the origins of modern medical ethics.

Van den Berg’s prediction was soon to come out. In 1971, the first euthanasia case was brought before court: the so-called Wertheim case. An older woman suffering from the consequences of a cerebrovascular accident (CVA) had tried to commit suicide, which failed. She wanted to die. Her daughter, who was a general practitioner (GP), committed euthanasia using high dose of morphia. The court ruled that she was guilty. The verdict however was remarkably low: one week probational. Many people sympathized with the GP and were to form the Dutch Voluntary Euthanasia Society in 1973. It was to take until 1984 that a physician was acquitted for committing euthanasia. The Dutch Supreme Court ruled that the physician had rightfully appealed to force majeure (defense of necessity). In 1985, a state commission was assigned at the request of the Dutch Parliament to advise on euthanasia legislation. The vast majority of the commission advised that euthanasia should be legalized if certain conditions are met. As noted above, this was to take another 17 years. Until legalization, there had been a policy of pragmatic tolerance. On the one hand, euthanasia was a penal offense with a maximum prison sentence of 12 years. On the other hand, most euthanasia cases were dismissed after an inquest. This was the case if the physician had observed the so-called conditions of carefulness that were established in criminal and disciplinary jurisprudence after 1971. Currently, the penal code articulates the following criteria for euthanasia and PAS:

1. The patient's request is voluntary and well considered.
2. The patient's suffering is unbearable and hopeless.
3. The patient has been informed about the situation and the prospects.
4. There is no reasonable alternative.
5. A second, independent physician has been consulted.
6. The physician has performed the act of life termination with due care.

Since 1994, the physician is also legally required to report his act of euthanasia or PAS. This requirement is formulated in the civil code. Between 1994 and 1998 the physician had to report to the public prosecutor. In 1998, five regional committees were established which were to assess retrospectively whether all conditions of carefulness had been met. Each committee consists of a physician, a lawyer, and an ethicist. If the committee judges that the conditions have not been met, they send their findings to the public prosecutor who will then bring the case to court. If, according to the committee, the conditions are met, the physician is acquitted.

Since 1969, the practice of euthanasia has been subject to intense political, legal, ethical, and medical involvement. The developments are far from self-evident, as other countries have taken different directions in dealing with the challenges posed by modern medicine. However, while euthanasia occurs also in countries where it is illegal, the Dutch have created a system in which it can be practiced openly albeit publicly controlled. This openness gave opportunity for various researchers to obtain empirical data regarding the prevalence of euthanasia.

Nationwide Empirical Studies

Three large-scale empirical studies have been conducted in 1991, 1996, and 2001. According to the latest figures of 2001, euthanasia is performed 3,600 times and PAS 200 times, annually. Taken together, physician-assisted death occurs in 2.8% of all 140,000 deaths in the Netherlands. Taken into consideration that annually 9,700 patients explicitly request euthanasia, it can be concluded that roughly one third of the requests are granted. In a study of the physicians, 54% of the physicians who participated in the study carried out euthanasia, at least once, in the past; 34% did not but would in specific circumstances be willing to; and 8% would not be willing to carry out euthanasia

but would refer patients to more willing colleagues. The number of physicians who oppose euthanasia and are not willing to refer is negligible. 77% of the patients suffered from cancer. The most common reasons for the patients' euthanasia requests were

1. Meaningless suffering (65%)
2. General weakness or fatigue (43%)
3. Decay or loss of dignity (44%)
4. Prevention of decay (35%)
5. Prevention of further suffering (36%)
6. Dependence (33%)
7. Pain (29%)

In 2001, 54% of the euthanasia and PAS cases were reported to the regional committees, which is more than in 1996 when only 41% of the cases were reported. Thus, strictly speaking, in 46% of the cases, the law is trespassed and public control of what actually happened in these cases is absent. The latest annual reports of the regional committees have shown a decrease in the number of euthanasia and PAS cases. This either implies that physicians have become less willing to report, or that the factual number of euthanasia and PAS cases is decreasing. A fourth nationwide study, which is currently in preparation, will provide clarity.

Perspectives from the United States and International Debate on Physician-Assisted Death

In 1906, proposals to legalize voluntary euthanasia in case of incurable diseases or traumas were discussed in states like Ohio and Iowa. A majority rejected the proposals. One could argue that debates on the issue of euthanasia in the United States date back far longer than in the Netherlands where the debate is only 40 years old. Yet, although as early as the beginning of the last century physicians in the United States were members of societies for voluntary euthanasia or even founders, the majority of the medical profession remained opposed. Until today the American Medical Association (AMA), which favors abortion, remains opposed to legalization of euthanasia. And whereas in the Netherlands court rulings unanimously contributed to a legalization process, the US Supreme Court rejected in 1997 a constitutional right to die, thus implying a crucial moral difference between practices such as terminal sedation and withdrawing life-sustaining treatment

on the one hand and euthanasia and PAS on the other. Three years earlier, the Oregon Death with Dignity Act took effect after a 51 to 49 vote (almost half the voters supported PAS in California and Washington). Oregon patients obtain, under strict conditions, a right to get prescriptions from their physicians to end their lives with dignity. The euthanasia debate in the United States can be characterized by a discourse in which patients' rights are dominant. How can a right to exercise control over time and manner of death be united with States' and physicians' duty to protect the lives of citizens. The compromise that has been made in Oregon to legalize PAS but not euthanasia can thus be explained. The physician only orders the lethal prescription but refrains from actively administering it. In spite of what has been said above on supposed minimal moral differences between PAS and euthanasia, within a judicial perspective, a discourse of rights, the differences may not be so minimal. Be that as it may, from the early 1970s, stimulated by cases such as Karen Ann Quinlan and Nancy Cruzan, the US ethical debates focused on withholding and withdrawing life-sustaining treatment. The majority of physicians and lawyers will remain opposed to euthanasia and PAS.

The topic of physician-assisted death remains highly contested. Taken into account, the enormous number of publications on euthanasia and the wide variety of arguments used for and against, it is in this context impossible to address all the nuances of the international debate. Yet, at least some salient topics can be clarified with the help of the requirements of carefulness that have been formulated above. We will focus on these topics, leaving aside other important arguments such as the slippery slope argument and arguments around the role of the public health care system. We will however make clear that the six conditions of carefulness are with no exception amenable to ethical debate.

Voluntariness of the Patient's Request

Can a request be voluntary if at the same time the patient suffers unbearably? This is not self-evident and raises the issue of the autonomy of patients' requests. It seems to be the duty of the physician to carefully assess what the patient actually means when she or he asks to be killed. It may well be that behind

the request for euthanasia is a request for help and relief from suffering. Philosophically speaking, it is not clear whether one can autonomously request for something that destroys the necessary condition for autonomy, namely life.

Unbearable and Hopeless Suffering

The concepts of unbearable and hopeless suffering should be carefully distinguished from one another. In the end, the unbearability of the patient's suffering is a subjective experience. Yet, at the same time, the physician should empathize with the patient's suffering. She or he should be convinced that, indeed, for this individual patient, the suffering has become unbearable. Decisions around the unbearability of the suffering are not purely subjective and are impossible to objectify, but do contain elements of intersubjectivity. The patient and the physician are both involved.

Decisions about the hopelessness of suffering are in the end medical decisions. Is it clear that no alternative options are viable anymore? Specifically in cases where the suffering is of psychiatric or psychosocial nature, it seems very contentious to decide about hopelessness. In 1993, a Dutch physician was acquitted after having assisted in the suicide of a woman who was suffering psychologically. Only in 1998, the Supreme Court ruled that a medical diagnosis is required to legally carry out euthanasia.

Patient Has Been Informed about the Situation and Prospects

Informing a patient about his or her prospects requires, next to an empathic, human attitude, also medical knowledge and expertise. Many patients request for euthanasia out of anxiety of what will happen to them in the future. They want to prevent further suffering, decay, suffocation, etc. However, is this anxiety justified? In 1994, a television documentary was broadcasted in the Netherlands about an amyotrophic lateral sclerosis (ALS) patient who requested for euthanasia. One of the reasons for his request was the prevention from suffocation. But do ALS patients actually die from apnea? Many far advanced ALS patients get infections which, when left untreated, result in a natural dying process.

There is No Reasonable Alternative

According to many palliative care specialists, it is in cases of emergency that it is always possible to render the patient asleep so that she or he does not have to experience the unbearable suffering any longer. This option of terminal sedation seems to be a viable alternative to euthanasia. At the same time, patients can have good reasons to refuse terminal sedation. They may associate a sedated deathbed with less dignity, loss of control, and increase of dependence. For their loved ones it may be difficult to witness the patient in deep sleep, unable to communicate anymore.

An Independent Physician Has Been Consulted

Many spokespeople argue that this independent physician should have expertise in palliative care, or when it concerns a psychiatric patient, in psychiatry. Indeed, specialist palliative care may prevent or take away requests for euthanasia. It is vital that before a euthanasia request is granted, the physician makes sure that the patient is not clinically depressed. However, the Dutch law does not stipulate specific requirements.

The Life-Terminating Act is Carried Out with Due Care

Although data regarding the means used to carry out euthanasia are not available, it is clear that morphia is still used to shorten or terminate patients' lives. Moreover, roughly in about 20% of the cases of physician-assisted suicide in the Netherlands, the attempt fails (for instance because of the patient's inability to swallow the awfully tasting lethal dose of medications). Currently, specialized physicians are available in the Netherlands who provide consultations regarding the administration of proper euthanasia.

Future Perspectives

As mentioned above, the euthanasia debate is richer and contains far more views and arguments than presented here. On the basis of the central requirements that are formulated in the Dutch penal code we have only been able to touch on some salient issues of the debate. In the

Netherlands and Belgium, it is unlikely that the legalization of euthanasia will be undone in the near future. Many other countries face difficult decisions. In the UK for instance, a political debate is now being held on possible legalization of euthanasia under specific circumstances.

However, euthanasia remains a means of last resort, if it is considered justifiable at all, only in specific and exceptional circumstances where the suffering of the patient is unbearable and hopeless. All cases of euthanasia share elements of tragedy. This means that in order to prevent tragic decisions to terminate the lives of the most dependent and weak members of our societies, a further development of palliative care is imperative.

Related Topics

- ▶ [Doctor–patient relationship](#), ▶ [End-of-life care](#),
- ▶ [Euthanasia](#), ▶ [Hospice](#), ▶ [Suicide](#)

Suggested Readings

- Gordijn B, Janssens MJPA (2000) The prevention of euthanasia through palliative care: New developments in the Netherlands. *Patient Educ Cou* 41:35–46
- Onwuteaka-Philipsen B, van der Heide A, Koper D et al (2003) Euthanasia and other end-of-life decisions in the Netherlands in 1990, 1995, and 2001. *Lancet* 362:395–399
- Schotsmans P, Meulenbergs T (eds) (2005) Euthanasia and palliative care in the low countries. Peeters, Leuven, the Netherlands
- Ten Have HAMJ, Clark D (eds) (2001) The ethics of palliative care: European perspectives. Open University Press, Buckingham, England, pp 233–252
- Thomasma D, Kushner T, Kimsma G, Ciecieski-Carlucchi C (eds) (1998) Asking to die: Inside the dutch debate about euthanasia. Kluwer, Dordrecht, the Netherlands
- van den Berg HJ (1969) *Medische Macht en Medische Ethiek*. Nijkerk: Callenbach, the Netherlands
- van der Wal G, Deliens L (2003) The euthanasia law in Belgium and the Netherlands. *Lancet* 362:1239–1240

Physician-Assisted Suicide

Michelle M. Cornette · Paul Tiger

Physician-assisted suicide is a term which falls along a continuum of practices that include euthanasia and withdrawal of life-sustaining treatment. Physician-assisted suicide can be distinguished from euthanasia

in that the patient is given the instructions or means of ending their own life; the physician does not actually perform the act. Suicide “assistance” may take the form of (1) providing information to patients on how to commit suicide, (2) providing the means to commit suicide to patients, or (3) providing “moral” support, supervising or observing the suicide, or assisting in carrying out the physical act.

Interest in assisted death is growing due to advances in health care technology which prolong life longer than in previous generations, a growing population of older adults, and an increasing emphasis on patient autonomy and involvement in medical decision making also contribute to an increased interest. Although the overall prevalence of physician-assisted death practices is unclear, an estimated 208 people have used medication to end their lives since physician-assisted suicide was legalized in the state of Oregon in 1994. Data also suggests that decision making regarding end-of-life issues is not uncommon among physicians; research has suggested that approximately 26% of physicians in Washington state and 21% of physicians in Oregon, for example, have reported being asked by their patients for “help in hastening death.”

Arguments for and against Physician-Assisted Suicide

Arguments supporting physician-assisted suicide center on the importance of patient autonomy and control over one’s own destiny, extending beyond the right to refuse unwanted treatment. They also focus on a patient’s right to a dignified death in circumstances of intractable pain, lack of meaningful quality of life, or dehumanization. Factors that will likely continue to influence case-by-case decisions concerning physician-assisted suicide include certainty of death, likely imminence of death, efficacy of available treatments for various forms of physical and mental illness/pain, and how quality of life is defined.

Arguments against physician-assisted suicide focus on the danger of a “slippery slope,” which could lead to active, involuntary euthanasia in which vulnerable populations—children, disabled, mentally ill, destitute, etc.—are preferentially targeted. Indeed, the experience of euthanasia and physician-assisted suicide in the Netherlands has shown that Dutch physicians have at times failed to comply with reporting and oversight rules, and that children and incompetent adults have been euthanized, violating the requirement of

voluntary, competent patient consent. Others argue that a role in ending life is morally incompatible with a physician’s duty to do no harm. They argue that proper palliative care, control of pain, discomfort, and depression can provide the opportunity for a dignified, meaningful death.

Attitudes Toward Physician-Assisted Suicide

Some sources indicate that a majority of the general population may be in favor of physician-assisted suicide under certain circumstances, but that clinicians are more divided. One study explored willingness to engage in physician-assisted death practices among consultation-liaison psychiatrists. Psychiatrists did not support physician-assisted death practices as performed by themselves or non-physicians, though they did support withdrawal of life support, and were slightly more accepting of referral or other physician involvement in physician-assisted death practices. In a related study, medical students expressed attitudes, which were largely similar to that of physicians’ in the prior study. Additionally, those students more influenced by religious beliefs were more opposed to physician-assisted suicide, whereas those influenced by personal philosophy were more uncertain regarding such practices. This study further found that women were more uncertain than men regarding assisted death practices.

Ethical and Legal Issues

Certain practices along the end-of-life continuum are widely accepted and legal, such as withdrawal of life-sustaining treatment in a competent, terminally ill patient who requests it. By contrast, a fair amount of ethical/legal controversy exists around the use of physician-assisted suicide and active, voluntary euthanasia.

Currently, physician-assisted suicide for terminal illness is legal only in the state of Oregon through the Death with Dignity Act, enacted in 1994. This allows a physician to give a patient medication for the purpose of ending life, which the patient then administers. Two doctors must confirm that the patient is of decisional capacity and is an Oregon resident with a “terminal disease likely to end his or her life within six months.” In the United States, the Supreme Court has decided that individual states have the right to prohibit or

support physician-assisted suicide. Voluntary, active euthanasia has been practiced (and is legal) in certain cases in the Netherlands, but is not legal in any state in the U.S. In addition, the American Medical Association's Code of Medical Ethics currently prohibits physician-assisted suicide.

In 1997, two important U.S. Supreme Court cases addressed the legality of physician-assisted suicide. While the case of *Washington versus Glucksberg* rejected the notion that individuals possess a fundamental right to physician-assisted suicide, the verdict of *Vacco versus Quill* drew a distinction between the legality of assisted suicide versus withdrawal of life-sustaining treatment. Consistent with these rulings, some experts contend that American law emphasizes a principle of freedom from "unwanted bodily invasion," which would favor the legitimacy of withdrawing life-sustaining treatments but not recognize a right to die, or to demand help to do so. Nonetheless, these cases and their rulings were controversial, as was evident in a series of opinions rendered by the justices following the disposition of both cases.

Terminal Sedation

An important, related practice in end-of-life care is "terminal sedation," an act that has been justified by an ethical principle known as the double-effect. This principle states "a physician may never *intend* the death of a patient but may sometimes perform actions that may *foreseeably* result in death." In practice, terminal sedation involves the administration of sedatives with the intention of providing comfort, but which also sedate the patient to unconsciousness and may lead to the patient's death. Importantly, terminal sedation often includes the withholding of artificial nutrition and hydration. If the patient or decision maker understands the risks and benefits, this practice is currently considered legal. Critics, however, argue the practice is not distinguishable from physician-assisted suicide.

End-of-Life Care

In light of the controversy surrounding physician-assisted suicide, how are treatment providers and patients to proceed? The American Medical Association's Institute for Ethics has prepared a summary designed to help physicians and other clinicians faced

with patient inquiries about aid in dying. The Institute advocates for assessing decision making competence, depression, pain, and other physical, mental, spiritual, and social stressors. They promote inquiry about goals for care, discussion of treatment options, the seeking of consultation, and the need to assure patients that their end-of-life wishes (legally and ethically compatible) will be followed within the context of current principles of care.

Patients should ask about options for pain relief and palliative care at the end of their lives. They should prepare advanced directives clarifying their wishes on end-of-life issues and life-sustaining treatments. Physicians should be prepared to, when appropriate, deliver—or refer their patients to—skilled palliative or hospice care. If patients can approach the end of their lives with the knowledge that their pain and suffering will be attended to in a caring, respectful manner, perhaps some of the trepidation concerning life's final transition can be alleviated.

Related Topics

▶ Advance directives, ▶ End-of-life care, ▶ Euthanasia, ▶ Hospice, ▶ Suicide

Suggested Readings

- Emanuel LL (2005) Clinics in geriatric medicine, vol 21. , Saunders, Philadelphia, PA
- Ferris FD (2004) Last hours of living. *Clin Geriatr Med* 20:641–667
- Junkerman C, Schidermayer D (1998) Practical ethics for students, interns, and residents. University Publishing Group, Hagerstown, MD
- Meisel A (2005) Ethics and law: Physician-assisted dying. *J Palliat Med* 8(3):609–621
- Roberts LW, Muskin PR, Warner TD, McCarty T, Roberts BB, Fidler DC (1997) Attitudes of consultation-liaison psychiatrists toward physician-assisted death practices. *Psychosomatics* 38:459–471
- Warner TD, Roberts LW, Smithpeter M et al (2001) Uncertainty and opposition of medical students toward assisted death practices. *J Pain Symptom Manage* 22(2):657–667

Suggested Resources

- Oregon Department of Human Services, Physician-Assisted Suicide; <http://egov.oregon.gov/DHS/ph/pas>
- University of Washington School of Medicine; <http://depts.washington.edu/bioethx/topics/index.html>

Pneumonia

Thomas W. Heinrich · Mark T. Wright

Pneumonia is an infection of the lungs and represents a serious medical condition. It is usually caused by an infection of the lower respiratory tract in contrast to the more common cold or flu, which most frequently involves only the upper respiratory tract. Pneumonia is commonly caused by bacterial, fungal, or viral infections. If it has its onset in the general community, it is known as community-acquired pneumonia, whereas pneumonia that occurs in individuals in health care institutions is called nosocomial pneumonia. A third common occurrence is for patients to aspirate contents of their oropharynx into their lungs and cause a bacterial infection of the lung known as aspiration pneumonia.

Incidence

Pneumonia is common among older adults. In the United States, community-acquired pneumonia affects approximately 2.5 million adults each year. One third of affected individuals require hospitalization for pneumonia or related medical complications. The incidence of community-acquired pneumonia and subsequent hospitalization increases steadily with age. This rise in incidence is present even when rates are adjusted to account for the patients' underlying chronic health problems.

Pneumonia is the sixth leading cause of death in the United States and represents the leading infectious cause of death in individuals older than age 65. The annual mortality rate of patients hospitalized with pneumonia varies and can reach as high as 35%. In addition, patients with pneumonia have a higher rate of hospital readmission and mortality in the year following initial admission. Pneumonia is also more common in residents of long-term care facilities than in community dwellers. It has been identified as the leading cause of death in nursing-home residents and is the leading infectious cause of transfer to a hospital from a nursing home.

Risk Factors

Elders have several important risk factors that may predispose them to pneumonia. These include multiple

underlying comorbid medical conditions, disadvantaged socioeconomic status, and age-dependent changes in lung function and the immune system. Dehydration, malnutrition, and other forms of pulmonary disease such as chronic obstructive pulmonary disease (COPD) all represent further risk factors for pneumonia in the older adult. Potential contributing factors often present in aging populations include inadequate nutrition, crowded living situations, exposure to air pollutants, poor medical care, and lack of immunizations. Smoking also is a contributing risk factor for pneumonia regardless of patient age. Physiologically, older adults may exhibit a suppressed cough reflex and impaired mucociliary clearance. These factors may prevent the patient from clearing potentially infectious secretions from the respiratory tract. Changes in cell-mediated and humoral immunity associated with aging may further predispose elders to respiratory infections through a weakened immune response to potential infection.

Clinical Presentation

Adults with pneumonia usually present a typical constellation of signs and symptoms. Examination of a patient suffering from pneumonia usually reveals a cough, fever, chills, sputum production, generalized malaise, shortness-of-breath, vital sign changes, and abnormal lung sounds. The older adult with pneumonia, however, often presents atypically with fewer respiratory complaints and a lower incidence of fever. They may instead experience confusion, disorientation, agitation, wandering, or frequent falls as their only initial sign of infection. The lack of a typical presentation of pneumonia in the elderly often obscures the diagnosis and delays appropriate treatment. These challenges coupled with the significant medical comorbidities often present in the older patient may contribute to the increased morbidity and mortality observed in the geriatric population suffering from pneumonia.

Laboratory and radiologic studies are often necessary to complete the diagnostic evaluation of a pneumonia patient. Patients with pneumonia may exhibit a high white blood cell count, also known as leukocytosis, suggesting an infectious process. Measurement of oxygen saturation often reveals a degree of hypoxia. Chest radiographs are an essential part of the workup of patients suspected of having pneumonia, as they

typically show patchy or diffuse pulmonary infiltrates. Cultures of the patient's sputum are sometimes performed in an attempt to isolate the infectious agent responsible for the pneumonia. However, extensive diagnostic testing only determines the causative agent (bacteria, fungus, or virus) in approximately 50% of hospitalized patients. Therefore, the diagnosis of pneumonia is largely clinical and based on the patient's presentation coupled with compatible radiologic findings on chest x-ray.

Causes

Bacteria and respiratory viruses account for a majority of cases of pneumonia. The specific pathogen responsible for the infection depends on multiple patient variables and there is no regular association between clinical signs and symptoms, laboratory findings, and specific etiologic pathogens. *Streptococcus pneumoniae* (i.e., pneumococcus) remains the most frequently identified organism in older patients with either community-acquired or nursing home-acquired pneumonia, followed by *Haemophilus influenzae* and *Staphylococcus aureus*. Institutionalized patients are at a greater risk of developing pneumonia from "atypical agents" (e.g., *Chlamydia pneumoniae*) and typical organisms that are resistant to various antibiotics.

Aspiration pneumonia is also a major cause of pneumonia in the elderly. Aspiration pneumonia should be suspected in individuals with medical or neurologic conditions, which compromise the level of consciousness or impair the ability to protect the patient's airway. Aspiration pneumonia often stems from "silent aspiration," or aspiration that is not apparent to patients and caregivers. Additionally, coinfection with more than one infectious agent is not uncommon.

Treatment and Prevention

Antimicrobial therapy is the mainstay of treatment for pneumonia in the older adult. However, because the specific agent responsible for the infection is not routinely identified, the treatment is largely empiric and based on several important factors. Important considerations when choosing antimicrobial therapy include the severity of the pneumonia, comorbid medical conditions, age of the patient, and the prevalence of

drug-resistant organisms. Rapid initiation of antimicrobial treatment is imperative to ensure a favorable clinical outcome, as studies have shown that delayed antibiotic therapy has been associated with increased rates of death.

Once the diagnosis of pneumonia has been made and appropriate treatment initiated, the determination of the need for hospitalization is made on the basis of the severity of illness and potential for adverse health outcomes. The duration of antibiotic treatment is based on the type of pathogen responsible for the infection (suspected or identified), type of antibiotic selected, severity of illness, complications, and the presence of coexisting medical illness. The average length of treatment is 7–14 days and clinical improvement usually occurs between days 3 and 5. Importantly, radiologic changes on chest x-ray often lag behind clinical improvement and in the elderly can take as long as 12 weeks to clear.

The potential for pneumonia to increase morbidity and mortality in aging populations, makes reduction of risk factors for this dangerous infection imperative. As a result, several potential means of limiting the occurrence of pneumonia have been identified. Influenza infection greatly increases the risk of community-acquired bacterial pneumonia, so patients at risk of pneumonia should receive the influenza vaccine annually unless contraindicated. The pneumococcal vaccine has also been shown to lessen the occurrence of pneumococcal pneumonia. Lack of patient and physician awareness of the pneumococcal vaccine may limit its use. Smoking cessation may also decrease the risk of developing certain types of pneumonia. Long-term oral hygiene has shown benefit in reducing the incidence of pneumonia in elderly nursing home residents. Feeding by nasogastric tube has also been recognized as a potential risk factor for some types of pneumonia.

Conclusion

Pneumonia is a common and dangerous medical condition, which challenges health-care provider and patient alike. Signs, symptoms, and radiologic findings are often nonspecific for the type of lung infection present. Rapid initiation of empiric antimicrobial treatment is often critical for good clinical outcome. As the population of the United States ages, the incidence of pneumonia and associated adverse consequences are

likely to increase proportionally. Therefore, pneumonia is likely to remain an important infectious disease for decades to come.

Related Topics

- [Acquired immunodeficiency syndrome](#), ➤ [Dysphagia](#), ➤ [Immunizations](#), ➤ [Nosocomial infections](#), ➤ [Tuberculosis](#)

Suggested Readings

Janssens J (2005) Pneumonia in the elderly (geriatric) population. *Curr Opin Pulm Med* 11:226–230

Loeb M (2004) Pneumonia in the elderly *Curr Opin Infect Dis* 17:127–130

Suggested Resources

American Lung Association 2005 New York; <http://www.lungusa.org/site/pp.asp?c=dvLUK900E&b=35692>

Polyamory

Sarah A. Smith · Julianne M. Serovich

In American culture, monogamy or the lifelong sexual and emotional commitment of two individuals to each other is the norm. Unspoken and less frequently practiced is polyamory. Polyamory, from the Greek and Latin roots meaning “many loves,” describes a diverse range of nonmonogamous relationship styles that heterosexuals, lesbians, gay men, and bisexuals practice. To be successful, individuals in polyamorous relationships typically negotiate a set of rules or agreements around issues such as safer sexual practices, social proximity to other lovers, frequency of contact between lovers, and level of emotional and sexual involvement between partners. These agreements make polyamory distinctly different than infidelity or promiscuity, as all partners are fully aware of the arrangements. Although infidelity and cheating can occur within the context of polyamory, polyamorous

individuals strive to be upfront and open about their desires and practices, which is why polyamory is sometimes referred to as “responsible nonmonogamy.”

Although there is some disagreement over terminology used to describe various multipartner relationships, they can be broadly categorized as primary, secondary, and tertiary. Primary partners are committed to a long-term, supportive sexual and emotional relationship and typically have a high level of involvement in each other’s daily lives (e.g., share housing and finances). Secondary partners may also have a long-term, committed sexual and emotional relationship, but typically live separately and do not share finances. Tertiary partners may be involved in a relationship for a brief period of time or have a long-term, but infrequent relationship. Although tertiary relationships may be characterized as highly intimate, individual’s lives are typically not as intertwined. It is possible to have any number and combination of primary, secondary, and tertiary partners.

No matter the arrangement, polyamorous relationships are typically characterized by mutual respect and caring for all partners. Because of this, many polyamorous individuals claim that the lifestyle, or “lovestyle,” is different than swinging, which involves more casual sex and typically does not allow for emotionally based relationships to develop. This distinction is tenuous, however, because some polyamorous individuals resist such hierarchical classification of relationships and reject such differences. These individuals may refer to their lifestyle as an “open relationship,” instead of a “polyamorous relationship.”

Multipartner relationships may be open or closed to outside sexual partners. For example, a triad of lovers may decide to be closed and thus only have sexual relations with members of that intimate network. Such closed polyamorous relationships are also called polyfidelity and are often considered a safer sex strategy. An open relationship among a small group of lovers does not have such rules on sexual relationships; however, there is usually an agreement between partners to disclose new sexual relationships or to consistently practice safer sex.

Although there has been little research on polyamorous relationships, practitioners often claim that with communication and support these relationships can be just as healthy as traditional monogamy and perhaps healthier than serial monogamy. Polyamory advocates claim that multipartner relationships may be

an excellent solution for couples with different sex drives or different emotional or sexual needs. Furthermore, some believe polyfidelity or intimate networks are conducive for childrearing because they mirror the support provided by extended family.

Just as with monogamous relationships, feelings of jealousy are commonly experienced by those who practice polyamory. Unless agreements and commitments between partners have been violated, feelings of jealousy typically indicate an individual's insecurity, inability to trust, or lack of self-esteem. Polyamorous individuals are encouraged to process through feelings of jealousy and grow emotionally from the experience. The ability to do so, however, is a learned, ongoing skill and is usually more successful with the support of a skilled therapist or friends.

Because the Western world is couple-centric and values monogamy, polyamorous individuals often remain closeted or go through a "coming out" process as they accept their own desires and communicate those to others. Polyamorous individuals are often stigmatized as promiscuous, self-centered, irresponsible, and unable to commit, thus experiencing an emotional toll. It is important for polyamorous individuals to find a supportive therapist and community to help deal with and minimize the stigma of multi-partner relations.

Currently, there is no published research that examines how polyamorous individuals experience the process of aging. In fact, there is very little information, academic or otherwise, that discusses aging and polyamory. Of particular interest would be how polyamorous people fair economically and socially in retirement. Do polyamorous relationships provide support in old age differently than monogamous couples? Are written agreements about financial support and caregiving, used in lieu of legally recognized spousal benefits and contracts, treated equally in court?

Related Topics

• Safer sex

Suggested Readings

Anapol DM (1997) Polyamory: The new love without limits. IntiNet Resource Center, San Rafael, CA
 Easton D, Catherine L (1997) The ethical slut. Greenery Press, San Francisco

Matik W-O (2002) Redefining our relationships: Guidelines for responsible open relationships. Defiant Times Press, Oakland, CA
 West C (1996) Lesbian polyfidelity. Booklegger Publishing, San Francisco

Polymyalgia Rheumatica

Douglas Flagg

Polymyalgia rheumatica (PMR) is an inflammatory condition that typically causes pain and stiffness in the neck, shoulders, and pelvic or hip muscles. It occurs almost exclusively in those over the age of 50 and occurs more often with increasing age. It is fairly common, occurring in approximately 7 out of 1000 people over the age of 50. PMR usually begins with stiffness in the morning that lasts longer than 1 h. The stiffness is usually mild in the beginning, but increases with time and may become so severe as to cause difficulty getting out of bed. Occasionally, symptoms begin quite abruptly and become incapacitating almost overnight. Although the neck, hips, and shoulders are most commonly affected, these areas rarely have observable swelling. The hands, wrists, and knees are involved less often, but significant swelling may be observed in these joints. Symptoms such as fatigue, weight loss, and less commonly fever may occur in about one third of patients. A severe headache, jaw pain, or new visual symptoms suggest the possibility of a more serious problem, giant cell (or temporal) arteritis, which may occur in association with PMR. This requires immediate medical evaluation, as giant cell arteritis can cause sudden irreversible blindness.

The diagnosis of PMR is based on the typical clinical presentation, and is almost always associated with an elevation of the erythrocyte sedimentation rate (ESR), an indicator of inflammation. In PMR, the ESR is usually greater than 40 mm/h (normal is up to 30). A normal ESR does not rule out the diagnosis however, and a highly elevated ESR does not necessarily mean more severe disease. The ESR is also elevated in many conditions other than PMR. Other laboratory abnormalities that may occur include mild anemia and occasionally abnormal tests of liver function.

Treatment with moderate doses of corticosteroids, such as prednisone 15–20 mg daily, usually leads to a prompt response with most symptoms resolving in

2–3 days. This response is dramatic enough that some consider it a criterion for diagnosis of PMR. Most would agree that if adequate doses of corticosteroids do not improve symptoms, the diagnosis of PMR should be reconsidered. The average duration of treatment is between 1 and 4 years, but some patients require longer treatment. Corticosteroids may cause numerous adverse effects, so the minimum effective dose is to be used. When the corticosteroid dose cannot be lowered to an acceptable level, other treatments, such as methotrexate or α -TNF inhibitors may be considered, although their efficacy is unproven. Due to the long duration of corticosteroid therapy, treatment to prevent corticosteroid-induced osteoporosis is often given along with the corticosteroids. This may include measurement of bone density, calcium and vitamin D supplementation, and medications to treat or prevent osteoporosis.

Other inflammatory conditions such as rheumatoid arthritis, infections, and malignancy may rarely mimic PMR. Usually, however, the diagnosis of PMR is clear because of its characteristic symptoms, elevated ESR, and prompt response to treatment. In 10–15% of patients however, PMR may coexist with the above-mentioned condition called giant cell arteritis. Treatment of giant cell arteritis usually requires much higher corticosteroid doses than PMR. As giant cell arteritis may develop during the treatment of PMR, symptoms of headache, jaw pain with chewing, and visual symptoms should be evaluated without delay, even in people who have responded well to treatment for PMR.

Most people affected by PMR will respond rapidly to treatment. With careful attention, side effects of treatment are manageable. There is no increase in mortality and people with PMR are generally able to lead normal lives with minimal effect on their quality of life or function.

Related Topics

▶ Giant cell arteritis, ▶ Osteoarthritis

Suggested Readings

Klippel JH (ed) (2001) Primer on rheumatic diseases, 12th ed. Arthritis Foundation, Atlanta, Georgia
 Salvarani C, Cantini F, Boiardi L, Hunder G (2002) Polymyalgia rheumatica and giant cell arteritis. *N Engl J Med* 347:261–271

Suggested Resources

Hunder GG Polymyalgia Rheumatica (2005) UpToDate online v.13.3, revised March 22, 2005. www.uptodate.com

Polypharmacy

Matthew A. Fuller

Polypharmacy continues to be significant issue for health care professionals and patients alike. It may be defined in many ways such as based on the number of drugs taken or specific drug-related problems. The Centers for Medicare and Medicaid Services defines polypharmacy in older adults as the use of two or more drugs without indications or for the same purpose, or the use of a drug to treat the adverse reactions of another drug. Others have defined polypharmacy as the use of two or more drugs of the same chemical class or with the same or similar pharmacological actions to treat different conditions. In addition, one study defined minor polypharmacy as two to four drugs and major polypharmacy as five or more drugs.

It is well known that the simultaneous use of multiple drugs can produce noxious effects. In older adults, there is not only a high risk of polypharmacy but also the prevalence of polypharmacy is high. Polypharmacy may lead to drug–drug interactions and adverse drug reactions for a variety of reasons. Older adults often have multiple chronic medical conditions for which they see multiple providers and may get their prescriptions filled at multiple pharmacies. They may also tend to have frequent hospitalizations. Further, new drugs are developed and brought into the market without adequately (and often no study) being evaluated in older adults. Other situations, which may lead to adverse events due to polypharmacy, are that clear end points of drug therapy may not be established and patients might not be reevaluated for the need to continue drugs. A lack of communication between pharmacies and multiple providers of care can also contribute to polypharmacy.

Drug regimens in older adults should be reviewed regularly for unnecessary drugs, including duplication of therapy; those without indications; and drugs treating adverse effects of other drugs. The absolute number of prescribed medications, although important, should

not be the sole determinant of polypharmacy. Parsimony would suggest that whenever possible, drugs that treat more than one medical condition should be used to manage certain conditions. Dosage formulations containing drug combinations might be warranted and may aid in the ability to minimize pill count burden.

Related Topics

▶ Delirium, ▶ Drug interactions

Suggested Readings

- Bjerrum L, Sogaard J, Hallas J, Kragstrup J (1998) Polypharmacy: Correlation with sex, age, and drug regimen. *Eur J Clin Pharmacol* 54:197–202
- Kingsbury SJ, Yi D, Simpson GM (2001) Rational and irrational polypharmacy. *Psychiatr Serv* 52:1033–1036
- Larson E, Kukall WA, Buchner D, Reifler BV (1987) Adverse drug reactions associated with global cognitive impairment in elderly persons. *Ann Intern Med* 107:169–173
- Veebof LJ, Stewart RE, Meyboom-deJong B, Haaijer-Ruskamp FM (1999) Adverse drugs reactions and polypharmacy in the elderly in general practice. *Eur J Clin Pharmacol* 55:533–536

Suggested Resources

- Centers for Medicare and Medicaid Services Chapter 3: Item-by-item guide to the MDS. Available from <http://www.cms.hhs.gov/quality/mds20/raich3.pdf> Accessed November 10, 2005

Postmenopausal Bleeding

Karen Ashby

Postmenopausal bleeding (PMB) refers to any vaginal bleeding that occurs after the onset of menopause. The average age of menopause, when periods cease, is approximately 51 years. Women often have irregular menstrual cycles before menopause. Once menstrual cycles have stopped for a year or more, any vaginal bleeding needs to be evaluated by a health care provider.

Postmenopausal bleeding (PMB) can be frightening because women often fear they have cancer. While uterine cancer is a potential etiology of PMB, it is not the most common. The incidence of uterine cancer

increases with age and with the existence of risk factors, such as obesity, hypertension, and diabetes. Women taking hormone replacement therapy can also have vaginal bleeding after menopause. This bleeding usually has a cyclic or regular pattern. Fibroids or myomas are a common etiology of abnormal bleeding in premenopausal women, but uncommon in postmenopausal women.

The evaluation of PMB begins with a careful physical examination to determine if the source of bleeding is visible. Vaginal tissue in menopausal women can be very thin and may bleed from minimal trauma. If there is no obvious source of bleeding then testing of the uterine lining is warranted. An evaluation of the lining is the best way to rule out uterine cancer. One of the simplest tests is an endometrial biopsy, which is an office test that samples tissue from the uterus. An endometrial biopsy can diagnose many uterine abnormalities including cancer. The limitations are that it can miss focal abnormalities such as endometrial polyps. More invasive testing may be indicated if an endometrial biopsy cannot make a diagnosis.

The thickness of the uterine lining is useful information to evaluate PMB. Transvaginal ultrasound (ultrasound that takes images from the vagina) can measure the uterine lining. A very thin lining (less than 5 mm) is almost always indicative of atrophy. Atrophy occurs when a thin uterine-lining bleeds because of lack of estrogen. This is the etiology of most postmenopausal bleeding. At the time of transvaginal ultrasound a small amount of salt water or saline can be infused into the uterus. This is called a sonohystogram and can better outline the lining of the uterus and show polyps or fibroids.

Hysteroscopy is another tool to evaluate the uterine lining. A hysteroscope is a small scope connected to a “camera” that directly visualizes the uterine lining. This procedure can be done in the office or outpatient surgery. Dilation and curettage is another outpatient surgical procedure that samples tissue from the uterine lining. This procedure is usually performed in conjunction with hysteroscopy. These two procedures can diagnose the majority of postmenopausal bleeding.

Postmenopausal bleeding can be caused by exogenous estrogen (taking estrogen replacement), 30%; atrophy (thin tissue), 30%; polyps (benign growths of the uterus), 10%; hyperplasia (abnormal uterine tissue from too much estrogen), 5%; cancer, 15%; or other causes, 10%. Older women with PMB are more likely to have endometrial cancer, but this still is not the most

common cause. Furthermore, women who have hypertension, diabetes, or obesity are at higher risk for cancer if they have PMB. Most endometrial cancer is diagnosed early when women seek medical care. Endometrial cancer is the most common gynecological malignancy but fortunately, is usually diagnosed when a complete cure is possible. Hysterectomy is usually recommended for endometrial cancer. Women who have endometrial atrophy do not require treatment unless they have heavy bleeding or it is bothersome. Polyps can be easily removed during dilation and curettage (scraping of the lining of the uterus which can then be tested for cancer or other abnormalities) or during office hysteroscopy and sent to pathology. Most polyps are benign but occasionally they can contain cancer.

Related Topics

[Cancer](#), [Diabetes](#), [Hysterectomy](#), [Menopause](#)

Suggested Resources

www.medem.com
www.webmd.com

Post-Traumatic Stress Disorder

John Tomkowiak

Post-traumatic stress disorder (PTSD) is an anxiety disorder that occurs in people who have been exposed to a traumatic event involving actual or threatened death, serious injury, or a threat to the physical integrity of self or others. The person's immediate response is one of intense fear, hopelessness, or horror. After the event a person will experience recurrent and intrusive recollections, distressing dreams, and psychological and physiological distress to cues that symbolize or resemble the event. At times, a person may even feel like he or she is re-experiencing the event (flashbacks). Persons with PTSD will try to avoid thoughts and activities that remind them of the event, and often feel detached, or feel like they have a foreshortened

future. Finally, they will have persistent symptoms of increased arousal (hyperarousal) such as difficulty falling asleep, hypervigilance, an exaggerated startle response, difficulty concentrating, and irritability. Symptoms that last for less than 3 months are considered acute, while those that last longer are considered chronic. Symptoms that are similar to PTSD but only last for less than 1 month would be considered an acute stress disorder. Symptoms that occur 6 months after the stressor are considered to have a delayed onset.

The lifetime prevalence of PTSD is 8% in the general population. The incidence in the elderly is thought to be somewhat less frequent. Although PTSD is not commonly thought of as an illness that affects the elderly, they do experience events that are life threatening. Events such as physical attack, robbery, mugging, natural disasters, severe automobile accidents, life-threatening illness, witnessing a dead body, and learning about the sudden unexpected death of a family member can be responsible for PTSD in the elderly population. In addition, many elderly who have served in the military may have had traumatic events at that time. PTSD symptoms are often misdiagnosed and a careful history should be taken especially for persons who might have experienced one of the events above.

Does PTSD present differently in the elderly population? In general, the elderly have the same symptom cluster that younger adults have, namely, re-experiencing the trauma, avoidance, and hyperarousal. However, some studies have shown differences in the symptom profile between elderly patients experiencing PTSD and their young adult counterparts. One study showed that elderly patients scored higher on arousal symptoms and lower on intrusive symptoms than younger adults. Another study showed that whites were more likely to experience hyperarousal symptoms (alertness, hypervigilance) than African Americans, when nonphysical trauma was encountered. Finally, the symptoms of PTSD may worsen later in life, even in patients who previously had periods of time that were symptom free. The loss of social support structure, increased time to think about past experiences, and a decreased ability to control the activities of daily life may lead to increased exposure to traumatic cues or memories.

What is the risk of undiagnosed PTSD in elderly patients with depression? PTSD has a high comorbidity with symptoms of depression. In older adults, a diagnosis of PTSD has been shown to slow the response of elderly individuals to treatment for depression. It has been suggested that patients with depression and

comorbid PTSD should be followed more closely and for a longer period of time.

What is the recommended treatment of PTSD in the elderly? It has been suggested that for mild cases of either acute or chronic PTSD psychotherapy be tried alone. For more severe cases either psychotherapy or combination pharmacotherapy and psychotherapy can be tried. Anxiety management, cognitive therapy, and exposure therapy are the therapies most commonly utilized with the elderly. Anxiety management techniques, which work best for hyperarousal symptoms may be a good choice as some studies suggest that older patients have more intense arousal symptomatology. Anxiety management includes techniques such as relaxation training, thought stopping, positive thinking, and assertiveness training. With regard to medication recommendations, antidepressant medications, in particular the selective serotonin reuptake inhibitors (SSRIs) and the antidepressant Venlafaxine are the recommended initial treatments of choice. Additional recommendations for the treatment of older adults include taking a careful medication history, monitoring for drug interactions, starting at a lower medication dose, and increasing medication slowly.

In summary, PTSD is a diagnosis that might be missed in an elderly patient. A history of a traumatic life event, even if it is not recent should prompt a thorough review of PTSD symptomatology. Though PTSD presents similarly in younger adults and the elderly, the elderly may experience more intense symptoms of hyperarousal. Finally, psychotherapy is the initial treatment of choice for mild symptoms and psychotherapy alone or combined therapy is recommended for more severe cases.

Related Topics

- [Anxiety disorders](#), ➤ [Depression](#), ➤ [Mood disorders](#),
- [Psychotherapy](#), ➤ [Stress](#), ➤ [Violence](#)

Suggested Readings

- Foa EB, Davidson JRT, Frances A (1999) The expert consensus guideline series: Treatment of post-traumatic stress disorder J Clin Psychiatry 60 (Suppl 16):1–76
- Goenjian AK, Najarian LM, Pyhoos RS, Steinberg AM, Manoukian G, Tavosian A, Fairbanks LA (1994) Post-traumatic stress disorder in elderly and younger adults after the 1988 earthquake in Armenia. Am J Psychiatry 151:895–901

Hegel MT, Unutzer J, Tang L, Arean P, Katon W, Hitchcock Noel P, Williams JW, Lin EHB (2005) Impact of comorbid panic and posttraumatic stress disorder on outcomes of collaborative care for late-life depression in primary care. Am J Geriatr Psychiatry 13:48–58

Mainous A, Smith D, Acierno R, Geesey M (2005) Differences in Post-traumatic stress disorder symptoms between elderly non-Hispanic whites and African Americans. J Nat Med Assoc 97(4):546–549

Weintraub D, Ruskin PE (1999) Post-traumatic stress disorder in the elderly: A review. Harv Rev Psychiatry 7(3):144–52

Suggested Resources

American Psychiatric Association Facts Brochure Concerning PTSD; <http://healthyminds.org/multimedia/ptsd.pdf>

Anxiety Disorders Association of America; <http://www.adaa.org/AnxietyDisorderInfor/PTSD.cfm>

Expert Consensus Guideline Series: Treatment of PTSD; <http://www.psychguides.com/ptsdgl.pdf>

National Institute of Mental Health: PTSD; <http://www.nimh.nih.gov/healthinformation/ptsdmenu.cfm>

PTSD Alliance; <http://www.ptsdalliance.org/home2.html>

Prenuptial Agreement

Brian Reinhart · Sheila Simon

A prenuptial agreement is a legally binding agreement made before marriage, dealing with arrangements if the marriage ever ends by divorce or death of one of the parties. These agreements are also known as premarital agreements or antenuptial agreements. Usually these agreements describe how each party's assets will be divided. Still they can cover a variety of other topics such as arrangements for children and alimony payments.

A prenuptial agreement is a legal enforceable contract, meaning the courts will usually require the parties live up to the agreement. However, a prenuptial agreement is not a traditional contract, such as for the sale of goods or services. It is made between two people who love and trust each other and will be promising to spend the rest of their lives together. Legal enforcement of prenuptial agreements is a current judicial trend. Traditionally these agreements were thought to promote divorce, but with the increase in divorce rates courts are increasingly enforcing prenuptial agreements.

However, courts do look at these agreements very carefully before enforcing them due to the seriousness

and potential repercussions of the contract. For example, the court will look retrospectively to discover if each party had a lawyer present when the agreement was signed. This is not required for most other contracts but often is in the case of prenuptial agreements. The court may not want one party (usually the one with more resources) to have the advantage of legal counsel, while the other does not. Courts may even require full disclosure of assets and income by both parties to make sure that the party with fewer resources is aware of what he or she could be doing without in the event of a divorce.

There are still certain cases in which the courts will not enforce a prenuptial agreement. The most common case involves duress, where one party is unfairly pressured into signing the agreement. For example, duress could be found if one party gives the other little choice in signing the agreement or it was proposed very close to the wedding day. These cases are becoming rare as prenuptial agreements are becoming more common and acceptable in today's society among middle-aged couples and are usually enforced by the courts.

Because 40% of marriages involve persons who have been married before, thinking about creating a prenuptial agreement is not an unspeakable thought. Although many people view a prenuptial contract as rather "unromantic," the reality is that middle-aged individuals are likely to have more complex assets and financial obligations than younger couples. To provide a solid foundation for their future marriage, individuals might want to consider sorting through their finances to devise a plan for how they will merge their economic lives.

Prenuptial agreements are often used in cases when one or both parties have been married before. In many of these cases children are involved, because each person would like to preserve their assets for their children from the previous marriage, rather than giving them to the new spouse. In other cases, these agreements may be used when there is great disparity between the income or assets of the potential spouses. The prenuptial agreement protects the resources and assets of both parties. For example, the party with more assets may seek to limit the amount of property or economic support the other party would receive upon divorce. A premarital agreement allows for the wealthier party to allot a certain sum to be awarded if the marriage lasts more than a year and award greater graduating amounts for each time the period after.

Signing this contract does not mean that a divorce is imminent or that is a lack of trust in the relationship. Instead, couples are recognizing the seriousness of the upcoming commitment of marriage, are communicating their concern for the future security of loved ones, and are expressing respect for the hard-earned assets and accomplishments of a future spouse.

Related Topics

▶ Divorce, ▶ Marriage

Suggested Readings

- Haman E (1998) How to write your own premarital agreement. Sphinx, Naperville, IL
- Lindey A, Parley L (1999) Lindey and Parley on separation agreements and antenuptial contracts. Matthew Bender, New York

Preventive Care

Karen Ashby

Preventive care is a combination of behaviors and health care practices that are designed to keep a disease from occurring. These practices include lifestyle changes, screening tests, and immunizations or vaccines. Preventive care has the potential to save millions of lives and health-care dollars. While health care providers play an important role in preventive health care, patients also have responsibility.

Lifestyle

Lifestyle is an area where patients have complete control. Most diseases can be prevented or delayed by maintaining healthy behaviors. Even people with no risks can benefit from engaging in healthy lifestyle behaviors. Healthy behaviors that can impact one's health are

- Daily exercise
- Weight control
- Smoking cessation

- Moderate alcohol-consumption
- Avoiding drug abuse

Screening Tests

A screening test attempts to detect a potentially life threatening or fatal disease process when an intervention can improve the outcome. The recommended schedule for most screening tests is based on age, risk factors, and family history. As we age, some screening tests are recommended at more frequent intervals. Other tests are recommended less often. One example is mammography. While mammography is important annually for women over 50 years, younger women may be screened less often. An example of a test that can be done less frequently as we age is the Pap smear test. Pap smears are extremely important in young sexually active women, but older women without risk factors may not benefit from Pap smear testing. With the exception of the Pap smear, most of the periodic screening tests should occur more frequently as we age. Periodic screening tests include

- Pap smear
- Breast self exam
- Mammography
- Testicular self exam (TSE)
- Prostate specific antigen (PSA)
- Colon screening (stool guaiac, flexible sigmoidoscopy, and colonoscopy)
- Blood pressure
- Weight
- Cholesterol
- Bone density

Immunizations and Vaccines

Immunizations and vaccines not only impact individuals but also impact the community. While most people receive immunizations as children, vaccines such as tetanus need to be updated. Tetanus should be administered during childhood and every 10 years throughout life. Older adults at risk for influenza should be vaccinated annually. Other recommended vaccines usually depend on travel or specific risks. Most vaccines are safe for older healthy adults, but any “live” vaccine should be used with caution in older adults who do not have a healthy immune system.

Health Care Providers

Patients benefit from a consistent relationship with their health care provider. Patients who frequent emergency rooms and urgent-care facilities for regular care tend not to get preventive tests. Studies have shown that patients who seek care from a primary care doctor or primary group of doctors tend to receive screening tests at proper intervals and get more advice on managing lifestyle behaviors such as smoking and diet. Having a relationship with a physician also helps people identify their own personal disease risks. For example, a person with a family history of colon or breast cancer may be recommended for screening earlier than the general population.

Related Topics

- [Cancer screening](#), ➤ [Exercise](#), ➤ [Immunizations](#), ➤ [Physical examination](#)

Suggested Readings

Agency for Healthcare Research and Quality (2003) The pocket guide to staying healthy at 50+. U.S. Department of Health and Human Services, Rockville, MD; <http://www.ahrq.gov/ppip/50plus/50plus.pdf>

Suggested Resources

U.S. National Library of Medicine and National Institutes of Health. Bethesda, MD; www.nlm.nih.gov/medlineplus
WebMD. New York, New York (2005); www.webmd.com

Probate

Janet L. Lowder · Lisa Montoni

Probate stems from the Latin word “probare” meaning “to prove,” and derives its usage from the practice in medieval England of heirs having to prove their right to inheritance of land to the king’s court. At that time in history, land conferred wealth and power upon its owner, and its transfer was carefully controlled. The early Americans continued the practice of judicial

oversight of property transfer but expanded it to include both real and personal property. Today, the term probate generally refers to state laws settling a decedent's estate under the supervision of the court. In a broader sense, the term refers to the administration of estates, guardianship, adoptions, and trusts with court oversight.

Courts charged with oversight of the probate process today may be called Probate Court, Surrogates Court, Orphans Court, Chancery Court, Circuit Court, or Court of the Ordinary, and may be presided over by a judge, surrogate, or magistrate. These are courts of local jurisdiction, such as a county, parish, or other designated district, and are governed by the laws of the state or commonwealth and local court rules.

The contemporary process of "proving" a will begins with submitting the will itself to Probate Court. The will is accompanied by an application or petition to probate the will, which details the name of the deceased individual, or decedent, and his or her date and place of death. The petition must also include the names and addresses of all interested parties, which may include next of kin, beneficiaries named under the will, and persons otherwise named or mentioned in the will. Those interested parties have a set period of time after the submission of the will in which to object to its validity. If no objections are made, a will is considered to be "self-proved" if it was executed according to governing state law. If objections are made, the court must then determine the validity of the will. Admitting a will into probate may also notify creditors of the decedent's death, and there is usually a set period after the date of death during which creditors may file claims against the decedent's estate.

The court must also approve the appointment of a person to manage the decedent's estate. This person is referred to as an executor to oversee the estate, if named by the decedent in his or her will, or may be called an administrator or personal representative if the decedent left no will or the person designated as such in the will was unable to serve in that capacity. The court generally looks to the next of kin to fulfill this administrative role.

The process of estate administration, greatly simplified in modern times, includes the gathering of the decedent's assets, appraisal and inventory of those assets, payment of the decedent's debts and costs associated with administering the estate, calculation and payment of estate or inheritance taxes and income taxes, distribution of specific bequests or remaining assets under the terms of the will or as directed by

law, and accounting to the court the disposition of the estate assets.

The size and complexity of the estate determines how the estate is administered and the time frame in which the administration must be completed. The requirements for estate administration vary from state to state, but most states have enacted laws to streamline and simplify the process. Many states have also adopted all or part of the Uniform Probate Code, thus creating consistency to this process across the country.

"Small" estates, estates with assets whose value is under an amount prescribed by law, may be distributed to the decedent's heirs without a formal administration of the estate. The will of these smaller estates, however, must still be submitted to the court and the distribution of assets approved by the court. This process may be referred to as "Relief from Administration," "Small Estate Administration," or other terms selected by the local Probate Court. This abridged process is less time-consuming and generally less costly than a full estate administration.

Many people still seek to avoid probate and its negative associations even with the current push to make the probate process easier. These negatives include the court exercising authority superior to the family in the probate process, fees paid to the executor or administrator, attorney fees, and court costs. In addition, documents filed in the Probate Court are public and open to public review. Assets that avoid the probate process include those held jointly with another person under survivorship rights, property titled as "payable on death" (POD) or "transfer on death" (TOD), assets payable to a designated beneficiary, and possessions gifted to others before death. An individual may also transfer or title real and personal property to a trust so as to avoid probate administration of an estate. A trust is an estate planning tool designed to specifically direct the use and disposition of the assets it holds. However, avoiding probate by any of these means may have its own costs and its own negative consequences depending on individual circumstances. Simple wills are still often recommended to "catch" any property not titled or transferred correctly, even if an individual establishes a trust or has titled assets in other ways which do not require probate administration.

The probate process, despite changes in its meaning and scope through the years, remains available to persons of all ranges of wealth as a means to publicly "prove" a will and judicially supervise the transfer of a decedent's probate assets.

Related Topics

➤ [Financial planning](#)

Suggested Readings

- Jasper MC (1997) Probate law. Oceana Publications, New York
- Lowder JL, Ster MJ (2004) Probate. In: Loue Sana, Sajatovic Martha (eds) Encyclopedia of women's health. Kluwer Academic/Plenum Publishers, New York, pp 535–536
- Ostberg K (1990) Probate: Settling an estate: A step by step guide. Random House, New York

Suggested Resources

- American Bar Association 2005 Chicago (November 28, 2005); <http://www.abanet.org>

Prostate

Derek Raghavan

The prostate is a gland situated anatomically low in the pelvis, surrounding the urethra where it exits from the neck of the bladder. The rectum is located behind, and thus allows the performance of the clinical test for prostate assessment, the digital rectal examination. This involves the physician's gloved, examining forefinger being inserted gently into the rectum with palpation of the part of the prostate that lies in front of the rectum (this gives an indication of overall size, shape, and consistency). An experienced physician can make an educated guess as to whether the gland is normal in size or harbors a cancerous lump. To the sides and in front, the components of the bony pelvis are located, with intervening soft fibromuscular tissues and various patterns of muscle. Adjacent to the prostate are other accessory sex glands, including the two seminal vesicles.

The prostate is composed of many glands that empty into multiple tiny ducts that lead toward the posterior urethra. The developed prostate is composed of three pathologically distinct zones. The peripheral zone represents about 75% of the gland and is characterized by ducts that radiate outward from the urethra as it runs through the prostate. The central zone,

about 20% of the gland, is a wedge-like glandular area surrounding the ejaculatory ducts. The transition zone, about 5% of the normal prostate, is adjacent to the urethra on both sides. This is the region that is thought to give rise to a benign, age-related size increase of the prostate, known as benign prostatic hyperplasia (BPH). Thus different parts of the prostate give rise to BPH and to cancer.

Although the prostate was first described as early as 4 B.C. by the Greeks, its function is still the subject of debate and conjecture. It is clearly a gland that functions as part of the male sex organ system, and produces a series of secretions, which are related to the production of semen and its subsequent passage. These include enzymes (including prostate specific antigen), which contribute to liquefaction of the semen and facilitate the migration of sperm.

At a cellular level, the prostatic glandular cells are stimulated by androgens, and are characterized by androgen receptors, chemical structures that facilitate the function of male hormones in prostate cells. The androgen receptors are responsible for activation of cellular growth pathways in response to androgen stimulation. This means that androgens interact with these receptors, which in turn initiate a chemical pathway that results in the growth of prostate cells. Prostate growth, development, and function are usually androgen dependent, although some cancers of the prostate lose that function (see "Prostate Cancer").

The prostate is subject to several relatively common disorders, including a benign proliferation of tissue (benign prostatic hyperplasia), which can result in urinary obstruction, infection or inflammation (prostatitis), and cancer. These problems tend to be more prevalent with increasing age.

Related Topics

➤ [Benign prostatic hyperplasia](#), ➤ [Cancer](#), ➤ [Cancer screening](#), ➤ [Prostate cancer](#)

Suggested Readings

- Barry MJ, Collins MM (2004) Benign prostatic hyperplasia and prostatitis. In: Goldman L, Ausiello D (eds) Cecil textbook of medicine, 22nd edn. Saunders, Philadelphia, PA, pp 775–780
- McNeal JE (1980) Anatomy of the prostate: An historical survey of divergent views. *Prostate* 1:3–13

Myers RP (2002) Gross and applied anatomy of the prostate. In: Kantoff PW, Carroll PR, D'Amico AV (eds) *Prostate cancer—principles and practice*. Lippincott Williams & Wilkins, Philadelphia, PA, pp 3–15

Suggested Resources

The Prostate Centre. The Prostate. Princess Margaret Hospital and University Health Network, Toronto, Canada (March 21, 2004); <http://www.prostatecentre.ca>

Prostate Cancer

Derek Raghavan

Prostate cancer is one of the most common malignancies in men. It occurs most frequently in African Americans, but is also common in most other racial groups. Around 170,000 new cases are diagnosed each year in the United States, with approximately 30,000 deaths per year. For reasons that are not completely certain, it occurs with the lowest prevalence in Asian races, and in particular to those who have not adapted to the Western lifestyle and diet. Asians who regularly consume a traditional Western diet (high in fat and calories) appear to show rates of prostate cancer that are similar to those found in Whites. Prostate cancer is a disease of older aged men, with its peak incidence in men over 65 years of age. It has been suggested that this cancer is now being identified more commonly in younger men, although this may reflect changes in the pattern of population screening. Details of the normal prostate gland and its biology are summarized in a separate entry (see “Prostate”).

The cause of prostate cancer is not really known, although it seems likely that it is associated with a high fat and high calorie diet, a positive family history, certain racial groups, exposure to radiotherapy, some occupational exposure (e.g., cadmium in the battery industry), and possibly may occur with increased frequency in smokers. It has been suggested that the balance between different hormone levels in the blood (e.g., the ratio between circulating estrogen and androgens) may be a determinant of prostate cancer. It has previously been shown that men castrated before puberty virtually never suffer from prostate cancer. It is well known that the prostate and prostate cancer are

stimulated to grow by male hormones (androgens), such as testosterone. This occurs by the interaction of androgens with androgen receptors, chemical receptor sites on the surface of the prostate cells which, upon interaction with androgens, trigger a series of activation or growth processes within the cell. This hormone responsiveness has offered one of the major therapeutic strategies for advanced cancer—that is, if metastatic prostate cancer is treated by castration (removal of function of the testicles by surgery or medications), it will usually shrink dramatically (see below).

The most common pathological type of prostate cancer is adenocarcinoma, derived from cancerous changes occurring in the prostate glandular tissue. This represents about 90% of prostate cancers. Other pathological types, found less commonly, include transitional cell cancer (arising from the lining cells of the urinary tract as they pass through the prostate), neuroendocrine or small cell anaplastic cancer, squamous cancer, and occasionally sarcoma (these three arising from other cells in the prostate). Rarely, cancers from other sites can metastasize to the prostate, including those from lung, bladder, and bowel. The pathological pattern of the cancer is very important as a determinant of the natural history of this disease. Tumors that are well differentiated (low grade) and resemble normal tissues more closely tend to have a lower metastatic rate, a more indolent (or slower) pattern of growth, and a better overall prognosis. Those that are poorly differentiated (high grade), with less resemblance to normal tissues and a higher rate of disorganization, tend to be more aggressive, grow more quickly, have a higher metastatic potential, and a worse overall prognosis. One of the methods of classifying the pathology of prostate cancer is the Gleason score, which identifies the two dominant patterns of pathology within a tumor, scaled between 2 and 5. Thus a well-differentiated tumor might be classified as Gleason's 2+3 (meaning that the dominant pattern is well differentiated and the secondary pattern is a little less well-differentiated), where a poorly differentiated tumor might be Gleason's 5+4 (representing dominant completely undifferentiated cells with a second, less evident population of poorly differentiated cells). This classification allows the pathologist to make an educated guess about the prognosis of the patient.

The presenting features of prostate cancer depend on the extent of disease. In an era where prostate screening is common, many men are identified as suffering from prostate cancer when they are completely

asymptomatic. Sometimes, if a localized tumor (a tumor that has not spread) is growing, symptoms may include slowing of the urinary stream, blood in the urine, and increased frequency of urination (sometimes with the sensation of incomplete emptying of the bladder). As the tumor grows and extends to adjacent structures, other symptoms may include pain, constipation, bowel irregularity, and sexual dysfunction. If urine flow is slow, the interpretation of symptoms may be confused by the fact that a urinary infection supervenes as a consequence of slow urinary flow, giving the symptoms of pain, blood in the urine, and burning or irritation when passing urine. If the tumor has metastasized (spread) to other parts of the body, symptoms are variable. They may be nonspecific, indicating the hidden effects of the cancer—general malaise, loss of a sense of well-being, loss of weight, reduced appetite, or fatigue. If the cancer is growing at a distant site, the symptoms may reflect that site for example, painful bones, shortness of breath (lung metastases), or abdominal pain (liver or abdominal lymph node metastases), among others.

The normal prostate and prostate cancer both produce enzymes known as kallikreins, which are involved in the production and liquefaction of the fluids that conduct sperm. One of these, known as prostate specific antigen (PSA), is quite specific to the prostate and thus has a useful role as a diagnostic test when its levels are elevated in the blood. These tissues also produce other proteins, such as prostatic acid phosphatase, but these are less specific to prostate tissue and thus are less useful in clinical practice. In general, low levels of PSA are associated with normal prostate function, and elevations beyond specific age-related ranges indicate either the presence of benign prostate hyperplasia (BPH) or cancer. The higher the level (especially beyond 10 ng/ml), the more likely it is that cancer is present. However, high PSA levels may sometimes be present without cancer—for example, in the presence of an infection or inflammation of the prostate (prostatitis) or with a very large, benign hyperplastic gland. Conversely, cancer may sometimes be present in the absence of PSA, thus limiting its use as a screening test.

In recent times, through the availability of the PSA test, screening of asymptomatic populations for prostate cancer has become more common. This is based on the concept that, as in many other cancers, early detection and diagnosis will result in a higher cure rate with a lower requirement for aggressive treatment.

To date, screening for prostate cancer in men without symptoms makes good sense, but has never been proved to save or extend lives in clinical trials. Screening protocols usually involve the combination of a digital rectal examination, measurement of blood PSA, and sometimes the use of prostate ultrasound. Although survival from prostate cancer is currently better than before the introduction of screening, this could be explained by different patterns of care, case selection, or better treatment, irrespective of early diagnosis. This area remains quite controversial, and as a result, few governments have made specific recommendations about screening for prostate cancer. What does seem clear is that men with a family history of prostate cancer should consider screening, and all men should be aware of the early symptoms of this disease and consult a physician if such symptoms arise. It is believed that African Americans may suffer from a more aggressive pattern of disease, and thus they probably should also consider prostate screening.

When prostate cancer is suspected, a PSA test is performed, which may support the diagnosis. A prostate ultrasound, a test in which sound waves are bounced off the prostate, indicating the size, shape, and variable density of the gland, may also be helpful. However, a final diagnosis usually requires a biopsy—a test in which a needle is introduced into the prostate and a tiny sample of tissue obtained. This is usually done under local anesthetic, with the biopsy probe introduced via the rectum into the prostate. If cancer is confirmed, the extent of the cancer is determined by tests including scans of the abdomen and bones, and then decisions are made regarding treatment.

Sometimes no treatment is recommended—this may occur particularly in the case of a very elderly man with no symptoms, a number of unrelated health problems, and a well-differentiated or indolent pattern of cancer. In that setting, close observation is used instead.

In younger men up to the age of around 75 years, a more active approach may be taken. If the tumor is localized to the prostate, treatment can be carried out by surgical removal of the cancerous gland (radical prostatectomy) or by radiotherapy. Surgery involves the removal of the prostate and some surrounding tissues, and in some centers, lymph nodes are removed as well (to see if the cancer has spread). Not all surgeons believe removal of the lymph nodes is necessary. This surgery will sometimes result in problems with sexual function and occasionally will cause

incontinence (difficulty in holding the urine). The chance of cure depends on the extent of the tumor—if it is confined to the prostate without a palpable nodule (stage A or T1), the chance of cure is around 60–70% or more. If there is a palpable lump in the testis (stage B or T2), the chance of cure is around 50–60%. If the tumor is more extensive, with involvement of surrounding tissues and organs, the cure rate drops below 40%.

Different types of radiotherapy can be used, including an invisible beam that is directed from a machine or via the insertion (under anesthesia) of tiny radioactive seeds that sit inside the prostate and treat the cancer from within the prostate. The radioactivity of these seeds runs out after some weeks, by which time the cancer cells have been killed. The side effects of radiotherapy include problems with sexual potency, especially if high doses are used, and sometimes an increased tendency to suffer from diarrhea. As with surgery, the cure rate depends on the extent of the tumor, ranging from higher than 70% to less than 40%. Although controversial, most clinicians believe that the results of surgery and radiotherapy are similar, although surgery may give a slightly better outcome with respect to the cure rate. Radiotherapy can also be used to treat metastatic sites, such as deposits of prostate cancer growing within bones.

If the cancer is locally extensive (i.e., has spread to adjacent structures, known as stage C or T3), it is sometimes helpful to start treatment with surgical or medical castration to shrink the cancerous gland, and then to follow this with surgery or radiotherapy. In particular, the combination of castration and radiotherapy has been shown in several studies to produce a higher cure rate than radiotherapy alone.

If the cancer has spread beyond the pelvis, the standard treatment is castration. This can be achieved either by surgical removal of the testicles, or via the use of medicines that interfere with the production of testosterone by the testicles (medical castration). In general, the benefit of the latter approach is that it does not require surgery and is also temporary in most cases—that is, it can be reversed by cessation of the medications. The medicines used to stop testosterone production are known as luteinizing hormone releasing hormone (LHRH) agonists; these drugs interfere with the ability of the brain to instruct the testicles to produce testosterone, and after a period of time cause a lowering of blood testosterone levels. Other medications are able to stop androgens from

stimulating prostate cancer cells. There is evidence that the combination of LHRH agonists and peripheral blocking agents gives a better anticancer effect than the use of LHRH agonists alone. In the past, it was believed that castration needed to be continued indefinitely, but more recent studies have suggested that intermittent medical castration may be a safe and effective alternative, accompanied by less toxicity. Randomized trials are currently assessing whether this is true. The toxic effects of hormone suppression include impotency, loss of libido, fatigue, anemia, and osteoporosis, so there is good reason to try to reduce the amount of time that a patient must experience castration.

When hormonal blockade is no longer effective, which will usually occur between 1 to over 10 years after initiation of treatment, chemotherapy may be useful in producing another remission. Randomized trials have now shown that the use of docetaxel, a chemotherapy agent, will improve survival when compared with mitoxantrone, another chemotherapy drug, which has already been shown to cause responses and improve quality of life in patients who have relapsed after hormone therapy. Current trials are studying whether multiple chemotherapy agents give better outcomes than the use of single drugs. In addition, chemotherapy is currently being tested at earlier stage in patients with locally extensive cancers after prostatectomy. These studies are questioning whether similar results can be obtained as for breast cancer, where early “adjuvant” or preventative use of chemotherapy will add to the effect of local treatment and of hormone therapy.

Related Topics

[Benign prostatic hyperplasia](#), [Cancer](#), [Cancer screening](#), [Hormones](#), [Prostate](#), [Ultrasound](#), [Urinary tract infections](#)

Suggested Readings

- Beer T, Raghavan D (2000) Chemotherapy for hormone-refractory prostate cancer: Beauty is in the eye of the beholder. *Prostate* 45:184–193
- Kantoff PW, Carroll PR, D’Amico AV (eds) (2002) *Prostate cancer—Principles and practice*. Lippincott Williams & Wilkins, Philadelphia, PA

- Petrylak D, Tangen CM, Hussain MH et al (2004) Docetaxel and estramustine compared with mitoxantrone and prednisone for advanced refractory prostate cancer. *N Engl J Med* 351:1513–1520
- Tannock IF, Osoba D, Stockler MR et al (1996) Chemotherapy with mitoxantrone plus prednisone or prednisone alone for symptomatic hormone-resistant prostate cancer: A Canadian randomized trial with palliative end points. *J Clin Oncol* 14:1756–1764

Suggested Resources

American Society of Clinical Oncology People living with cancer. Alexandria, VA (2002–2006); www.plwc.org

Pseudodementia

Sara G. West

Pseudodementia refers to a condition resembling dementia but is caused by a primary psychiatric disorder, often depression. The term was first coined in the 1880s, but the name has lately received some scrutiny secondary to a number of reasons, including the idea that it indicates a dichotomy between organic and functional disease, which is no longer clear. Despite the difficulties surrounding the nomenclature, the syndrome does appear to exist, and the recognition of pseudodementia is imperative; with treatment, the cognitive impairment associated with it can be improved. The epidemiology, signs and symptoms, diagnosis, treatment, and prognosis of pseudodementia will be discussed.

Since pseudodementia is a complicated condition and therefore difficult to diagnose, not much statistical information exists concerning its prevalence. It is believed that at least 10–15% of the geriatric population diagnosed with dementia actually suffers from pseudodementia. One of the main factors that influences the development of pseudodementia is the presence of an underlying depression. In the elderly, it has been shown that 40% of those who are medically ill and in the hospital, and up to 20% of those in a long-term care facility develop depression. Therefore, given the high rates of depression in some elderly populations, the risk of pseudodementia also increases.

Pseudodementia and dementia share many of the same signs and symptoms, making it difficult to distinguish between these syndromes. These include, among others, apathy (lack of interest in one's surroundings),

memory impairment, changes in sleep, and changes in appetite. With a careful history, it may be possible to discriminate between the two based on several fine points. Often the onset of pseudodementia is rapid compared to that of dementia. The time course involving the development of the neurovegetative symptoms such as sleep disturbance, differs as well; patients with pseudodementia appear to develop those symptoms first, while those disturbances do not occur in patients with dementia until later in the course of the illness. Also, sleep disturbances in depression in the elderly characteristically occur in the early morning, whereas those in dementia are more variable. The majority of patients with pseudodementia have a prior psychiatric history, especially of depression. Patients with pseudodementia frequently have a consistently depressed mood, whereas those with dementia have more variability in their moods, especially related to their environment. The cognitive impairment of patients with pseudodementia tends to be less severe and less consistent than patients with dementia, and this may be reflected in their scores on cognitive exams. Furthermore, with cognitive testing, it is thought that some patients with pseudodementia, after encouragement by the examiner, will be able to eventually provide the correct answer to the question. Patients with pseudodementia may also highlight their mistakes rather than minimize them, as patients with dementia tend to do. Those with pseudodementia tend to perform more poorly on tests that require greater effort than those with dementia, who are often impaired in multiple areas of cognition.

As mentioned before, the best way of differentiating between pseudodementia and dementia involves a thorough history. This includes inquiring about, among other topics, previous episodes of depression, a family history of depression, a history of head trauma, and medications. In addition, there are several laboratory and radiological tests, which may prove useful in making a diagnosis. Basic laboratory tests, including a basic metabolic panel, complete blood count, vitamin B₁₂, thiamine, urinalysis, and thyroid function studies are essential to rule out metabolic causes of dysfunction. The dexamethasone suppression test may sometimes be useful in identifying depression. A positive test (a cortisol level greater than 5 mg/dl drawn the following day) is found in more than 50% of patients with depression; however, the result may also be positive in advanced dementia. Specialized radiology and imaging tests such as a computed tomography (CT scan) or magnetic resonance

imaging (MRI) can be used to rule out structural lesions in the brain. They may be somewhat useful in identifying dementia, but often the findings are non-specific. An electroencephalogram (EEG), test of brain wave activity, is often found to be normal in patients with pseudodementia, which is not necessarily the case if the patient is suffering from delirium or dementia. Finally, cognitive testing is essential in evaluating pseudodementia; the exams most commonly used include the mini mental status exam, the Wechsler Adult Intelligence Scale, the Bender Visual-Motor Gestalt test, and the Halstead–Reitan Neuropsychological Battery. Some of these can be lengthy tests and are most often administered and interpreted by neuropsychologists.

If a patient suffers from pseudodementia, the most important step is to treat the underlying psychiatric condition, most often depression. It is crucial to recognize any medications that the patient may be taking for general medical conditions, which may create or worsen the underlying depression. These medications should be replaced by those known to have a lesser effect on mood. The patient may also be started on an antidepressant with the realization that these medications may take several weeks to have a substantial effect on the primary depression. Finally, if the depression is severe or medications are not an option, electroconvulsive therapy (ECT) is a safe, effective, and rapid treatment for depression. In pseudodementia, the successful treatment of the underlying psychiatric illness will often bring about great improvements in cognition.

It was originally believed that once pseudodementia is resolved, the prognosis for those patients was quite good. Recent studies have provided evidence to the contrary. It has been shown that each year, between 9% and 25% of patients with reversible dementia will go on to develop irreversible dementia. Eight years after the original diagnosis of pseudodementia, 89% of patients had developed irreversible dementia. In other words, those with pseudodementia are at a 2.5 to 6 times greater risk to develop dementia than those with no prior history of pseudodementia.

Elderly patients with signs and symptoms or a history of depression are certainly at risk for developing pseudodementia. The difficulty concerning the diagnosis of pseudodementia lies in the fact that there are no clear diagnostic criteria and the overlap of depression and dementia may occur naturally. These patients warrant a thorough evaluation to rule out this cause of cognitive impairment which may be improved with treatment of the underlying depression.

Related Topics

▶ [Delirium](#), ▶ [Dementia](#), ▶ [Depression](#), ▶ [Mini Mental State Examination](#), ▶ [Mood disorders](#)

Suggested Readings

- Dobie DJ (2002) Depression, dementia, and pseudodementia. *Semin Clin Neuropsychiatry* 7(3):170–186
- Haggerty JJ, Golden RN, Evans DL, Janowsky DS (1988) Differential diagnosis of pseudodementia in the elderly. *Geriatrics* 43(3):61–74101

Psychosomatic Disorder

Lara Stepleman

The term psychosomatic disorder generally refers to a medical disorder, which is caused by psychological factors. Although the term continues to be used extensively in the medical community, “psychosomatic disorders” largely has been replaced by the term “somatoform disorders,” and is referred to as such in the most recent version of the *Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association. There are several types of somatoform disorders including conversion disorder, somatization disorder, and hypochondriasis. The fundamental commonality of all somatoform disorders is the experience of physical symptoms that are not fully explained by a medical condition or by another mental disorder and cause significant functional impairment in life realms such as family, career, and social activity.

The etiology of somatoform disorders is often unclear and the complex interaction of biological, environmental, social, and psychological factors produces a symptom presentation unique to the individual. The physical symptoms, however, are not voluntarily or consciously produced. In fact, the individual who experiences these symptoms truly believes that there is an underlying physical condition in spite of the medical evidence demonstrating otherwise. The combined prevalence rate for somatoform disorders varies greatly by sample, although findings of 10% or more are not uncommon in medical settings. There is research suggesting that some somatoform disorders, specifically hypochondriasis, may occur more frequently as individual’s age. However, research

studies on somatoform disorders typically do not have adequate samples of individuals over the age of 60, and thus, we do not have an accurate picture of the relative frequency and unique symptom presentation of somatoform disorders in older adults.

Conversion disorder is one type of somatoform disorder in which there are motor symptoms (paralysis, difficulty swallowing) and sensory symptoms (blindness, deafness) that suggest a neurological condition but do not have medical basis and often appear or worsen during or after stressful life events. For a diagnosis of somatization disorder, there must be an established history of somatic complaints before the age of 30 that include multiple pain sites, gastrointestinal problems (diarrhea, nausea), sexual problems (sexual dysfunction, irregular menses), and one pseudoneurological symptom such as those experienced with conversion disorder. With hypochondriasis, individuals become impaired to function in their lives due to a preoccupation with having a serious illness related to the misinterpretation of bodily experiences (rapid heart beat, sweating). This preoccupation continues to exist despite thorough medical work up and continual reassurance. Individuals with somatoform disorders are often seen with great frequency in medical clinics and are considered costly to the health care system due to the number of medical tests and specialist consultations they often receive before a psychiatric diagnosis can be reached. Somatoform disorders as a whole seem to occur more frequently in women, although the gender makeup does vary from culture to culture.

Physicians and other health care providers specializing in geriatric populations have largely neglected somatoform disorders as part of their routine practice. Several reasons for this lack of attention have been offered in the literature. The first explanation given is the difficulty untangling somatoform disorders from the complex physical problems and medication regimes within an aging population who are more likely to have multiple chronic medical conditions. Second, somatoform disorders are challenging psychiatric disorders and most individuals are likely to consult their primary care physicians who may have little to no experience diagnosing or treating these issues. Third, somatoform disorders may not be perceived as common or pressing medical concerns in the aging by health care providers, who may already be managing health issues seemingly more acute or life threatening. The resultant consequence may be underdiagnosis of somatoform disorders and lack of treatment or misdiagnosis and unwarranted and costly medical care to address physical complaints

that, in fact, have no physical basis. Although somatoform disorders are often thought to be inconsequential relative to other medical problems, research suggests that the medical costs associated with somatoform disorders are in the billions each year and represent one fifth of the national health care budget in the United States. Clearly, this classifies somatoform disorders as a significant public health concern.

Recent medical interest in mind–body relationships and research advances in fields like psychoneuroimmunology have increased the awareness about the meaningful reciprocal relationship between emotional and physical states in psychological disorders (depression, posttraumatic stress disorder) and in physical disorders (HIV, autoimmune disorders, cancer). Consequently, a wide array of research-based treatments such as biofeedback, relaxation, and cognitive-behavioral therapy are now available to treat individuals with the more commonplace psychosomatic symptoms of everyday stress as well as the more disabling somatoform disorders. These treatments have been found very effective for a broad spectrum of individuals and diagnoses, including individuals in older age groups. More research on the utilization of these interventions with older adults and specifically for the treatment of somatoform disorders is warranted.

Related Topics

➤ [Anxiety disorder](#), ➤ [Cognitive-behavioral therapy](#), ➤ [Depression](#), ➤ [Hypochondriasis](#), ➤ [Post-traumatic stress disorder](#)

Suggested Readings

Asaad G (1996) *Psychosomatic disorders: Theoretical and clinical aspects*. Brunner/Mazel, New York
Schumacher Finell J (ed) (1997) *Mind body problems: Psychotherapy with psychosomatic disorders*. Jason Aronson, Northvale, NJ
Shorter E (1993) *From paralysis to fatigue: A history of psychosomatic illness in the modern era*. The Free Press, New York
Wijerante C, Brodaty H, Hickie I (2003) The neglect of somatoform disorders by old age psychiatry: Some explanations and suggestions for future research. *Int J Geriatr Psychiatry* 18:812–819

Suggested Resources

<http://cchs-dl.slis.ua.edu/clinical/psychiatry/somatoform-disorders/>
<http://www.emedicine.com/med/topic3527.htm>

Psychotherapy

John M. Tomkowiak

Psychotherapy is often described as the “talking cure.” It is a generic term for a number of different methods utilized to engage a patient in better understanding of his or her emotional state, thoughts, and behaviors in the context of their specific situation. There are many different kinds of psychotherapy. The most frequently practiced psychotherapies in the elderly are supportive psychotherapy, brief psychotherapy, interpersonal psychotherapy, cognitive behavioral psychotherapy, problem-solving therapy, and occasionally group therapy. A therapist who works frequently with geriatric patients should be skilled in determining which therapy is appropriate for use with each patient. In the past, geriatric patients have comprised up to 8% of psychologists’ psychotherapy practice and it is likely that this percentage will increase over time secondary to the current population trends. If a therapist is seeing at least 10% geriatric patients in their practice, they should have an appropriate amount of experience in dealing successfully with these patients.

What are the conditions for which elderly patients are most often referred for psychotherapy? Bereavement and depression certainly are at the top of the list. Psychotherapy is often used in the geriatric patient population to treat other disorders such as dysthymia, generalized anxiety disorder, panic disorder, posttraumatic stress disorder, insomnia, substance abuse, and early dementia. In addition, psychotherapy can be helpful in addressing stress and behavior problems that may not be associated with a specific mental illness. Finally, therapy has been shown to reduce pain among nursing home patients.

There have been numerous studies that show the efficacy of psychotherapy in the adult population, but is psychotherapy also effective in the elderly? In general, research on psychotherapy with elderly patients is limited. A meta-analysis of 17 studies of psychotherapy interventions in elderly patients with depression found psychotherapy to be more effective than no treatment or placebo. In addition, psychotherapy in combination with medication often provides optimal treatment for depression in the elderly.

Is psychotherapy practiced with the elderly the same way as with the general adult population? Does mild cognitive impairment prevent the use of psychotherapy?

There are some important differences in elderly patients who present for psychotherapy. Issues such as decreased social support, financial difficulties, hearing and/or vision problems, while not unique to the elderly, more often play a significant role in a patient’s ability to engage successfully in therapy. Psychotherapy can be useful for patients with mild cognitive impairment; however, in patients with moderate cognitive impairment, it is usually not helpful. It has been suggested that supportive cognitive behavioral therapy in patients with mild cognitive impairment could be performed, albeit with certain modifications to the usual therapeutic technique. When seeking psychotherapy services for an elderly patient, the therapist should be comfortable with not only elderly patients in general, but also the therapeutic techniques used with the elderly.

Psychotherapy is commonly thought of as an outpatient experience. However, elderly in need of psychotherapy might be encountered in other settings such as a rehabilitation hospital or a nursing home. In this case, it is important to determine if these services are available within an institution. One example of a successful therapeutic intervention with nursing home residents was a group intervention model that was designed to help residents develop better relationships with other residents.

In summary, psychotherapy can play a significant role in the appropriate recovery of elderly patients with depression and other mental health problems. Benefits of psychotherapy include the reduction of stress, decrease in pain, and positive effects on other medical conditions that a patient may have. Finally, finding a therapist who works with elderly patients and knows a variety of therapeutic techniques will more likely produce a good outcome.

Related Topics

[Anxiety disorders](#), [Bereavement](#), [Depression](#),
[Grief and grieving](#), [Mental illness](#), [Mood disorders](#), [Personality disorders](#)

Suggested Readings

Barrick C, Kazura J, Dundon M (1995) Older adults, reimbursement, and referrals: Implications for psychologists after Medicare reimbursement changes and before health care reform. *Professional Psychology: Research and Practice* 26(6):598–601

- Cook AJ (1998) Cognitive-behavioral pain management for elderly nursing home residents. *J Gerontol B Psychol Sci Soc Sci* 53:51–59
- Croese R (1990) Establishing and maintaining intimate relationships among home residents. *J Mental Health Couns* 12(1):102–106
- Grant RW, Casey DA (1995) Adapting cognitive behavioral therapy for the frail elderly. *Int Psychogeriatr* 7(4):561–571
- Klausner EJ, Alexopolous GS (1999) The future of psychosocial treatments for elderly patients. *Psychiatr Ser (online)* 50:1198–1204
- Niederehe G (1996) Psychosocial treatments with depressed older adults: A research update. *Am J Geriatr Psychiatry* 4(4, Suppl 1): S66–S78
- Scogin F, McElreath L (1994) Efficacy of psychosocial treatments for geriatric depression: A quantitative review. *J Consult Clin Psychol* 62:69–74

Suggested Resources

- American Psychological Association Website related to Aging; <http://www.apa.org/pi/aging/>
- American Association for Geriatric Psychiatry; <http://www.aagppa.org/>
- National Alliance for the Mentally Ill: Psychosocial Treatments; http://www.nami.org/Content/ContentGroups/HelpLine1/Psychosocial_Treatments

Pulmonary Disorders

Mohamed H. Yassin

Many of the pulmonary (lung/breathing) disorders in

elderly are preventable. Chronic obstructive pulmonary disease (COPD) and carcinoma of the lung (lung cancer) are directly related to prolonged exposure to smoking or other materials related to occupational exposure such as asbestos. The main symptoms of pulmonary disorders are dyspnea (shortness of breath) and cough. Both of these two symptoms may be present for a long time but are often ignored by the individual with the symptoms. Other symptoms that appear to be more alarming for the individual include hemoptysis (bloody cough) and wheezing. Chronic obstructive pulmonary disease, pulmonary embolism, infection, and carcinoma of the lung constitute the major burden of pulmonary disorders. These disorders are much more common in elderly than younger indi-

viduals. This entry will discuss COPD, probably the most preventable of lung disorders.

COPD is primarily a disease of older individuals in their fifties or sixties. Cigarette smoking is clearly the most important cause of COPD. Historically, as there have tended to be more men smokers than women smokers, COPD has tended to be over-represented in men. However in women, COPD rates increase with smoking rates.

It is estimated that over 14 million Americans have been diagnosed with COPD and probably an equal number remain undiagnosed. COPD is defined by air-flow obstruction due to two mechanisms emphysema and chronic bronchitis or most commonly, a combination of both. Chronic bronchitis is defined as productive (sputum producing) cough for more than 3 months in two consecutive years. Emphysema is a pathological diagnosis with abnormal dilatation of air spaces in the lungs with destruction of airflow passageway walls.

COPD usually presents as slowly progressive shortness of breath. Dyspnea (difficulty breathing) is initially noted on heavy exertion only. It gradually progresses to dyspnea at rest in severe COPD. Pulmonary function testing, which can be conducted in a medical clinic or hospital, detects decrease in forced expiratory volume in the first second (FEV₁). Expiratory volume is the maximum amount of air on individual can push out of their lungs with exhalation. Pulmonary radiographic examination (lung x-rays) may show abnormal enlargement of the small airways and chambers in the lungs (parenchymal bullae or subpleural blebs). These abnormal enlargements are pathognomonic (diagnostic) for emphysema.

Morbidity and mortality from COPD is largely preventable by avoiding smoking and by vaccination with influenza and pneumococcal vaccines. Guidelines for COPD management have been published and available on the web <http://goldcopd.com>. The first step in COPD management is smoking cessation. Smoking cessation in already severe COPD may not reverse the already established pathology but may decrease the frequency of exacerbations and slow the rate of deterioration.

Use of home oxygen may also improve COPD outcome. Supplemental low-flow oxygen is documented to alter the natural history of COPD. In research studies, oxygen improves survival, and quality of life and decreases hospitalization. Significant hypoxia (low oxygen content) in the arterial blood gases (PaO₂ ≤ 55 mmHg) or low oxygen-saturation in specialized evaluation of how well oxygen is taken up in the blood (pulse

oximetry $\text{SaO}_2 \leq 88\%$) are the usual indications for oxygen therapy.

In summary, COPD is a common, preventable lung disorder that occurs primarily in middle-aged and older adults. Avoidance of smoking can largely prevent COPD. For individuals with COPD, smoking cessation improves outcomes, and outcomes may also be improved by the use of oxygen.

Related Topics

▶ [Cancer](#), ▶ [Coronary artery Heart disease](#), ▶ [Smoking](#)

Suggested Resource

American Lung Association; www.lungusa.org or 1-800-LUNGUSA

Quality of Life

Brandy L. Johnson

Quality of life, as a concept, has various meanings and definitions. The World Health Organization has defined quality of life as an individual's perception of their position in life in the context of culture and value system in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, and social relationships to salient features of the environment.

Quality of life research can be applied to various disciplines, such as politics and economics, but is primarily used in medical contexts. In a medical context, quality of life is referred to as health-related quality of life. Health-related quality of life research measures the way illness, disease, and treatment affects a patient's welfare. The idea is that the information gained directly from a patient can help health care professionals assess the patient's condition. The results of such data assist health care professionals in determining, among other things, whether a particular course of treatment should be continued, or if a different course of treatment would be more beneficial. Quality of life data enable health care professionals to compare treatments, monitor the overall progress of individual patients, and receive a better understanding of an individual patient's beliefs regarding his or her treatment and well-being.

Quality of life research can be done in different ways. A health care professional can, for example, conduct an open-ended interview with the patient. Most quality of life research, however, is done through questionnaires. Although questionnaires may be administered through an interview, most are self-administered.

Quality of life questionnaires measure the patient's perceptions, beliefs, feelings, and expectations regarding different domains. This is usually done by assigning a numeric value to each of the answers to the questionnaires. Common domains include physical health, psychological health, social relations, level of independence, environment, and spirituality, religion, or personal beliefs. For each domain, various questions are asked to give the health care professional an idea of the patient's appraisal of his or her well-being in that area. For example, when attempting to gauge a patient's physical health, the questionnaire may include questions

regarding energy, fatigue, pain or discomfort, sleep or rest, health habits, sensory functions, mobility, nutrition, and illness symptoms. Similarly, questions used to assess psychological health may include inquiries regarding body image, appearance, negative or positive feelings, self-esteem, education, learning and the opportunity for continued learning, concentration, memory, emotional functioning and fulfillment, anxiety, stress, depression, and the ability to cope.

There are over 800 questionnaires that measure health-related quality of life. These questionnaires can be labeled as either generic or specific. Generic questionnaires are designed to assess many domains of health-related issues and are based on a broad and global concept of quality of life. There are two types of generic questionnaires: health profiles and health indices. Health profiles include inquiries concerning a large range of health-related domains and uses questions related to various aspects of subjective health status. As the patient answers each question, a numerical score based upon the patient's answer is figured for each domain. Health indices questionnaires also ask various health-related questions. However, unlike the health profile questionnaires, health indices questionnaires combine the scores each answer generates into a single number. The number is then placed in a range, with, for example, 0 being death and 1.0 being perfect health.

The numerical score, or scores, arrived at using generic questionnaires constitutes a health care professional's understanding of a patient's needs, as it reflects the patient's perceptions of his or her life. This perception is important because a patient has a unique perspective on his or her quality of life that cannot necessarily be arrived at by others. A wheel-chair bound individual, for example, might perceive his or her quality of life as not differing from able-bodied individuals. However, an evaluation of the wheel-chair bound individual's quality of life that is performed by an able-bodied individual might result in a lower score than the wheel-chair bound individual would have arrived at him or herself. Such a result could be partially explained by the fact that an able-bodied individual may place a higher value on qualities like standing and walking than the wheel-chair bound individual does. Bringing the patient's perceptions to the attention of health care professionals promotes the development of a comprehensive treatment plan. The health care professional can learn what aspects of the patient's life the patient is satisfied with or believes needs improvement. The information permits the

health care professional to put more or less weight on various treatment goals. If the patient's primary objective, for example, is continued independence, awareness of this objective will help a health care professional develop a treatment plan that places more emphasis on this goal. Knowing the patient's perception of his or her overall condition could also assist the health care physician in making decisions concerning the effectiveness or continuation of various treatments.

Specific health-related quality of life questionnaires, on the other hand, are designed to measure the quality of life of patients with a specific condition. There are four basic types of specific questionnaires:

1. *Domain specific:* This type of questionnaire only inquires as to one domain. For example, the questionnaire could be designed to solely assess the patient's psychological health.
2. *Disease specific:* This type of questionnaire is concerned with quality of life of individuals with specific conditions. Thus, a questionnaire that measures the health-related quality of life for individuals with Alzheimer's would be disease specific.
3. *Population specific:* This type of questionnaire is used to determine the health-related quality of life in the population being studied. This questionnaire could be used to gain information about subgroups like individuals living in nursing homes.
4. *Symptom specific:* This type of questionnaire is used to gain information about one symptom. By concentrating on one symptom, like memory loss, the results of this type of questionnaire can provide physicians with valuable information about the disease, various forms of treatment, and any changes that may result from treatment.

Once an individual's health-related quality of life has been determined, the health care professional and patient can take steps to improve the patient's quality of life. The steps taken to improve the individual's health-related quality of life could vary from pain management to therapy to increase in mobility. Improving one's quality of life is extremely individualized and will vary with each patient's state of health. However, every individual could improve his or her health-related quality of life.

An elderly individual can improve his or her quality of life by remaining active—both mentally and physically. Elderly individuals can also improve their quality of life by taking actions such as working with

a physician to find a regime that could help manage symptoms and pain.

Individuals nearing the end of life, including the elderly, often face a hard decision: quantity of life or quality of life. Rather than taking measures to extend the quantity of their lives, many individuals choose to improve the quality of the life they have remaining. Individuals who are nearing death are often concerned with issues including pain control, fatigue, independence, maintaining a sense of control over decision-making, avoiding a prolonged death, strengthening relationships with loved ones, the burden of physical care, spirituality, burial arrangements, and the burden placed upon caregivers and loved ones who may have to make decisions concerning life-sustaining treatment.

Legal documents, such as advanced directives, can also be utilized to relieve elderly individuals of decision-making concerns. For instance, the individual could execute a living will, thereby making his or her wishes concerning life-sustaining treatment known. The individual could also utilize a document known as a durable power of attorney. A durable power of attorney would permit the elderly individual to maintain decision-making power as long as he or she remains legally competent and to elect a person to act as a decision-maker if the individual were to become incompetent. By discussing his or her wishes with the elected decision-maker, an elderly individual can ensure both that his or her health care and wishes are known and the elected decision-maker is willing to accept the responsibility of honoring those wishes. A second form of a durable power of attorney could also help increase the quality of life of elderly individuals. A durable power of attorney over property can be utilized to permit an elected decision-maker to manage the finances and property of an elderly individual. This allows an elderly individual to ensure his or her property and bills will be managed by the person of his or her choice. This document would be especially beneficial for patients suffering from dementia or Alzheimer's disease. Additionally, execution of a will and the prearrangement of burial planning could be utilized to make an elderly individual's intentions known. Such measures relieve the elderly person's reluctance to leave loved ones with the burden of making such decisions.

Whether an aging individual is in perfect health or suffers from a debilitating condition, measures can be taken to increase his or her health-related quality of life. Further, data collected in quality of life research can be utilized to improve the quality of life of future patients.

Related Topics

➤ Durable power of attorney, ➤ Living wills, ➤ Mental illness, ➤ Social support, ➤ Spirituality

Suggested Readings

- Andrews F (ed) (1986) Research on quality of life. University of Michigan, Institute for Social Research, Ann Arbor, MI
- Crammer J (1999) Quality of life in clinical practice. *Neurology* 54 (Suppl. 2):S49–S52
- Larson D, Tobin D (2000) End of life conversations: Evolving practice and theory. *JAMA* 28:1573–1578
- Singer P, Martin D, Kelner M (1999) Quality of life care: Patients' perspective. *JAMA* 281:163–168

Suggested Resources

- Alliance for Aging Research; <http://www.agingresearch.org>
- The American Geriatrics Society; <http://www.americangeriatrics.org>
- AARP, Policy and Research; <http://www.aarp.org/research>
- National Counsel on Aging, Inc.; <http://noca.org>

Quality Indicators

Diane W. Braza

Over the last several years, there has been greater attention placed upon the quality of health care. Although the United States spends more on health care per capita than any other nation, it ranks much lower than other countries on several health measures. There is a large and growing body of literature that has documented that patients do not always receive proven therapies or preventative measures, and that the rate of preventable medical errors remains high. Additionally, studies have confirmed wide geographic variation in clinical practice, raising questions regarding the medical profession's adherence to evidence-based guidelines.

“Quality indicators” are defined as measures of health outcome or health improvement attributable to medical care. Quality indicators are benchmarks for the technical quality for which health care is provided. They represent the “value” side of the health care equation. Key components of health care quality include the following:

- Effectiveness—examines quality of care for specific clinical conditions or care settings
- Safety—tracks measures of patient safety, hospital-acquired infections, injuries or adverse events due to medical care, complications of health care, and medication safety
- Timeliness—examines both the delivery of time-sensitive clinical care and patients' perceptions of the timeliness and the accessibility of their care
- Patient centeredness—incorporates the patients' perspective with care for both routine and emergency services

Clinical areas studied to assess effectiveness often include cancer, diabetes, end stage renal disease, coronary artery disease, respiratory diseases, HIV or AIDS, maternal and child health, and nursing home and home health care. For example, utilizing evidence-based medicine, superior outcome has been demonstrated in individuals who receive aspirin and beta-blocker during an acute myocardial infarction (heart attack). Quality indicators for the treatment of an acute myocardial infarction would include the percentage of patients receiving aspirin within the first 24 h of admission, the percentage of patients discharged home on aspirin therapy, and the percentage of patients receiving beta-blockers at admission and discharge. Given that tobacco utilization is an independent risk factor for coronary artery disease, another quality indicator would be the percentage of patients given smoking cessation guidelines during hospitalization. For example, according to the 2004 National Healthcare Quality Report, in 2001–2002, 82% of Medicare patients hospitalized with a heart attack were prescribed a beta-blocker when leaving the hospital. A lower rate, 80%, was noted for women. During this same period, 49.5% of such patients were given smoking cessation counseling while hospitalized. Comparing subgroups, significant variations occurred for this indicator: Thirty-one percent of Hispanics, 51% of Whites, 40% of African Americans, and 54% of Native Americans received tobacco cessation counseling at discharge.

Patient safety measures include assessment of morbidity, mortality, and associated costs. The rate of hospital-acquired infections, adverse events and postoperative complications, and inappropriate use of medications are tracked as key adverse outcomes. According to the Centers for Medicare and Medicaid Services, in 2002, postoperative pneumonia, venous thromboembolism, and urinary tract infections were the most common risks in surgical

patients. Patient safety may be influenced by the severity of the patient's condition. For example, the complication rate was higher (23%) for individuals undergoing a hip replacement after hip fracture as compared to elective total hip replacement (10%).

Timeliness or the ability to receive care when needed is another key quality indicator. Timely delivery of appropriate care can help reduce mortality and morbidity for acute conditions such as stroke as well as chronic conditions such as renal failure. The national standard for the initiation of administering thrombolytic therapy in an acute myocardial infarction is 30 min. Within the United States, in 2000–2002, there was a sevenfold variation in timeliness to administer thrombolytic therapy, ranging from a low of 20 min to a high of 140 min. According to the 2004 National Healthcare Quality Report, average time to thrombolysis was 47 min; 42 min for males and 48 min for females. Time for thrombolysis was shorter for Whites (43 min) compared to Hispanics (60 min) and African Americans (59 min). Geographic variations were also reported ranging from 23 min in North Carolina to 140 min in Louisiana.

Patient centeredness is defined as “health care that establishes a partnership among practitioners, patients, and their families (when appropriate) to ensure that decisions respect patients’ wants, needs, and preferences and that patients have the education and support they need to make decisions and participate in their own care.” According to the Institute of Medicine, patient centeredness “encompasses qualities of compassion, empathy, and responsiveness to the need, values, and expressed preferences of the individual patient.” Measures of the patient experience of their care include the percentage of patients who report that their physician explained things clearly and the percentage of patients who felt that the physician showed respect for what they had to say. In the 2004 National Healthcare Quality Report, 56.4% of adult patients reported that their health care providers always explained things clearly to them; similar percentages were noted for both males and females. Percentages varied by ethnicity: White, 56%; Black, 62%; Asian or Pacific Islander, 44%; and American Indian, 55%.

Health quality “report cards” incorporating results of the various quality indicators are used nationally, regionally, and locally by payors, policy makers, clinicians, health system administrators, community leaders, and others to assess the quality of care delivered, identify critical areas for improvement, and identify centers or providers of excellence.

Related Topics

➤ [Managed Care](#), ➤ [Medicaid](#), ➤ [Medicare](#), ➤ [Medical malpractice](#), ➤ [Medication management](#)

Suggested Readings

- Antman EM, Anbe DT, PW Armstrong et al (2004) ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction—Executive summary: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 1999 Guidelines for the Management of Patients With Acute Myocardial Infarction). *Circulation* 110(5):588–636
- Centers for Medicare and Medicaid Services, Medicare Quality Improvement Organization Program, 1999–2000 and 2000–2001
- Institute of Medicine (2001) *Crossing the quality chasm: A new health system for the 21st century*. National Academies Press, Washington, DC

Suggested Resources

- <http://books.nap.edu/books/0309072808/html>
- <http://www.qualitytools.ahrq.gov/qualityreport> National Healthcare Quality Report 2004

Queer

Angela Pattatucci Aragón · Julianne Serovich

The term *queer* evolved through different historical contexts during the twentieth century. Prior to the Stonewall rebellion in 1969 that marked the beginning of the gay liberation movement, *queer*, in the context of describing a person, was used almost exclusively as a derogatory term against homosexuals. Furthermore, phrases such as “That’s so queer” was meant to express disgust at something considered abnormal. As the gay liberation movement gained momentum, a new meaning surfaced that signified a radical act of gay pride in defiance of *heteronormativity*. Heteronormativity describes a binary gender system, in which only two sexes are recognized, where sex is equated with gender and gender with a heterosexual orientation.

At the same time, lesbian feminists were concerned with legitimizing lesbian as an identity within the general context of women’s oppression, which necessitated

defining parameters. Out of this emerged separatist movements, proscriptions against butch and femme gender roles, antisadomasochism and antidominance or submission stances, and exclusionary taxonomies such as “women-born, women-identified women.” This process led to an identity politic that alienated and marginalized increasing numbers of men and women. Additionally, homonormative strategies (we’re just like you except for one thing) employed by lesbian and gay organizations to gain civil rights served to further marginalize individuals. Among those ostracized were transgendered persons, bisexuals, intersexed persons, butch and femme lesbians. Others were also ostracized, irrespective of sexual orientation. These individuals, who do not fit the prevailing cultural norms of gender, include transsexual persons, transvestites, and others who do not adhere to cultural standards of monogamous partnerships or congruency between sex, gender, and desire.

Similar to the gay liberation movement, these groups adopted queer as an umbrella term in a radical act of defiance and pride. However, in this case it was in defiance of lesbian and gay homonormativity in addition to heteronormativity. This meaning of queer exposes the hypocritical stance of gay liberation, in that queers can be visible only so long as they fit within the prevailing parameters of acceptability. Thus, these marginalized groups are queer even within lesbian and gay circles. In effect, they are “queer” queers.

Elderly persons may still view the term as pejorative and distasteful. More recently, however, queer studies have emerged as an academic discipline sustained by a well-articulated theoretical framework that has influenced a positive change for the term. Queer theory

proposes that sexual identities are a function of representations. It assumes that representations preexist and define, as well as complicate and disrupt, sexual identities. Although the gay liberation movement fought to legitimize an acceptable homosexual identity and in the process free from oppression-marginalized sexual minorities, Queer theorists seek to destabilize cultural ideals of normality and foster the freedom people need to create their own sexualities. That is, it challenges the norm of compartmentalizing people into preexisting categories. It is skeptical of viewing some identities as authentic and others as lacking, inauthentic, or deviant. Instead, queer theory concentrates on what individuals want and do. The emergence of queer theory has allowed many to embrace “queer” as a word of honor.

Related Topics

▶ [Femininity](#), ▶ [Gender](#), ▶ [Gender Role](#), ▶ [Homosexual](#), ▶ [Homosexuality](#), ▶ [Intersexuality](#), ▶ [Lesbian](#), ▶ [Masculinity](#), ▶ [Transgenderism](#), ▶ [Transsexuality](#)

Suggested Readings

- Butler J (1993) *Bodies that matter: On the discursive limits of “Sex.”* Routledge, New York
- Jagose A (1997) *Queer theory: An introduction.* New York University Press, New York
- Spargo T (1999) *Foucault and queer theory.* Totem Books, Kallista, Australia
- Turner WB (2000) *A genealogy of queer theory (American Subjects Series).* Temple University Press, Philadelphia

Race

Teddy D. Warner

What is “race” and who decides where a person fits in the racial, ethnic, or cultural categories so widely used in the United States? And on what criteria do they base their decision? Such basic questions about race are often left unaddressed by people who speak about the relationships among racial and ethnic groups in the United States. Most people simply assume that a consensus exists on classifying the race (or ethnicity) of individuals, but there are opposing views on the meaning of the concept of “race” (and ethnicity). Under the traditional view, race is a biological trait, capable of classification into types based on observable physical characteristics such as skin color, hair type, nose shape, etc. The biological basis of race has been the source of fairly heated debates, and it is now generally understood that such external physical characteristics have little reliable relationship to culture or ethnic group status. Today “race” has no consensus definition, and in fact, biological racial categories and observable characteristics have more variation with members of commonly identified racial groups than between such groups. The newer views of race argue that biological or anthropological definitions of race are not scientifically valid, and instead assert that race is a social and political construction. The social construction view does recognize that race classification and race identity exists in our society and that race does significantly influence the lives of people—thus it also recognizes that race merits careful attention in our culture. In this view, race is the category to which individuals are assigned on the basis of observable physical characteristics and on family genealogical history as it is understood by individuals. Race also includes the generalizations and stereotypes made as a result of such categorization. People are thus commonly treated (or studied) as though they belong to biologically defined racial groups on the basis of such characteristics, although these groups are largely socially or politically constructed.

“Race” has traditionally been a system of classifying individuals as members of a group of persons who are related by heredity or a common descent. Under this view, racial groups are supposedly distinguishable by distinctive physical characteristics that are possessed by members of a particular racial group. Biological race

has been more recently distinguished by genetic markers such as blood groups and other markers. Overall, the scientific validity of the concept of race has been seriously called into question by many authorities. Biological categories of race and phenotypic characteristics have been shown to have more variation within ascribed racial groups than between such groups. Race has also been used to refer to a population of people isolated reproductively from other populations and whose members share greater physical and genetic similarity with each other than with other groups of people.

More broadly, race has been used to describe groups of people who form an “ethnic group.” “Ethnic” usually refers to characteristics of a people, especially a group of people that share a distinct and common set of characteristics, such as culture, religion, language, race, and nationality (for more details see “Ethnicity”). However, no consensus exists regarding definitions of race or ethnicity or culture, and although each concept has distinct elements, it is unfortunately very common for people to use the terms race, ethnicity, and culture interchangeably.

However, several experts have pointed out that the amount of variability of social, behavioral, cultural, and even genetic characteristics among individuals within specific ethnic or racial groups is almost always much greater than the variability between such groups. That is, it has often been argued that although genetic, behavioral, social, and cultural differences among ethnic groups may be predictors of average health status between such groups, it is much more important to examine differences within members of an ethnic group to understand the causes of health and illness and to increase effectiveness of diagnosis and treatment.

Despite the demise of racial theory scientifically and the official rejection of white supremacy as the social and legal organizing principle for race classification in the United States, the conception that race is a fixed inherited characteristic of people remains widely accepted, and race is still reflected in current law. The rejection of supremacist and biological theories of race have led some people to conclude that race is now only a matter of skin color that is not related to other aspects of culture or society. For example, under a majority Supreme Court decision written by Justice O’Connor, “racial classifications of any sort pose the risk of lasting harm to our society. They reinforce the belief, held by too many for too much of our history, that individuals should be judged by the color of their

skin.” This position assumes that race is a physical, inherited trait disconnected from matters such as social and political interests. It further argues that the only reason to group persons of the same race together is because people in a racial group will think and act alike on important matters, such as voting for political candidates. The appropriate role of government should, by this view, be only to model nonracial approaches, and to consider race only when identifying past racist practices to the extent necessary to address identified harms. To use race otherwise to classify and make proactive decisions would reinforce the prejudices that lie at the basis of the racism according to this reasoning.

An alternative view of race can be found in Justice Souter’s dissenting opinion in the same case. He does not question that race is often equated with differences in skin color, but he does recognize that blacks, for example, may often have important shared interests beyond mere physical appearance. He does not acknowledge, however, that such shared interests may arise from the historical racial subordination of African Americans (or other minority groups) to the white majority in the United States.

Thus, debates about race are often based on different cultural assumptions. Terms such as “Hispanic” or “Black” or “Native American” describe groups whose members recognize some people as members of their “cultural group,” with a common history and traditions, and other people as members of other groups with distinct history and traditions. The common ground of racial or ethnic group membership gives members a cognitive framework (and related language) for viewing the world based on roughly shared experiences that derive from their group’s particular status in society. The different histories of Hispanics and Blacks and American Indians and Asian Americans is that despite the many similarities in the treatment and status of these groups, their members speak with different specific experiences and different cultures, which may manifest in distinct ways.

Broad physical similarities, such as skin color, are now used efficiently, if also often inaccurately, to identify the differences between racial groups. However, economic, political, and social forces (not skin color or other physical characteristics) work to keep these groups similar in some important respects, as well as partially separated from the rest of the majority society. With this understanding, “race” is a term that is used to describe the difference between the minority groups

and the majority society, because racial differences have been the traditional justification for racial subordination. If the concept of race is a product of historical relationships among groups, rather than an inherited trait, people who describe the social and political situations must focus on the relationship among and within cultural groups rather than using a simple characteristic, such as skin color, to serve as an identifier for members of groups.

To recognize that race is a matter of cultural or social definition is thus a critical position. Such definitions of race have been invoked historically and legally. For example, the Supreme Court’s decision in *Keyes v. School Dist. No. 1* used a cultural view of race, ethnicity, and culture in describing the Southwestern city of Denver as “a triethnic, not a biracial community.” The Court noted that “in the Southwest Hispanics and Negroes have a great many things in common” and held that the two groups must be considered as one when determining whether Denver’s schools were racially segregated. Justice Brennan’s opinion revealed a more complex understanding of race and ethnicity than seen in other Supreme Court decisions. In this opinion, race is not a fixed trait, disconnected from other aspects of society, but instead racial and ethnic definitions are a matter of local culture and history. Justice Brennan asserted that in the Southwest the literal black versus white racial distinction found in the East was not valid—instead, three main ethnic groups existed with the Anglo holding dominance over Hispano and Native American. The Court’s description of Denver Blacks as an “ethnic” or “racial” group was not intended to imply that actions against Blacks were not racial discrimination, nor that Blacks were in the process of assimilating into White society. Rather, the view of racism in that case was that racial discrimination could be found wherever the dominant white or Anglo group viewed other groups as separate and inferior and acted on those beliefs with discriminatory behaviors. This view does not depend on an inquiry into inherited characteristics, but only into real social and political actions. The central issue under this view is whether a racial or ethnic group is accepted and recognized as part of the majority society.

US federal standards have been published to provide a common language for uniformity in the collection and use of data on race and ethnicity by federal agencies. The standards are not to be used as determinants of eligibility for participation in any federal programs. The categories are social and political

constructs and should not be interpreted as scientific or anthropological in nature. Federal research grants, such as those funded by the National Institutes of Health, are required to utilize these categories when reporting characteristics of research participants in scientific manuscripts and reports to federal agencies. The minimum federal categories for data on race and ethnicity are defined as: (1) American Indian or Alaska Native—a person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment; (2) Asian—a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam; (3) Black or African American—person having origins in any of the black racial groups of Africa; terms such as “Haitian” or “Negro” can be used in addition to “Black or African American”; (4) Hispanic or Latino or of Spanish origin—a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race; (5) Native Hawaiian or other Pacific Islander—a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands; and, (6) White—a person having origins in any of the original peoples of Europe, the Middle East, or North Africa. Respondents are offered the choice of one or more of these racial categories.

Percentages of people of all ages who consider themselves to be in each “race” category based on the 2000 US Census are: (1) 0.9% American Indian or Alaska Native; (2) 3.6% Asian; (3) 12.3% Black or African American; (4) 0.1% Native Hawaiian or other Pacific Islander; (5) 75.1% White; (6) 5.5% some other race; and (7) 2.4% two or more races. Percentages by “ethnicity” categories are: (1) 12.5% Hispanic or Latino and (2) 87.5% not Hispanic or Latino. Percentages of individuals 65 years of age or older within each race and ethnicity category based on the 2000 US Census are: (1) 5.6% American Indian or Alaska Native; (2) 7.8% Asian; (3) 8.1% Black or African American; (4) 5.3% Native Hawaiian or other Pacific Islander; (5) 14.4% White; (6) 3.0% some other race; and (7) 4.9% Hispanic or Latino. In addition, percentages of individuals 50 years of age or older within each race and ethnicity category based on the 2000 US Census are: (1) 17.1% American Indian or Alaska Native; (2) 21.5% Asian; (3) 20.1% Black or African

American; (4) 16.1% Native Hawaiian or other Pacific Islander; (5) 30.5% White; (6) 10.1% some other race; and (7) 13.6% Hispanic or Latino. Projections show that the percentage of people of all ages within non-white groups will increase steadily over the next half century. For example, Black or African Americans are expected to increase from 12.3% to 14.6% by 2050 and Asians from 3.8% to 8.0%, while Hispanic or Latinos will increase from 12.5% to 24.4%. Finally, projections also indicate that the percentage of individuals in all groups who are both over 50 and 65 years of ages will increase substantially over the decades ahead.

Federal standards for reporting race govern the collection of federal statistics regarding the implementation of a host of civil rights and other laws. The reasoning provided for these standards suggests several questionable assertions about race and identity embedded in the classification system. Guidelines for these standards instruct agencies to prefer separate questions for “race” and “ethnicity,” the latter term referring, as previously noted, only to whether or not a person is “Hispanic.” The definitions of the racial categories make it clear that, with two exceptions, the individual is supposed to look to genealogy as the source of racial identity. For example, a “White” person is one “having origins in any of the original peoples of Europe, North Africa, or the Middle East,” while a “Black” person has “origins in any of the black racial groups of Africa.” That origin means biological ancestry is made clear by comparison with the two groups defined at least in part by “culture”: “American Indian[s] or Alaskan Native[s],” who must have both pre-Columbian American ancestry and “cultural identification through tribal affiliation or community recognition,” and “Hispanics,” who are identified as having either “Spanish culture or origin.” Further, the widespread but erroneous belief that cultural identity is fixed and biologically inherited insures that origin will be interpreted by most people as referring to biological ancestry. Thus, federal guidelines reflect the view that race is a fixed, inherited trait unrelated to culture or social relationships among members of various groups. Further, by neglecting any reference to the relationship of the respondent to people in other cultural groups, guidelines place racial identity within the individual, instead of in that person’s relationship to others.

Hispanics are defined as the ethnic group whose “culture or origin” is Spanish, “regardless of race,” and Mexican-Americans are specifically described as a

“Spanish cultur[al]” subgroup. The combined format declares that Hispanics are either white or black. Because a “black” person is defined as “a person having origins in any of the black racial groups of Africa,” it is clear that federal guidelines consider Mexican-Americans as a white ethnic group. This perception is at odds with Chicano identity and the Chicano people’s historical experience of racial oppression, as well as the present, ongoing racial discrimination against Mexican-Americans. The perception also differs from the determinations Congress made when it decided that Mexican-Americans needed to be covered under laws addressing racial discrimination. The classification of Mexican-Americans as white is consistent only with prior practices of the Census, which stopped counting “Mexicans” as a race with the 1930 Census and instructed Census takers to list Chicanos as whites when those persons were “definitely not Negro, Indian, or some other race.”

Federal guidelines describe Chicano difference from the white majority as an “ethnic” difference, rather than a racial one. In other words, it describes Chicanos as part of the “white” race, but a part that has yet to fully assimilate into the mainstream status enjoyed by members of that group. This construct, sometimes described as the “immigrant analogy,” holds that minorities in American society will all progress down the path of assimilation taken by such white ethnic groups as the Irish, the Jews, and the Italians, at least to the extent that minorities work as hard as members of those groups worked to gain acceptance as deserving of white status. Few now believe that the immigrant analogy holds true for groups such as Chicanos or immigrant communities from Asia, whose difference from majority society is defined both in racial and ethnic terms.

The differences between the ethnic experiences of a member of a racially subordinated minority group and a member of the white majority are profound. One study of white American ethnicity in communities on the East and West coasts describes white cultural identity as a “dime store ethnicity.” This characterization does not mean that ethnicity is of little value to whites; on the contrary, ethnic identity provides white Americans with a “warm feeling” of belonging to a community that is very important in an increasingly individualized society. This description does mean that a white American has the flexibility to choose any European cultural identity he or she prefers (limited

by the individual’s tendency to view ethnic identity as an inherited trait), while an American identified as a racial minority does not have that flexibility. Thus, it appears that white “ethnicity” is purely symbolic and does not limit white individuals in any way. Whites are often the bitter foes of affirmative action, it is argued, because they fail to understand the difference that race makes in the ethnic experiences of nonwhite compared to white Americans.

The difference, of course, lies in the racial barrier that divides American society. Racialized minority groups are those defined as inherently inferior, whether because of genetic differences or because members of these groups are the products of backward, deficient cultures. Racialized minority groups are not eligible for assimilation into the Anglo majority because the process of assimilating into white society requires defining oneself as not part of a racialized minority group, and most members of racialized minorities cannot define themselves as white. The ethnic experience of people not eligible for assimilation is very different from that of a white American, because ethnic differences are used to justify inferior treatment for the racially minority group members.

A racialized minority group is defined by the relationship between that group and the majority white society. If the relationship is one of subordination enforced by the perception of racial difference, the group is racially subordinated. This does not rely on any innate characteristic of the members of the racially subordinated group.

Related Topics

[▶ African American](#), [▶ American Indian and Alaskan Native](#), [▶ Asians and Pacific Islanders](#), [▶ Discrimination](#), [▶ Ethnicity](#), [▶ Latino](#)

Suggested Readings

- Bamshad MJ, Olson SE (2003) Does race exist? *Sci Am* 289:78–85
- Burchard EG, Ziv E, Coyle N et al (2003) The importance of race and ethnic background in biomedical research and clinical practice *N Engl J Med* 348:1170–1175
- Frable DES (1997) Gender, racial, sexual, and class identities. *Ann Rev Psychol* 48:139–162
- Genes, race, and psychology in the genome era (special issue) (2005) *American Psychologist*, 60(1)

- Nazroo JY (2003) The structuring of ethnic inequalities in health: Economic position, racial discrimination, and racism. *Am J Public Health* 93:277–284
- Zuckerman M (1990) Some dubious premises in research and theory on racial differences: Scientific, social, and ethical issues. *Am Psychol* 45:1297–1303

Suggested Resources

- American Psychological Association (2002) Guidelines on multicultural education, training, research, practice, and organizational change for psychologists. APA Policy approved by the Council of Representatives. Downloaded Nov. 1, 2005; <http://www.apa.org/pi/multiculturalguidelines>

Rape

Kathleen Franco · John Franco · Mohammed Alishahie

Rape is the crime of having sexual intercourse with a person forcibly and without consent. It is an act of violence and hostility. Females and in particular elderly females are perceived as being powerless and easy targets. Because rape is not normal sexual activity, but a form of aggression, victims can be older than the perpetrators. Half of the women who are raped never report it and this percentage may be higher in the elderly. Embarrassment and shame may play a role and can be dramatically compounded if the woman was sexually molested as a child. This is particularly true if the perpetrators were family or close friends of the family. Rape may not receive adequate attention when there is evidence of general domestic battering or elder abuse.

There is less written about older men who are raped. Those with disabling mental or physical conditions are at greater risk, particularly those with dementia or psychosis. Men in prison are quite susceptible to being raped. Elderly men whose caretakers are intrigued by pornography are often in a more dangerous situation, reiterating that rape represents both power and violence.

Despite interest from the National Institute of Mental Health in the mid-1970s, little was known

regarding the issue of rape in older adults until the last decade. Risk increases with institutionalized patients' dependency on staff for protection. Sexual assault in nursing homes lacks rigorous review perhaps due to disinterest or bias against the aged and particularly the cognitively impaired. In one report of 20 forensic cases, the majority were white females unable to ambulate on their own. Over three-quarters had dementia, central nervous system disorders, or brain trauma. Poor memory and confusion were typical making it hard for the individual to report the assault in a credible manner. Even psychological consultants can be led to believe that the initial claims are delusions. Symptoms such as loss of appetite, withdrawal, and increasing fear may be early signs before the resident can express the assault verbally. Elderly individuals without dementia may not report the rape, feeling ashamed that they did something to cause it to happen.

Documentation history, physical examination, cognitive and psychological assessment is needed at the first indication that a rape may have occurred. Reports of pain, observation of bruises, and even new venereal warts can help substantiate. Cautious hiring practices for staff, guidelines for examination of residents, recommendations for assuring a safe environment, and availability of appropriate treatment should be in place.

It is estimated that 100,000 to 600,000 older women survive rape in a given year. Roughly two-thirds are severely injured physically including 10% who are murdered. Almost half of those murdered suffer beatings. Assailants are generally white, single males. Nearly 80% of the assailants are strangers and the remaining 20% are family or friends. Among older women rape victims, rape perpetrators are 30 years or more their junior in one-quarter of cases. For women over the age of 65, the rape almost always occurs in their own home, whether by a stranger or someone they know. Eighty percent of the elderly living alone are women. Many are frail, increasing their powerless position, yet hesitate to ask others for assistance. Even when they do ask, it is not without risk. Caregivers may perpetrate the abuse. Raising the awareness of the general public and educating women of this age group to their risk are critical prevention measures.

Elderly individuals often fear reporting the caregiver and being forced into a nursing home. The impact on those who survive is devastating and requires close attention to physical and psychosocial

sequelae. There are protocols in hospitals and nursing homes to direct careful evaluation, provide initial treatment, and assess in follow-up what further interventions may be needed.

Elderly persons, whether male or female victims, are most often much older than their assailants. The victims in both cases lack power in many spheres and are easily overcome by the perpetrator. Men and women are at risk both at their homes and at nursing homes. The more intimidated, ashamed, or cognitively impaired they are, the more vulnerable they are. Educating both the older women and men and the general public is an important starting point in the message of no tolerance toward violence.

Related Topics

- [Adult Protective Services](#), • [Elder abuse and neglect](#), • [Sexual abuse](#), • [Violence](#)

Suggested Readings

- Burgess A, Dowdell E, Prentky R (2000) Sexual abuse of nursing home residents. *J Psychosoc Nurs* 38(6):10–18
- Davis LJ, Brody EM (1979) Rape and older women. A guide to prevention and protection, United States Department of Health and Human Services Publication No. (ADM) 81-734. U.S. Government Printing Office, Washington, D.C.
- DeLorey C, Wolf K (1993) Sexual violence and older women. *AWHONNS Clin Issues Perinatal Women's Health Nurs* 4(2): 173–179
- Fazel S, Hope T, O'Donnell I, Jacoby R (2002) Psychiatric, demographic and personality characteristics of elderly sex offenders. *Psychol Med* 32(2):219–226
- Kallman H (1987) Detecting abuse in the elderly. *Med Aspects Human Sexuality* 21(3):89–99

Rational Suicide

Deborah Gould

Rational suicide is a term that has been used for nearly a century to describe the taking of one's own life based upon logical decision-making. Many argue that suicide can never be rational. Dialog concerning rational suicide is becoming more important as the number of

elderly with chronic, debilitating diseases increases and considerations of quality of life issues emerge.

Proponents of rational suicide believe that the taking of one's own life is a personal right that should be allowed to be exercised for whatever reasons an individual deems fit. This extreme position holds that even if the individual has an illness that could respond to treatment (such as depression, psychosis, or chronic pain), suicide is a viable option if the individual so chooses. Opponents of rational suicide believe that suicide is unacceptable under any circumstances, and if not irrational it is certainly immoral.

The debate between these two extremes will continue and probably intensify as patient advocates, bioethicists, philosophers, civil libertarians, and religious leaders voice varying opinions. For now, the consensus opinion appears to be that illnesses that could lead to suicide need to be identified and treated. For instance, hypothyroidism (decreased production of thyroid hormone) can cause depression and treatment of the underlying disorder is curative. Some medications, such as corticosteroids (prednisone) can cause depression and psychosis and discontinuation of the medication or close monitoring while the medication being used is required. There are psychiatric illnesses such as depression and schizophrenia, which can be identified and treated to decrease the suicide rate associated with these disorders.

Elderly and terminally ill individuals present the greatest challenge in the rational suicide controversy. Physician-assisted suicide (euthanasia) has been debated for decades. Jack Kevorkian, a Michigan physician, advocated physician-assisted suicide and would counsel terminally ill patients on how to successfully complete it. In 1999, he was convicted of second-degree murder for causing the death of a terminally ill patient. Whereas previously he had only counseled patients, for this patient he injected the lethal medications himself.

In 1997, the US Supreme Court upheld the right of individual states to make physician-assisted suicide illegal, stating that physician-assisted suicide was not a right guaranteed by the Constitution. In doing so, however, the Court left the door open for individual states to pass laws making it legal, which Oregon did in 1997. In the Netherlands, euthanasia has been practiced for decades.

In summary, rational suicide is an issue that has become increasingly complicated as legal, ethical, and moral considerations in addition to individual choice

need to be taken into account. However, some individual choices regarding quality of life remain. Individuals can make living wills and advanced directives, which legally define exactly the kind and extent of medical care they are to receive in the event of being incompetent to make those decisions at the time of the illness. Medical intervention can therefore be limited depending upon the individual's preexisting wishes and family members do not make decisions that are difficult and contrary to the individual's choice.

Related Topics

▶ [Ambiguous loss](#), ▶ [Bereavement](#), ▶ [Death](#), ▶ [Parasuicidal behavior](#), ▶ [Physician-assisted suicide](#), ▶ [Suicide](#)

Suggested Reading

Lerner BH (2004) A calculated departure: For someone in good health, can suicide ever be a rational choice? *Washington Post*, March 2, 2004

Suggested Resources

Smith WJ (2003) www.s-u-i-c-i-d-e.com; suicide advocacy goes online. *National Review Online* (June 12, 2003); <http://www.nationalreview.com/comment>

Regional Rheumatic Pain

Lori B. Siegel

Regional rheumatic pain syndromes are defined as localized pain syndromes including inflammation of the joint space (bursitis), tendons (tendonitis) muscle strains, and tenosynovitis. As people age, the supportive and protective musculoskeletal structures that are in place become weaker and less able to tolerate stress tendons become less flexible and are more susceptible to injury. Calcium deposition along tendons and in bursae and tissues add to this inflexibility and may lead to contractures and scarring. Muscles tend to atrophy

with aging or disuse also become weaker and this results in less bulk to absorb the strain and wear that is placed on the muscles. These forces are transmitted to the bursae and tendons which are less able to tolerate the stress, resulting in regional rheumatic pain. Poor circulation as well as other chronic medical conditions, such as arthritis and diabetes may further affect the tendons, muscles, and bursae and predispose a patient to these syndromes.

It is crucial to establish the correct diagnosis with a thorough history and physical examination. In general the history will reveal some type of repetitive motion or overuse of the affected area. The physical examination will usually allow the examiner to move the joint through its full range of motion, even though painful, indicating that the joint itself is not affected. Since the regional rheumatic conditions are localized, often direct local therapy is safer than systemic medications in older individuals. Nonsteroidal antiinflammatory drugs (NSAIDs) may help these conditions, however in an aging population these must be used with caution because of decreased renal perfusion and other concurrent medications that could adversely interact with the NSAIDs. For this reason, a local lidocaine or corticosteroid injection is preferred with local physical therapy. Some conditions may respond to physical therapy, splinting, or other ergonomic measures so that medication is not required at all.

Shoulder pain is one of the common complaints among older individuals and a careful physical examination is needed to define whether the tendon, muscle, or joint is affected. In addition, the health-care provider should be mindful that neck problems may manifest in the shoulder pain.

Rotator cuff tendonitis or even rupture is quite common and may happen with only minimal insult such as lifting a heavy suitcase in an awkward fashion. In a rotator cuff injury, the patient experiences pain on voluntary arm movement away from the body or a chronic deep dull ache. The biceps tendon is independent of the rotator cuff tendons and may become inflamed and painful with repetitive movements or heavy lifting. The pain is usually in the front of the arm just below the shoulder but may radiate to the shoulder itself. The shoulder also has joint spaces (bursae), which may be inflamed. The subacromial and subdeltoid bursa often cause pain when the patient is resting or sleeping on the inflamed side.

Another common shoulder condition in the aging population, particularly patients with diabetes, is

adhesive capsulitis. This rapidly deteriorating condition causes acute pain in one or both shoulders and is associated with severe stiffness and decreased range of motion. Prompt treatment is essential and may include corticosteroid injection and physical therapy. Some people need to have the range of motion done under anesthesia if conservative measures are unsuccessful. Physical therapy is very important in shoulder problems so the range of motion may be preserved; this is lost quickly if not treated.

In the lower extremities, a common cause of regional pain is the trochanteric bursa. Patients initially complain of “hip” pain but the pain is on the lateral side of the leg and not in the groin region, as is true hip joint pain. The pain is worse when lying on the affected side or wearing a purse or tool belt that hits the area. As with the neck, many lower extremity complaints may actually stem from the lumbar spine such as a slipped disk and this should be considered in the evaluation. Pains about the knee may be from prepatellar bursitis, infrapatellar bursitis, infrapatellar tendonitis, or iliotibial band syndrome. A good understanding of the anatomy will help distinguish these syndromes.

The treatment is aimed at reducing symptoms and preventing recurrence. Rest, ice, and/or heat may be useful. Physical therapy and splints or ergonomic alterations may help as well. Local therapeutic injections are preferred to NSAIDs in those patients who have renal insufficiency, gastrointestinal problems or are on other complicated medical regimens. Stretching and strengthening the muscles throughout ones life will help prevent these types of injuries and speedy recovery if they occur.

Related Topics

- ▶ [Chronic fatigue syndrome](#), ▶ [Chronic pain](#), ▶ [Fibromyalgia](#)

Suggested Readings

- Klippel JH (ed) (2001) *Primer on rheumatic diseases*, 12th edn. Arthritis Foundation, Atlanta, GA
- Klippel JH, Dieppe PA (1998) *Rheumatology*, 2nd edn. C.V. Mosby, St. Louis, MO
- Klippel JH, Dieppe PA, Ferri FF (2000) *Primary care rheumatology*. Harcourt, London

Rehabilitation

Diane W. Braza

DeLisa and colleagues define rehabilitation as “the development of a person to the fullest physical, psychological, social, vocational, avocational, and educational potential consistent with his or her physiologic or anatomic impairment and environmental limitations.” Rehabilitation is a concept that should permeate the entire health-care system focusing not only on intervention, but also on prevention and early recognition. Rehabilitation strategies can be implemented across all age spans, disease processes, and settings (hospital, outpatient, home, and care centers).

Rehabilitation by its very nature is comprehensive, holistic, and multidisciplinary. Therefore, a well-integrated rehabilitation team utilizing the combined expertise of multiple disciplines is the most beneficial method of care delivery. The team leader is usually the physician, who has the responsibility for establishing the medical and/or surgical diagnosis, designing a comprehensive care plan, and setting treatment goals. Physicians who specialize in Physical Medicine and Rehabilitation are called “physiatrists.” Physiatrists are specialists in the diagnosis and treatment of patients of all ages in three major areas of medical care:

- Diagnosis and treatment of musculoskeletal injuries and pain syndromes
- Electrodiagnostic medicine
- Rehabilitation of patients with severe impairments

Physiatrists treat neurologic rehabilitation conditions including stroke, brain injury, and spinal cord injury. Many other disabling conditions such as amputations, multiple trauma, burns, and sports injuries are treated as well. A physiatrist directs a comprehensive rehabilitation team of professionals that may include physical therapists, occupational therapists, recreational therapists, rehabilitation nurses, psychologists, social workers, speech-language pathologists, and others.

Physical therapists assist the patient in functional restoration. Treatment may include exercises to improve and maintain joint range of motion and improve strength, flexibility, coordination and endurance; gait training; instruction in use of assistive devices (canes, walkers, wheelchairs), orthotics (devices used to support weakened joints and limbs) and prosthetics (a device

used to replace a missing body part, e.g., an artificial limb); assessment of the individual's safety; and incorporation of therapeutic heat, cold, ultrasound or electrical stimulation to reduce pain and muscle spasm.

Occupational therapists assist the patient in achieving independence in all facets of their lives. It gives people the “skills for the job of living” necessary for independent and satisfying lives. Services typically include treatment programs to improve one's ability to perform daily activities such as bathing, dressing, eating, and personal hygiene; comprehensive home and job site evaluations with adaptation recommendations; adaptive equipment recommendations and usage training; instruction in upper extremity joint range of motion, strengthening and flexibility exercises, and energy conservation; and training and guidance to family members and caregivers.

Speech pathologists help patients in the areas of communication and swallowing. This can include teaching people how to speak again; evaluation of swallowing function and management of dysphagia; retraining speech in patients who have undergone procedures which alter head and neck anatomy, such as following surgery for mouth cancer; evaluation and treatment of neurological communication and cognition problems, such as seen in stroke survivors; and evaluation and instruction in the use of compensatory nonvocal communication devices including communication boards. Rehabilitation nurses, recreational therapists, and social workers assist patients, their families and the rehabilitation team to maximize functional independence and adjustment to injury and disability.

Rehabilitation in adulthood focuses on the aging individual who develops medical conditions that alter their level of function as well as the aging disabled. It is well-known that with increasing age there is an increasing incidence of chronic and multiple diseases. Over 60% of adults with functional impairments due to chronic health problems are aged 65 or older. Since the majority of these chronic diseases are not curable, the challenge to health-care providers is to prevent or minimize functional impairments resulting from various chronic and multiple illnesses.

Related Topics

- [Activities of daily living](#), ➤ [Occupational therapy](#),
- [Speech disorders](#), ➤ [Traumatic injury](#)

Suggested Readings

- DeLisa JA, Martin GM, Currie DM (2004) Rehabilitation medicine: Past, present, and future. In: DeLisa JA, Gans BM, Walsh NE, Bockenek WL, Frontera WR, Gerber LH, Geiringer SR, Pease WS, Robinson LR, Smith J (eds) Rehabilitation medicine: Principles and practice. J.B. Lippincott Company, Philadelphia, pp 3–24
- Felsenthal G, Lehman JA, Stein BD (2000) Principles of geriatric rehabilitation. In: Braddom RL, Buschbacher RM, Dumitru D, Johnson E, Matthews D, Sinaki M (eds) Physical medicine and rehabilitation. Saunders, Philadelphia, PA, pp 1343–1368

Suggested Resources

- American Physical Therapy Association. Alexandria, VA (2005); www.apta.org
- The American Occupational Therapy Association. Bethesda, MD (1999–2005); www.aota.org
- Association of Academic Physiatrists. Baltimore, MD (1999/2006); www.physiatry.org

Religion

Cynthia M.A. Geppert

Religion is as ancient and universal as humanity. Despite its ubiquity, the definition of religion remains elusive and debated. One text concludes that “Religion is an organized system of beliefs, practices, rituals and symbols designed (a) to facilitate closeness to the sacred or transcendent (God, higher power, or ultimate truth/reality) and (b) to foster an understanding of one's relationship and responsibility to others in living together in community.” Distinguishing religion from spirituality has become increasingly important in the postmodern world. Spirituality is usually presented as a more personal and less formal or ritualized search for meaning or relationship to the ultimate. When examining research into the relationship of religion and health, a distinction between intrinsic and extrinsic religiosity is significant. For persons with an extrinsic orientation, religion is a means of attaining goals other than purely spiritual ones. Religion may be a source of community, social support, comfort, or status. Outward practices such as church membership or attendance are research variables that tend to measure extrinsic religiosity. For individuals with an intrinsically religious attunement,

religious values are primary and transcendent. Prayer, meditation, and the reading of sacred texts are often indexes of intrinsic religiosity.

The United States is among the most religious of industrialized nations and older Americans tend to be more religious than any other segment of the population. In 2004, a survey by the American Association of Retired People of 1,625 people above age 45 discovered that more than half of respondents attended church as frequently as once every 2 weeks. Eight of ten participants perceived themselves as religious. Women and older adults were more likely to consider themselves religious and attend services than men and younger individuals.

Religion and Health

There has long been an intuitive recognition of the positive association between religion and health, but it is only in the last few decades that science has provided evidence to ground this intuition. A respectable number of studies have been carried out with older populations, and under a variety of conditions, have consistently shown a modest correlation between religious involvement and better mental and physical health, improved life satisfaction, less use of health care services and reduced morbidity, and even mortality.

One study looked at religious attendance among the two, 182 disabled and nondisabled elders over a 12-year period. It confirmed earlier findings in that frequent attendance predicted lower and delayed onset of disability. Surprisingly, functional impairment did not prevent church attendance. Religious persons appear to use fewer medical services because they are in better health, use fewer substances, and also have more social support. A study at Duke University of 542 hospitalized persons above age 60 showed that those who attended religious services once a week or more were 56% less likely to be hospitalized and, when admitted, stayed fewer days. Research suggests that the religious may even live longer than their nonreligious counterparts. Investigators followed 21,204 adults of all ages. Those who attended religious services lived 7 years longer on average than those who did not, with a life expectancy beyond age 20 of 55 years compared to 62 years. African Americans who were church attendees lived 14 years longer than those who did not go to services, with a life expectancy for

60 years beyond age 20 compared to 46 years for those not attending. Religious participation may also bring mental health benefits to elders, including less depression and substance use, better coping and stress tolerance, improved life satisfaction and overall well being, fewer mental health visits, and reduced need for psychotropic drugs.

Researchers are delving into the mechanisms underlying the positive effects of religion on health, a crucial step if they are to be incorporated into health care practices and delivery. It is well known that social support buffers stress and improves coping, and that both of these factors lead to better health. Religion, particularly extrinsic types, may be one of the most powerful and efficient means of social cohesion and support. More intrinsic forms of religion, such as prayer and meditation, may improve health through the reduction of stress and other symptoms intrinsic to aging.

Critics of the “religion and health” connection argue that other variables such as healthier lifestyles and more close-knit communities, rather than any specific religious factor, are actually responsible for the positive effects found in studies. However, rigorous investigations that controlled for these confounding influences through sophisticated statistical methods continue to demonstrate that religion is beneficial for health. Other critics caution that religion can have negative effects including the induction of shame, alienation or guilt, all of which correspond to deleterious effects on health. Proponents acknowledge the possibility of negative effects, although argue they occur in a minority of cases and can be improved through adherence of health care professionals and clergy to high ethical standards.

Religion, Aging, and Public Health

The financial and social cost of our aging population in the United States underscores the importance of understanding and fostering the benefits of religion for the health of elders. The Centers for Disease Control in 2005 reported that there are currently 33 million people above the age of 65; this number is predicted to double over the next quarter century as the baby boomers enter their senior years. At least 80% of these older adults have one chronic condition and 50% have two or more. These older Americans require

four times the health expenditures of a 40-year-old person and a 25% rise in costs is predicted by 2030.

Religious beliefs, practices and communities such as faith-based social services and community health initiatives like flu vaccinations, cholesterol and blood-pressure screenings, meals on wheels, and outreach to homebound seniors have proven to be highly successful and a cost-effective means of protecting and promoting the health of older adults. Education and training of future health care professionals to respect and facilitate religious involvement among patients in a nonjudgmental and sensitive manner may enable better overall care for religious elders. Initiatives involving collaboration with clergy have the potential to utilize a large and virtually untapped public health resource to serve the good of an aging population.

Related Topics

🔗 Coping, 🔗 Mortality, 🔗 Spirituality

Suggested Readings

- Allport GW, Ross JM (1967) Personal religious orientation and prejudice. *J Pers Soc Psychol* 5:432–443
- American Association of Retired Persons (2004) Spirituality and religion among Americans 45 years and older. American Association of Retired People, Washington, D.C.
- Hummer R, Rogers R, Nam C, Ellison CG (1999) Religious involvement and U.S. adult mortality. *Demography* 36:273–285
- Idler EL, Kasl SV (1997) Religion among disabled and nondisabled elderly persons. II: Attendance at religious services as a predictor of the course of disability. *J Gerontol* 52B:S306–S316
- Koenig HG, Larson DB (1998) Use of hospital services, church, attendance and religious affiliation. *South Med J* 95:925–932
- Koenig HG, McCullough ME, Larson DB (2001) Handbook of religion and health. Oxford University Press, New York

Suggested Resources

- Centers for Disease Control, Healthy aging: preventing disease and improving quality of life among older Americans at a glance, 2005, Atlanta (July 25, 2005); http://www.cdc.gov/nccdphp/aag/aag_aging.htm
- John Templeton Foundation; <http://www.templeton.org>
- The Park Ridge Center for Health, Faith at ethics; <http://www.parkridgecenter.org/index.html>

Resolution Therapy

Jeffrey T. Junig · Jon A. Lehrmann

The use of short-term, problem-focused psychotherapy, through a variety of techniques, is referred to as resolution therapy. Often a specific situation or conflict prompts a patient or family member to seek treatment that is time-limited and has a specific goal, such as grieving or adjusting to a transition in one's marriage or employment. Elders may benefit from resolution therapy, and they are increasingly referred for this form of psychosocial treatment by their clinicians.

Psychotherapy is a form of deliberate interactive treatment between a therapist and patient, which is designed to improve one's mental well-being. There are many different styles or techniques of psychotherapy. Resolution therapy encompasses a variety of techniques. Cognitive-behavioral therapy (CBT) is a time-limited technique that focuses on thoughts and behaviors that are maladaptive. Typically, this approach utilizes workbooks, and the patient is given "homework" assignments to perform between sessions. Other types of therapy include interpersonal therapy, reminiscence therapy, supportive therapy, group therapy, and family therapy. One model for family therapy uses the concept of a "family life-cycle," where interdependent aspects of family relationships such as communication, attachment, and problem-solving are examined, and conflicts arising from emotional issues or external life challenges are explored by the family and therapist.

The aging person must navigate areas of potential stress and conflict, which include life transitions, relational changes, and grief. Life transitions include retirement, loss of a spouse, change in body image and function, or moving to assisted living. Relationships are stressed when typical roles change, financial problems arise, or recreational activities are curtailed. Grief may develop in response to the loss of a spouse or other contemporaries, or in response to the loss of one's youth and independence. Finally, with aging often comes a desire to find meaning, or to leave a legacy for family and community. Therapy focused on recovery from loss, or on relational difficulties, is referred to as grief resolution therapy and conflict resolution therapy, respectively.

Focused psychotherapy may have several advantages over medication treatment for illness such as depression in elders. Side effects and drug interactions

are avoided, the provider allies with a patient who may have few social resources, and treatment often empowers the patient who is struggling with loss of independence. Other appropriate psychotherapy patients are elders who experience symptoms of dysphoria, anxiety, or isolation which fall short of clinical depression, and do not warrant medication.

Despite the usefulness of therapy in aging populations, there are many barriers to treatment. Financial constraints are particularly common in elders, who often have fixed incomes or who fear that their assets will run out during their lifetimes. Older adults are often more aware of social stigma and fear they will damage the family reputation by seeking therapy. Transportation may be difficult to arrange on a weekly basis, particularly if the patient is physically disabled. Symptoms of depression, including social withdrawal and loss of motivation, may also limit access to treatment. The result is that psychotherapy is underutilized in the aging population.

Related Topics

➤ [Cognitive-behavioral therapy](#), ➤ [Depression](#), ➤ [Grief and grieving](#), ➤ [Psychotherapy](#)

Suggested Readings

- Curtis EA, Dixon MS (2005) Family therapy and systemic practice with older people: Where are we now? *J Fam Ther* 27:43–64
- Garner J (2003) Psychotherapies and older adults. *Aust NZ J Psychiatry* 37:537–548
- Klausner EJ, Alexopoulos GS (1999) The future of psychosocial treatments for elderly patients. *Psychiatr Serv* 50:1198–1204
- Miller MD, Wolfson L, Frank E et al (1998) Using interpersonal psychotherapy (IPT) in a combined psychotherapy/medication research protocol with depressed elders: A descriptive report with case vignettes. *J Psychother Pract Res* 7:47–55
- Morgan AC (2003) Practical geriatrics: Psychodynamic psychotherapy with older adults. *Psychiatr Serv* 54:1592–1594

Respite Care

Mary Jane Nottoli

Respite care is a phrase used to describe short-term, temporary relief from caregiving responsibilities. Primary caregivers, often middle-aged women closely

related to the care recipient, benefit from these services. With growing numbers of elderly individuals requiring care in the home, the need for these types of services has greatly increased.

Thanks to medical breakthroughs, individuals from infancy through old age survive catastrophic illness, accidents, and anomalies, which once claimed lives. Additionally, an ever-increasing life expectancy continues to add to the population, prompting a need for care and assistance services ranging from help with functional activities, such as bathing and dressing, to complex care such as mechanical ventilator support.

Currently, 25% of households include a caregiver. Eighty percent of these in-home care services (valued at over \$250 billion annually) are provided by unpaid, informal caregivers, usually a female family member. This phenomenon has created associated social, health, and public policy issues. Arguably, in-home care is preferable to institutionalization, notwithstanding the savings to public funds. But, caregiver stress can impact the relationship between themselves and the care recipient, negatively affecting the care delivery and increasing the likelihood of placement in a facility. Respite care is seen as a means of supporting these informal caregivers, facilitating their ability to continue caring for their family members at home. Providing temporary caregiver relief may improve stress levels and provide the opportunity for caregivers to recharge and recover, preserving positive relationships between patient and caregiver, and fostering quality in-home care.

Respite care encompasses many and varying services. Respite care can take place in a home or day care or in a residential setting. It can be provided by trained or untrained persons, staff members, or volunteers. It may range in duration from hours to weeks. It may be planned or unplanned. It may involve overnight stays or just daytime care. Respite care may be informal, provided by extended family, friends, members of a church group or community, or formal, provided by social or health care agencies. Respite care may be unpaid or paid.

To identify the appropriate type of respite, the caregiver and, if possible, the care recipient should decide what care needs and assistance are required. Any special skills required should also be considered. Other elements to think about are the time frame and location for the respite care, as well as financial issues. Since the passage of the National Family Caregiver Support Program under the Older Americans Act

Amendments of 2000, various states have begun Medicaid waiver programs and other state funding streams designed to support the service needs of family caregivers of elder or dependent persons. Family caregivers of chronically ill or disabled younger family members must still seek assistance elsewhere. Information regarding resources is available from diagnosis specific organizations such as The Alzheimer's Association, and individual community agencies.

Ideally, the caregiver and the care recipient should choose the type of respite care desired. However, choices are often limited as to what is available in a specific geographical area. Although establishing and maintaining a network of supporting family and friends is an ideal resource for informal volunteer respite help, siblings and other close family and friends often live far away, making that an unreliable source. Female family members, who have traditionally been the mainstay in family caregiving situations, are often currently part of the workforce and may have family responsibilities in addition to caregiving-related roles. Consequently, the primary family caregiver often experiences role strain, emotional stress, physical fatigue, and financial uncertainty.

Members of particular church or religious organizations may be able to arrange informal respite care for short periods through those organizations. A service called "First Call for Help," funded through the United Way, can provide lists of names and telephone numbers for local resources. Although available resources frequently change, particularly if grant funded, United Way updates their data regularly. Local offices of the Area Agency on Aging also provide information about and access to services for older adults.

Related Topics

[Adult day care](#), [Area Agency on Aging](#), [Caregiving and caregiver burden](#), [Day hospital](#), [Hospice](#), [Informal caregiving](#), [Medicaid](#), [Palliative care](#)

Suggested Readings

Feinberg LF, Newman SL (2004) A study of 10 states since the passage of the National Family Caregiver Support Program: Policies, perceptions, and program development. *Gerontologist* 44:760–769

Lustbader W, Hooyman NR (1994) Taking care of aging family members: A practical guide. The Free Press, New York
 Multari A (2005) Tips for caregivers. *Mayo Clin Womens Healthsource* 9:7–9

Suggested Resources

Ideastream (2005) "And Thou Shalt Honor;" www.wviz.org

Retirement

Brandy L. Johnson

Retirement describes a withdrawal from an individual's occupation or active working life. For many years, the full retirement age has been 65. However, beginning with people born in 1938 or later, the full retirement age will gradually increase until it reaches 67 for people born after 1959. Additionally, many individuals have been opting for early retirement. Those choosing early retirement are often retiring between the ages of 62 and 65.

Retirement means more than ending an individual's professional career. In retirement, few individuals want to sit around and do nothing. Instead, many individuals want to stay useful and plan to spend time engaging in the leisurely activities they enjoy. To be able to do this, a retired individual must have physical security and financial security.

Physical security means that the retired individual is physically able to engage in the activities they find enjoyable. For example, if a retired individual or couple wishes to spend some of their retirement traveling abroad, they would have to be in a state of health that allows them to travel. By maintaining a good state of health, retired individuals ensure that they will be able to perform activities that they find satisfying, enjoyable, and rewarding.

Another key to retirement is financial security. By retiring, an individual loses the paycheck that he or she used to receive from his or her former employer. Therefore, retirees must look to other sources of income. As a result, individuals should start planning for retirement long before they actually retire. Financial planning is essential to financial security in retirement. There are many tools that an individual can utilize to acquire the funds needed for retirement.

Social Security

One source of income in retirement is Social Security. Social Security retirement benefits are based on the individual's average earnings during a lifetime of work under the Social Security system. For most current and future retirees, the Social Security will average a retiree's 35 highest years of earnings. Years in which there were low earnings or no earnings may be counted to bring the total years of earnings up to 35. Individuals who retire at 65 are entitled to full benefits. However, an individual who opts for early retirement can start receiving partial benefits at age 62. These individuals will only get 70% of the monthly benefit because they will be getting benefits for an additional 60 months.

401(k) Plans

Another source of income for retirees is a 401(k) plan. A 401(k) plan is a retirement savings plan that an employer typically offers for its employees. 401(k) plans allow an employee to put a portion of his or her paycheck into a retirement account. Money placed in a 401(k) plan is generally not considered to be part of the employee's taxable wages. An employee has an annual maximum amount that he or she is permitted to defer to a 401(k) plan. For example, employees are able to defer a maximum of \$15,000 in 2006. Additionally, employers can match a percentage of their employees' 401(k) contribution. Any money contributed by an employer does not count toward the annual maximum amount an employee can defer.

Individual Retirement Accounts

An Individual Retirement Account (IRA) is another popular retirement tool. An IRA is an investment account that is opened through a mutual fund, bank, or brokerage firm. IRA accounts are opened in the individual's name and are used to invest in things like stocks, bonds, or mutual fund shares. There are two types of IRAs that are used to save for retirement: the Traditional IRA and the Roth IRA.

The Traditional IRA was created by Congress in 1974. When an individual invests in a Traditional IRA, he or she will not pay taxes on the money that is earned until the money is withdrawn in retirement. However, the plan holder must pay taxes on any money that is withdrawn. A plan holder can add funds to his

or her plan until age 70-1/2. Although a plan holder is required to begin withdrawing money at age 70, he or she can begin to withdraw funds, without paying a penalty, at age 59-1/2.

Roth IRAs came into existence in 1997. Roth IRAs are only available to individuals that meet an income requirement. Contributions can be made up to a specified limit on a nondeductible basis. This means that unlike Traditional IRAs, contribution to Roth IRAs can be made without taking a deduction on the income tax for the contribution. Withdrawals are also tax free within certain limitations. Like a Traditional IRA, a Roth IRA plan holder can begin to withdraw funds at 59-1/2. However, a Roth IRA plan holder is not required to begin withdrawing money at age 70-1/2.

Mutual Funds

Investing in mutual funds provides another avenue for individuals to utilize when planning for retirement. A mutual fund consists of money that is pooled together by a large number of investors and is professionally managed. The fund manager invests the money stocks and/or bonds. *The Wall Street Journal* divides mutual funds in four categories: stock funds, tax bond funds, municipal bond funds, and stock and bond funds. An investor has a choice between aggressive, moderate, and conservative mutual funds.

It has been estimated that 40 million people own shares in mutual funds. Mutual funds are fairly safe investments. Investment typically requires only a small amount of money. Mutual funds allow for diversification and are subject to governmental regulations. However, all funds charge administrative fees to cover daily expenses. A sales commission or load may also be charged. An investor may also be responsible for taxes if he or she profits from the sale of securities in his or her portfolio.

Annuities

Annuities are long-term investment contracts between the investor and an insurance company. When an individual invests in an annuity, the insurance company agrees to pay out money to the investor pursuant to an agreed upon schedule.

Annuities can be either a single premium annuity or a flexible payment annuity. A single premium annuity only permits the investor to pay one lump sum.

After paying the lump sum, the investor is unable to invest more money in that annuity. A flexible payment annuity, on the other hand, allows the investor to continue making contributions to the annuity.

Investors also choose between a fixed rate and a variable annuity. Fixed rate annuities pay a guaranteed amount for a fixed period of time. Once the fixed period of time has passed, the insurance company can set a new rate. This rate may be higher or lower than the previous fixed rate. However, these annuities generally have a guaranteed minimum rate. Conversely, variable annuities are connected to the stock market's fluctuation. Thus, the amount an investor receives changes as the stock market rises and falls. A guaranteed minimum rate may be offered if the investor chooses an equity-indexed annuity.

An investor can decide whether they wish to receive monthly, quarterly, or annual payments. Payments can start immediately or at an agreed upon time. Although annuities are not tax-deductible, they are tax-deferred. Therefore, the investor will be required to pay taxes on the interest earned when he or she starts to draw money from the annuity.

Pensions

A pension plan is a retirement option generally offered by an employer. A pension provides income to the employee after retirement. Pension plans can be divided into two main categories: defined benefit and defined contribution plans. In addition, hybrid plans that offer aspects of both defined benefit and defined contribution plans are sometimes offered.

A defined benefit plan defines a benefit for an employee's retirement. The benefit is defined by a formula that may incorporate the employee's pay, the number of years employed, the employee's age at retirement, and other factors. Although defined benefit pensions are not portable, they typically pay their benefits as an annuity.

In a defined contribution plan, a predetermined amount of the contribution may be made into an account for investment by the employer, the employee, or both. However, the benefit is unknown. When the employee retires, he or she can use the pension funds to purchase an annuity or have amounts withdrawn as needed. Unlike defined benefit plans, defined contribution pensions are portable after they become vested.

Retirement has been described as the golden years of an individual's life. However, to enable full

enjoyment of one's retirement years, it is important to have both physical and financial security. Physical security requires maintenance of both an individual's physical and mental health. Financial security takes planning and forethought. Individuals who plan for retirement and maintain a healthy state will go a long way to having a satisfying, active, and rewarding retirement.

Related Topics

- Financial planning, • Early retirement, • Medicare, • Quality of life, • Social Security

Suggested Readings

- Abromovitz L (1999) You can retire while you're young enough to enjoy it. Dearborn Financial Publishing, Chicago, IL
- Arnold S (2005) Ready or not: Your retirement planning guide. Manpower Education Institute, Bronx, NY
- Carlson R (2005) The new rules for retirement. John Wiley & Sons, New Jersey
- Garner R, Arnone W, Pape G, Baker N, Nissenbaum M, Roiese K, Voss D (1997) Ernst & Young's retirement planning guide: Take care of your finances now. . . and they'll take care of you later. John Wiley & Sons, New Jersey
- Helen M, Smith S (1999) The retirement sourcebook. Lowell House, Chicago, IL
- Tyson E (2003) Personal finance for dummies, 4th edn. Wiley Publishing, Indianapolis, IN

Suggested Resources

- AARP; <http://www.AARP.org>
- Securities and Exchange Commission; <http://www.sec.gov>
- Social Security Online; <http://www.ssa.gov/planners>
- 401k Help Center.Com.; <http://www.401khelpcenter.com>

Rheumatoid Arthritis

Lori B. Siegel

Rheumatoid arthritis (RA) is a chronic arthritis that causes inflammation and pain in a symmetric pattern. Although it spans all age groups and ethnicities, the two main peaks are in women aged 20 to 40 and men

and women age 50 and above. How rheumatoid affects someone is highly variable among patients and its activity may even change in one patient over time. There is no definitive test or x-ray that establishes the diagnosis of RA, but rather the diagnosis is established by a constellation of findings observed over a period of time.

The initial diagnosis of RA is made after a careful history and physical examination. The complaint of arthritis equally affecting both sides of the body, in a mirror image, or symmetric pattern, is common. These symptoms must be present for longer than 6 weeks since many other transient types of arthritis may seem like RA early on. The arthritis usually causes morning stiffness in the joints lasting longer than 30 min and feeling better after movement. The patient may also experience a stiffening or gel phenomenon after a period of immobility while riding in car or sitting through a movie.

A detailed physical examination will show some thickening around the joints, which may reflect extra joint fluid from inflammation or thickening of the joint lining. Often the joints are tender to palpation and warm. The striking finding on physical examination is usually the symmetric involvement of joints and the sparing of the distal interphalangeal joints, or knuckles nearest the nail bed. If these joints are involved, another type of arthritis need be considered. The examiner must also carefully examine the skin, lungs, eyes, and heart for evidence of systemic involvement of RA. In some patients with a more aggressive form of RA, the body tends to form nodules. While commonly present and benign, when involving the elbows and forearms, nodules in the eyes, lungs, and heart may have devastating consequences. Patients with signs of aggressive RA should be examined for these nodules.

When a patient is thought to have RA it is important to obtain x-rays of some of the involved joints, usually the hands, to look for signs of erosions of the cartilage. Often when erosions are detected, a more aggressive form of treatment is considered.

Laboratory testing is important as well in evaluating someone with RA. A rheumatoid factor (RF) (or antibody to . . .) is found in the serum of approximately 80% to 85% of people with RA. A smaller percentage of patients may have RA but not have a positive RF or develop one later on in their disease course. A positive RF does not make a diagnosis of RA and may be falsely positive in infection, malignancy, or other

autoimmune conditions. A very high RF is associated with more aggressive disease including erosions and nodule formation as mentioned earlier. Other laboratory tests may reveal an associated anemia of chronic disease.

Once diagnosed, treatment and education is essential. There have been many major advances of the treatment of RA over the past several years. The entire approach to treatment has become much more aggressive in halting the erosions and trying to prevent or slowdown joint damage. An accurate diagnosis is key to obtaining appropriate treatment and outcome. The most important aspect to treating patients with RA still remains educating the patient about the arthritis and the impact it may have on their everyday lives. Being an inflammatory and chronic condition requires that the patient employ "energy conservation." That means going about their activities more slowly so they don't overdo any activity or wear themselves out. Some patients who may feel well, overuse their joints and subsequently damage themselves or end up needing extended periods of rest to make up for their explosion of activity. Moderation is the key. Many activities of daily life place undo stress on joints, which when inflamed, may be hurt more. Simple motions of turning keys or holding pots with one hand may hurt a wrist. Patients, in consultation with physical and occupational therapists, may learn joint sparing hints such as using a two-handled pot or using a special key holder, which removes stress from the susceptible joints. Appropriate exercises are also important in joint health and are best learned early in the disease process to decrease future problems. Along with early visits to physical and occupational therapy, a podiatric evaluation of the rheumatoid foot is paramount in reducing the risk of foot complications in RA. If the foot is healthy in RA, the knees and hips may be better off.

Medication is still the cornerstone of treatment in RA in order to reduce inflammation and slow disease progression. Nonsteroidal antiinflammatory drugs (NSAIDs) are used to for symptom control to relieve the pain and inflammation associated with RA. They do not control the disease itself. In very mild cases, they may be the only treatment. It is important to monitor side effects such as gastrointestinal (GI) irritation and bleeding as well as kidney functioning on a regular basis. These medications also have significant interactions with other medications and must be used cautiously. They may also affect platelet function. The newer COX 2 selective agents may be slightly safer than

traditional NSAIDs regarding GI issues but are still associated with adverse reactions and should be used with caution. Corticosteroids are potent suppressors of inflammation and should be used with extreme caution. The side effects are numerous and devastating. These drugs should be used only as a bridge therapy until the slower acting medications kick in. Patients should be counseled extensively regarding the dangers of corticosteroids since some people find such relief with them, they may be abused. There are times the corticosteroids are used in either smaller doses chronically or in higher doses for acute situations. This should be done in consultation with a specialist and extreme caution used.

The disease modifying antirheumatic drugs (DMARDs) are now used quite frequently and early on in the treatment of RA. Commonly used medications include methotrexate, hydroxychloroquine, sulfasalazine, and azathioprine. These medications have been shown to slow the progression of disease and erosion. They may take weeks or months to show an effect and this is when the bridge therapy with corticosteroids may be used. These medications may be toxic and they require frequent laboratory monitoring. Methotrexate is the most commonly used DMARD in the United States and requires monitoring of the hepatic and bone marrow effects. Overall, the amount of benefit these medications offer in RA is worth the risk and monitoring.

The newest medications in the treatment of RA are the tumor necrosis factor (TNF) antagonist antibodies. These medications stop inflammation at the start of the inflammatory cascade and have been shown to work quickly in suppressing the inflammation of RA and even slow and in some cases heal the erosions. The long-term safety and side effects are still not fully known. Patients on TNF treatment are at increased risk for infection and must have their tuberculin testing done before initiation of treatment. The question of long-term sequelae of lymphoma, infection, malignancy, and demyelinating syndromes remains to be studied. These medications are very costly and have not yet taken their place as treatment before the traditional NSAIDs and DMARDs, although it is clear that early use has been helpful in patients with RA.

RA, its diagnosis and treatment, remains a challenge to both physicians and patients. Education and practices to promote joint health care are key in the treatment of RA. The physician, patient, and healthcare professionals become a close team in treating RA with

the ultimate goal of preventing deformity and long-term sequelae of RA.

Related Topics

[Autoimmune disease disorders](#),
 [Polymyalgia Rheumatica](#),
 [Sjogren's syndrome](#)

Suggested Readings

- Klippel JH (ed) (2001) *Primer on rheumatic diseases*, 12th edn. Arthritis Foundation, Atlanta, GA
- Klippel JH, Dieppe PA (1998) *Rheumatology*, 2nd edn. C.V. Mosby, St. Louis, MO
- Klippel JH, Dieppe PA, Ferri FF (2000) *Primary care rheumatology*. Mosby, London

Role Loss

William Meyer

As individuals age, the roles that they play in society change as well. People start out in childhood with little responsibility and little in the way of roles to play. As individuals reach adolescence and adulthood, they take on more roles. They play roles like son or daughter, friend, employee, student, and boyfriend or girlfriend to name a few. These roles change as we enter adulthood, with some roles being lost, such as that of student, while other are gained, as parents, for instance. As individuals move into late life, they are faced with the sudden loss of multiple roles without the occurrence of new ones. For example, retirement can mean a major change in the roles that an individual plays. Going from being the supervisor of multiple people to supervising no one can be a difficult transition. Going from a substantial salary to a smaller retirement package can also be difficult. Other examples of roles that are lost in late life are driving privileges, moving to nursing care, death of friends or a spouse, and loss of physical abilities. Losing one's physical abilities or the ability to take care of oneself can potentially be a very severe role change. No longer being able to take care of oneself can lead to a feeling

of inadequacy or low self-worth. Several of these changes can occur in a short time span and can not only be difficult to cope with, but can also lead to increased stress and the potential for depression. The result can be that a person is back where they started as a child, with little responsibility and few roles to play.

Helping to prevent feelings of role loss can be as easy as asking a person how they feel about things like no longer driving or moving to a nursing care facility and role loss as a result of retirement can be reduced by planning for retirement and taking part in pre-retirement counseling. Feelings of inadequacy resulting from a decrease in physical abilities can be combated through regular physical exercise to maintain physical functioning.

Related Topics

◆ Ambiguous loss, ◆ Loss, ◆ Retirement

Suggested Readings

Molgaard V (1994) Growing older: Changes in roles and relationships. Iowa State University, University Extension

Suggested Resources

American Association of Retired Persons: Staying Sharp series; www.aarp.org/nrta

Buckwalter KC (2000) Virtual Hospital: Health Prose: Elderly Loss: Treat it with Respect, 2000. University of Iowa Health Science Relations (revised 2003); <http://www.vh.org/adult/patient/internalmedicine/prose/elderlyloss.html>

Rosacea

Mary G. Mercurio

Rosacea is a common facial skin condition that most frequently affects fair-skinned Caucasian women and men of northern European ancestry. While the precise cause of rosacea is unknown, it is likely due to some combination of factors in predisposed individuals,

resulting in an abnormality of the blood vessels in the skin (cutaneous vasculature). The earliest sign of rosacea is recurrent episodes of flushing that may be triggered by a variety of exacerbating factors including hot beverages, spicy foods, alcohol, sunlight, or emotional stress. Over time, the redness (erythema) may become permanent rather than episodic, resulting in skin alterations called telangiectasias that coalesce into patches. Inflammatory changes often ensue including swelling (edema), papules, and pustules. The phymas, a late stage of rosacea seen more commonly in men, are characterized by disfiguring fibrotic changes in the skin. An index of suspicion should be maintained for ocular rosacea that is common and often unrecognized, but has the potential to cause discomfort as well as rarely corneal ulceration.

Avoidance of triggers that cause flushing is an essential first step toward treating rosacea. Hyperirritability of the skin characterized by stinging and burning with application of topical preparations is a frequent feature in rosacea patients. Avoidance of products that produce these symptoms and employing gentle skin care can also improve the condition. Daily use of a gentle moisturizer with a broad-spectrum, nonchemical sunscreen is essential. Cosmetics can be used if they are mild and do not irritate the skin; the use of cosmetics to camouflage the redness and blemishes goes a long way toward benefiting self-esteem in this highly visible condition.

Therapy of rosacea has included both topical and systemic agents, with treatment regimens based primarily on disease severity. Antibiotics are the most common prescription drugs for rosacea, and most dermatologists employ a tiered approach based on the severity of the condition. Topical metronidazole products are the most common first-line therapies. Combination therapy with systemic antibiotics, particularly those in the tetracycline class, is prescribed for inflammatory papulopustular lesions as well as ocular involvement. Low-dose accutane is an additional option when antibiotics fail. Laser therapy is an effective means of eradicating the telangiectasia features. Early intervention is the best means of preventing the irreversible and disfiguring fibrotic changes known as rhinophyma. Rosacea tends to be cyclic in nature and systemic medications can often be tapered while maintaining a regimen of gentle skin care, photoprotection, and avoidance of known triggers. Recognition and treatment of rosacea early in its onset provides the most favorable long-term prognosis.

Related Topics

- ▶ Hair and nail changes replacement, ▶ Skin,
- ▶ Skin care

Suggested Readings

- Danby FW (2005) Rosacea, acne rosacea, and actinic telangiectasia. *J Am Acad Dermatol* 52:539–540
- Powell FC (2005) Clinical practice. Rosacea. *N Engl J Med* 352(8):793–803

Rural Health

Teddy D. Warner · Laura Weiss Roberts · Pamela Monaghan Geernaert

Elders comprise over a quarter of the 65 million people who live in rural and frontier areas in the United States. Older people make up a higher proportion of rural residents than urban residents, with rural populations aging rapidly due to aging-in-place, out-migration of young adults from rural areas, and in-migration of older persons from nonrural to rural areas.

The image of rural life as simple, healthy, and natural has been replaced with a more complex understanding in which distinct stresses, hardships, and community patterns of rural life are also recognized. Rural elders report somewhat worse health than nonrural elders. Age-adjusted death rates are higher than for urban counterparts, and older rural citizens make more doctors visits, are more likely to be seriously ill, and are more likely to be admitted to the hospital when they do seek medical attention than those who are younger. Chronic physical illnesses and long-term effects of serious chronic conditions are increasingly recognized as serious burdens for rural dwellers. The rural aged may not be able to overcome the additional barriers to optimal health services that exist in rural areas, including limited access to health care providers, fewer care facilities, increased travel time, lack of specialized caregivers, and less access to adequate health insurance. These barriers are exacerbated because rural older people are more likely to be poor or near poor than nonrural older people. Finally, rural health care poses special ethical problems surrounding health care that are

related to overlapping personal and professional relationships, confidentiality of personal health information, and stigma associated with various conditions. For these reasons, the health care of older people who reside in rural areas deserves special attention.

Health Issues for Rural Elders

Rural residents show higher rates of various chronic medical conditions, many of which relate to conditions specific to rural life. Greater heart disease rates were detected in rural areas beginning in the 1970s and continued into the 1980s and 1990s. Studies reveal greater rates of certain kinds of cancer in rural than urban areas, particularly associated with exposure to herbicides, pesticides, insecticides, and other carcinogenic substances. Greater respiratory disease (e.g., asthma, organic dust syndrome, chronic bronchitis) rates have been found among farm than nonfarm populations. Arthritis and related disabilities are greater in rural areas, but rural residents tend to be more mobile than their counterparts due to the rural geographic and physical requirements. Some neurologic diseases (e.g., Parkinson's disease, Alzheimer's disease, amyotrophic lateral sclerosis, chronic encephalopathy) associated with exposures to toxic chemicals used by farmers and miners are of greater prevalence in rural than nonrural areas. Obesity and nutritional problems are also higher in rural communities. Rural residents also have higher rates of activity limitations due to chronic conditions, and fewer rural residents perceive their health to be excellent.

Addiction and mental illnesses affect the lives of rural older people, indirectly and directly. Fewer rural residents consume alcohol, but the prevalence of heavy and binge drinking among active drinkers is similar in rural and urban areas. In recent years, the use of illicit substances has increased in rural areas to the levels in urban communities. One-quarter of rural people have a diagnosable mental illness, and one-half will have some significant mental health problems during their lives. Higher rates for mental illnesses in urban compared to rural areas have been reported by several studies, but others indicate rates are equivalent. Differences in rates of mental illness rates may reflect much lower access to mental health services and lower identification of people's problems in rural areas. The few extant studies indicate no rural versus urban differences in prevalence of mental illnesses co-occurring

with addictions, although the lack of mental health and substance abuse services in rural areas means comorbid disorders may go untreated more often.

Serious mental illness, addiction, HIV/AIDS may be highly stigmatized in small, interdependent communities. Such conditions often require ongoing monitoring and lifestyle changes harder to accomplish in rural settings due to much lower access to specialized, supportive services and health care resources in general (e.g., over 95% of urban counties have psychiatric inpatient services but only 13% of rural counties do with only 1% of the psychiatric beds). In rural areas, older people may resist formal treatment for mental health or other stigmatizing illnesses, especially by mental health professionals, because it may threaten the rural image of self-reliance and rugged individualism or stimulate stoicism or shame. Newer studies indicate that such resistance may be waning among the more recent generation of rural elders. Alternatively, care-seeking may be sought informally through social networks of rural communities. This may change in coming decades if differences in urban and rural communities diminish, especially if rural people continue to experience the decline in social networks that have served as a source of support.

Rural people, like those in urban areas, face issues of domestic violence. Few studies of rural household violence exist, but living in rural areas may exacerbate issues contributing to domestic violence because of social and physical isolation. In one study twice as many rural people (25%) as urban (12%) were involved in an ongoing violent relationship. Poverty, lack of public transportation, shortages of health care providers, lack of health insurance, and decreased access to many resources may make it more difficult for rural people to escape abusive relationships. Furthermore, the closeness of relationships among members of rural communities may make it awkward for rural people to disclose problems. Geographical isolation and the increased availability of firearms and knives in rural households also increase the potential severity of domestic attacks.

Accidents and trauma are a major concern for rural dwellers. Farming has inherent environmental and physical risks, and the rate of machinery-related injuries is greater than in urban areas. High rates of automobile accidents also occur in remote areas, often due to alcohol intoxication. Beyond a heavier burden of physical disability associated with accident and trauma, rural people are nearly twice as likely as city

dwellers to die from injuries they sustain, partly due to the limited emergency services and time of travel to services.

People in rural areas experience infections that are uncommon or rare in more urban locales. They are more likely to have jobs (e.g., farming) or avocations (e.g., hunting) that expose them to many disease-inducing organisms that are carried by animals and insects (e.g., anthrax, Hantavirus, plague, tularemia, Lyme disease, Brucella). Rural dwellers are more likely than urban people to be exposed to contaminated water and to improper sanitation systems, which increase risk for a number of illnesses (e.g., giardiasis, hepatitis A). Migrant workers in rural areas present with infections (e.g., malaria) acquired in their country of origin that are uncommon in the United States. Because clinicians are typically trained in urban environments, when they come to practice in rural communities they, at least initially, are often less familiar with many of the health risks that are more common in rural than urban areas. In addition, the number of health care providers in rural areas is far less than in urban communities even adjusted for population differences.

Challenges and Disparities in Rural Care

Changes in health care financing, introduction of new technologies, and evolution of health care services into networks produced dramatic changes in the United States rural healthcare system over the past decade or so. Resources for health care in rural areas remain insufficient—many rural communities have shortages of physicians and behavioral health providers, rural hospitals experience heightened financial stresses, and rural communities are often without adequate public health infrastructure. Most health care in rural areas is given by primary care providers, in contrast to the much greater proportion of specialists in urban areas. Indeed, most geriatricians practice in urban areas where they spend most of their time in direct patient care, instead of consulting with primary care providers as they do in the United Kingdom. This prevents geriatricians from spreading their skills into the general medical community, especially in rural areas. Organizations have attempted to address disparities in rural health care by stimulating network development, introducing new approaches, such as telemedicine, and changing the rules for Medicare payments. Whether

current efforts to reduce rural health care disparities will be effective remains to be seen.

In 2001, the Secretary for Health and Human Services (HHS) charged federal agencies with the responsibility of improving health care and services for rural Americans. In 2002, the HHS Rural Task Force found that three broad factors inhibited HHS rural efforts—lack of a common definition of “rural”; over 225 different HHS programs serving rural communities; and, HHS processes do not consistently consider rural concerns. The Rural Task Force identified actions that could improve the way HHS manages rural services—create a formal structure for coordinating rural policy and partnerships; create an interagency workgroup to follow-up on strategies; ensure that processes include a focus on rural America; and, develop a common approach for determining investment in specific communities and populations. Finally, the Rural Task Force set five goals to improve provision of health care and services in rural areas: (1) improve rural community access to quality health and human services; (2) strengthen rural families; (3) strengthen rural communities and support their economic development; (4) partner with state, local, and tribal governments to support rural communities; and (5) support rural decision making to ensure a rural voice in consultative processes. Such efforts seek to address disparities in care in rural areas of this country.

The aging of the American population has broad effects on rural communities, where the range of health care services is narrower, services are less accessible, fewer specialized services are available, and services are more costly to deliver than in urban areas. Rural America is quite diverse, ranging from traditional farming areas to newly developing retirement communities.

Policies and programs for the older population will need to take into account rural versus urban differences in adjusting to the increasing elder population, and health services research should incorporate rural issues to ensure that efforts to improve rural care are effective. Unlike in previous decades, rural health care is interwoven with urban health care, and policy that is focused on the needs of urban people may have unpredicted effects on rural dwellers. Rural people, including rural elders, deserve best care standards to be carried out within the context of their communities.

Related Topics

▶ [Access to health care](#), ▶ [Accidents](#), ▶ [Addictions](#),
▶ [Mental illness](#), ▶ [Stigma](#), ▶ [Substance use](#), ▶ [Traumatic injury](#)

Suggested Readings

- Coward RT, Drout JA (eds) (1998) *Aging in rural settings: Life circumstances and distinctive features*. Springer, New York
- Geyman JP, Norris TE, Hart LG (2000) *Textbook of rural medicine*. McGraw-Hill, New York
- Ham RJ, Goins RT, Brown DK (eds) (2003) *Best practices in service delivery to the rural elderly*. West Virginia University Center on Aging, Morgantown, WV
- Loue S, Quill BE (eds) (2001) *Handbook of rural health*. Kluwer Academic/Plenum, New York
- Ricketts TC (2000) The changing nature of rural health care. *Annu Rev Public Health* 21:639–657
- Rogers CC (2002) Rural health issues for the older population. *Rural Am* 17(2):30–36
- Rosenthal TC, Fox C (2000) Access to health care for the rural elderly. *J Am Med Assoc* 284(16):2034–2036

Safer Sex

Daniel J. O'Shea

Contrary to a popular myth, sexual desire does not wane after the age of 50; most older adults continue to be sexually active, enjoying close personal and sexual relationships with a partner. A 1998 National Council on Aging survey of 1,300 seniors found that half were having sex at least once a month, and nearly 40% wanted more. Masters and Johnson cited significant physiological and psychological value in continuing sexual activity among older adults. Every person has normal desires to be loved, touched, and have sexual relations. While the sex drive may diminish in some with aging and chronic disease, it remains an important part of life. Among older males, impotence or "erectile dysfunction," the inability to sustain an erection sufficient for sexual intercourse, can now be treated through pharmacotherapy.

More and more people in their sixties and seventies, living longer and healthier, are newly single through divorce from, or death of, their partners, and are once more dating, beginning new relationships, and participating in some kind of sexual activity. Others may be in monogamous relationships with a partner who engages in risky behavior without their knowledge. Unfortunately, knowledge of the risk of unprotected sex and safer-sex practices among older adults is much less than that of sexually active persons in their late teens and early twenties. This circumstance can place unwary older adults at risk of acquiring deadly diseases like HIV and hepatitis as well as other sexually transmitted diseases.

The older generation has never been targeted for sex education with the exception of Viagra, or identified as a risk group; many geriatric doctors are not even looking for HIV among their patients. Older adults and their health care providers rarely discuss sexual behaviors, given the stigma that society attaches to risky behaviors and HIV. This is particularly dangerous as HIV-related illnesses can be difficult to distinguish from typical age-related health problems. Older adults typically believe that HIV only affects younger people and that they are free to engage in unprotected heterosexual (now without worry of pregnancy) or homosexual sex.

Sexual activity is the most common cause of HIV infection in older adults. One study found that people over 50 are only one-sixth as likely to use condoms and

one-fifth as likely to get tested for HIV as those in their twenties. Once exposed to HIV, older women may also be more vulnerable to infection due to physical changes with menopause. Vaginal walls become dry and thin, and can lead to abrasions and tears, increasing risk of infection with unprotected sex.

Safer sex activities Before becoming sexually intimate, older adults should consult their doctor about the risks of acquiring HIV or other sexually transmitted diseases, and also talk frankly about this with their partners. Most sexual activity carries some risk, which can be reduced by making it more difficult for your partner's blood or sexual fluid to enter your body. The risk is minimized by "safer sex" practices. Following are a combination of guidelines offered by the New Mexico AIDS Education and Training Center, the Centers for Disease Control and Prevention (CDC), and the National Institute on Aging.

1. Assume that your sex partners are infected with HIV. You cannot tell by appearance if people are infected, and he or she may be lying or unaware that he or she is positive. Some were infected by steady partners who were unfaithful "just once." Even those testing negative might have been infected after being tested, or may have taken the test too soon after exposure to HIV.
2. Engage in activities that have no risk for spreading of HIV, avoiding contact with your partner's blood or sexual fluids. These include abstinence (never having vaginal, anal, or oral sex), fantasy, masturbation, sexy talk, and nonsexual massages.
3. If you do engage in vaginal, anal, or oral sex (a) be aware of your body and that of your partner's. Cuts, sores, or bleeding gums, rough physical activity, and even small injuries increase the risk of HIV. (b) Have intercourse with only one partner. Sex with just one partner is safe as long as neither of you is infected and if neither of you ever has sex or shares needles with anyone else. (c) Make sure you and your partner have been tested and are free of HIV. Get tested if you or your partner had a blood transfusion before 1986, or had an operation or blood transfusion in a developing country at any time. (d) Use a barrier to prevent contact with blood or sexual fluid during intercourse: male or female condoms (latex or polyurethane). Although skin is also a natural barrier, in rare cases HIV can get into the body through healthy mucous

membranes, with risk of infection much higher if the membranes are damaged. (e) Lubricants can increase sexual stimulation and reduce the chance that condoms or other barriers will break, but use only water-based lubricants; oil-based products like Vaseline, oils, or creams can damage condoms and other latex barriers. (f) Know what you are doing: be aware that using any alcohol or drugs before or during sex can impair judgment and greatly increase chances of not following safer sex guidelines. (g) Before you have sex, think about safer sex, set your limits and stick to them: decide how much risk you are willing to take, how much protection you want to use during different sexual activities, making sure you have adequate supplies where they are easy to find, and talk to your partners so they know your limits.

Oral sex has some risk of transmitting HIV, especially if there are bleeding gums or sores in the mouth. Condoms without lubricants work best for oral sex; pieces of latex or plastic wrap over the vagina can also be used as barriers.

If both people are already infected Although some do not see the need to follow safer sex guidelines when both partners are already infected, there is a possibility of exposure to other sexually transmitted infections such as herpes or syphilis, which can have more serious consequences for people with HIV. Potential “re-infection” with a different strain of HIV might result in resistance to some anti-HIV drugs. Following safer sex guidelines reduces these risks.

Related Topics

- [Acquired Immunodeficiency Syndrome \(AIDS\)](#),
- [Sexually transmitted diseases](#)

Suggested Resources

The AIDS InfoNet, New Mexico AIDS Education and Training Center, University of New Mexico School of Medicine: Safer Sex Guidelines (2005) Albuquerque, NM (August 18, 2005); <http://www.aidsinonet.org/articles.php?articleID=151>

Centers for Disease Control and Prevention (2005) Frequently asked questions on HIV and AIDS. Atlanta, GA (October 15, 2005); <http://www.cdc.gov/hiv/pubs/faqs.htm>

Krales E (2004) Is it AIDS or is it Aging? Considerations for aging with HIV. *Body Positive* (online). December 2004; <http://www.thebody.com/bp/dec04/aging.html>

National Institute on Aging Age Page HIV, AIDS, and Older People (2004) Gaithersburg, MD (June 2004); <http://www.niapublications.org/engagepages/aids.asp>

Shippy A (2004) HIV and aging ACRIA (AIDS Community Research Initiative of America) Update (online). 13(3); http://www.acria.org/treatment/treatment_edu_summerupdate2004_aging.html

Schizophrenia

Deborah J. Gould

Schizophrenia is a disorder of the brain that affects approximately 1% of the world’s population, occurring equally in men and women and in all ethnicities. The three types of clinical symptoms found in schizophrenia are called positive symptoms, negative symptoms, and cognitive symptoms. The positive symptoms include hallucinations (seeing, hearing, smelling, or feeling things that do not exist), delusions (false beliefs that cannot be changed by factual knowledge), and disorganized, illogical thinking. The most common type of hallucination is auditory. Negative symptoms include apathy (lack of interest in life), social withdrawal, and minimal or inappropriate emotional responsiveness. These types of symptoms make it difficult for people with schizophrenia to interact with others and feel comfortable in social situations. Cognitive symptoms include decreased attention and concentration, decreased working memory, and decreased executive functioning (the ability to plan activities and carry them out in an organized manner). The cognitive symptoms can interfere with an individual’s ability to work or study effectively.

Schizophrenia typically presents in late adolescence or early adulthood. The average age of onset is 18 years for men and 25 years for women. There is often a prodromal period of several months during which florid psychosis is absent but behavioral changes such as social isolation and amotivation have begun. The course of schizophrenia can be quite variable. Some individuals have remitting and relapsing illness with periods of high functioning between episodes. Some individuals are chronically symptomatic despite treatment. There is evidence to suggest that if

treatment is begun during the prodromal phase, the outcome is improved.

Although schizophrenia usually develops at a young age, the exception to this is an entity called "late-onset schizophrenia." By definition, this type of schizophrenia begins after the age of 45. In individuals who require hospitalization for schizophrenia, 13% have the onset of symptoms in their fifties, 7% in their sixties, and 3% in their seventies or later. The most common symptoms are hallucinations and delusions, whereas negative symptoms are infrequent. This form of schizophrenia may be etiologically different from that which affects younger people, although the treatment is the same.

The cause of schizophrenia is unknown. Current research at the National Institute of Mental Health (NIMH) focuses on neurodevelopmental, genetic, and environmental factors. The neurodevelopmental hypothesis of schizophrenia proposes that the brains of individuals with schizophrenia begin to develop abnormally before birth. Whether this abnormal development is due to genetic or environmental causes is unknown.

Twin studies of schizophrenia have indicated that there is a genetic component in schizophrenia, but even in identical twins the concordance rate (both twins affected) is only 40–65%. The genetic contribution to schizophrenia is probably related to a number of different genes on several different chromosomes. Some of these genes are thought to encode for enzymes involved in the metabolism of neurotransmitters such as dopamine and glutamate, which have been implicated in the pathogenesis of schizophrenia for a long time. Other genes may be involved with the development of the nervous system, including neuronal pathways in the brain.

Environmental factors may contribute to the development of schizophrenia if the genetic predisposition for the illness is already present. Some of these factors include pollution, toxins, malnutrition, and emigration to another country. Other environmental factors may contribute directly to the development of schizophrenia for reasons that have not yet been elucidated. For instance, mothers who have influenza during the first trimester of pregnancy have a sevenfold increased risk of bearing a child who will develop schizophrenia. Mothers with toxoplasmosis, a parasitic infection, also have an increased risk of having a child with schizophrenia. Whether the increased risk is related to a direct effect of the pathogen on the fetus or to the

effect of the mother's immune response to the pathogen is unknown.

Whatever the cause or causes of schizophrenia are found to be, there are treatments available currently that address the symptoms of schizophrenia. Antipsychotic medications can help the positive and negative symptoms of schizophrenia. In general, these medications work by blocking receptors to certain neurotransmitters in the brain that are believed to be responsible for the symptoms seen in schizophrenia. The dopamine hypothesis of schizophrenia attributes schizophrenia to excess dopamine in the brain. The first antipsychotics developed to treat schizophrenia block dopamine receptors. These conventional antipsychotics have neurological side effects such as Parkinsonism and dystonias that occur because of the dopamine blockade. Tardive dyskinesia, another type of movement disorder presumably caused by decreased dopamine activity in the brain, can occur years after the initiation of conventional antipsychotic therapy and has no known treatment.

The newer antipsychotic medications are called atypical antipsychotics. They target different dopamine and serotonin receptors than do the conventional antipsychotics and have fewer neurological side effects. In addition, they may be superior to the conventional antipsychotics in treating the negative symptoms of schizophrenia. Unfortunately, potentially serious side effects of the atypical antipsychotics have now been found. This group of medications appears to affect glucose and lipid metabolism and can lead to the development of diabetes mellitus and hyperlipidemia (elevated blood lipids or fats). In addition, their use in older people with vascular dementia (dementia due to stroke activity) has been implicated in fatalities due to cardiovascular events or infection. As with the use of all medications, the benefit of the treatment has to be weighed against the risk.

Because schizophrenia usually begins at a young age and has symptoms that affect cognition, emotions, and perception, the cost in terms of human suffering and dollars is high. In the United States, more than 3 million people have schizophrenia. Of these, 5% are homeless and constitute approximately 30% of the homeless population. Only 28% of people diagnosed with schizophrenia live independently, whereas 6% live in hospitals, 10% live in nursing homes, and 25% live with family members. In 2002, more than \$62 billion was spent on care for schizophrenia in the United States. Direct health care costs were more than \$22 billion. Direct nonhealth

costs, such as homeless shelters and research costs, were more than \$7 billion. Indirect costs, which include unemployment and decreased work productivity, were more than \$32 billion.

In summary, schizophrenia is a chronic, debilitating disorder of the brain that has an immense impact on individuals, their families, and society as a whole. The National Institute of Mental Health continues to search for causes of the illness. Further work needs to be done to find safe and effective medications. Finally, social issues such as stigma and funding need to be addressed to ensure that individuals with chronic mental disorders receive appropriate ongoing care.

Related Topics

➤ [Homelessness](#), ➤ [Medication management](#), ➤ [Mental illness](#), ➤ [Parkinson's Disease](#)

Suggested Readings

- Stahl SM (1999) *Psychopharmacology of antipsychotics*. Martin Dunitz Ltd., London
- Wu EQ, Birnbaum HG, Shi L et al (2005) The economic burden of schizophrenia in the United States in 2002. *J Clin Psychiatry* 66(9):1122–1129

Suggested Resources

- The American Academy of Family Physicians February 2002 HealthyPlace.com Thought Disorders Community; <http://www.healthyplace.com>
- National Institute of Mental Health Schizophrenia Review of research on and epidemiology of schizophrenia Revised 2005; <http://www.nimh.nih.gov>

Scleroderma

Lori B. Siegel

Scleroderma is a generalized disorder in which there is excess deposition of fibrous or scar tissue in the connective tissues that can affect the skin and internal

organs. This condition occurs more commonly in women and the typical onset may be between the ages of 45 and 65. Scleroderma encompasses a wide spectrum of conditions, some that progress rapidly, and some that progress more slowly. Often times the symptoms evolve over time and the official diagnosis may only be determined over months to years of observation. The disease may be quite disfiguring and life threatening or quite mild, depending on the degree and distribution of vasculopathy (disease of the tissue). The terminal arteries of the circulatory system are affected and result in vascular insufficiency to the end organ or target tissue. All organs are involved at some level or degree.

Scleroderma is divided into two major clinical groups that affect or predict severity and prognosis. Limited systemic sclerosis (LSS), or CREST, has a more benign prognosis and slower course. Progressive systemic sclerosis (PSS) progresses more rapidly and has a more malignant presentation. Although there is some overlap, and one may evolve into the other, careful history and physical examination along with selected laboratory testing should help make the distinction.

LSS is also called CREST because patients may have calcinosis, Raynaud's phenomenon, esophageal dysmotility, sclerodactyly, and telangiectasia. Again, all of these may rarely be present at once, or they may occur over time. The calcinosis is actually calcium deposition in the soft tissues and muscles. It is idiopathic and independent of serum calcium levels or calcium ingestion. There is no treatment for this condition but the calcium deposits may be quite painful, and if large or affecting activities, may need to be surgically removed. If the deposits are superficial, they may break through the skin surface and become easily infected, so good skin hygiene is paramount.

The Raynaud's phenomenon is not unique to LSS and may occur in PSS as well as many connective tissue disorders. The classic changes in Raynaud's are an initial well-demarcated pallor (skin paleness), then cyanosis (ruddy/bluish color of skin) and then upon revascularization, a deep red or mottled appearance of the fingers or toes. It should be noted that Raynaud's might affect the fingers and toes as well as the tip of the nose. Uncontrolled Raynaud's may lead to tissue loss. Treatment is aimed at avoidance of cold, using gloves, and local care to any lesions on the hands or feet. Calcium channel blockers, particularly nifedipine, promote vasodilatation. Also nitrates, used sparingly

because of side effects, may help in some situations. Esophageal dysmotility (diminished movement of muscles of esophagus/throat) also occurs in LSS due to relaxation of the lower esophageal sphincter (clenching muscle at the base of the esophagus/gullet) and this causes acid reflux. Caution must be used because the calcium channel blockers that treat the Raynaud's may exacerbate reflux.

Sclerodactyly (scarring and distortion) of the fingers or toes may occur as well but usually involves the areas below the knee and below the elbow. Involvement more proximal to these areas is seen in PSS. The sclerodactyly may present initially as puffiness before the fibrosis and hardening sets in. Treatment of this is symptomatic with nonsteroidal anti-inflammatory medications with close attention to renal function. Steroids should be avoided in this condition as they may actually worsen the disease state.

Telangiectasias are the final component of the CREST syndrome. These are flat, small reddened accumulations of blood vessels that may appear anywhere but are most common on the palmar surfaces of the hands, around the nails, around the mouth, and sometimes on the cheek mucosa. There is no specific treatment for these and the lesions do not cause any problems per se but are clues to the underlying vasculopathy. A very common presentation in LSS is that of Raynaud's phenomenon that is present years before the other clinical features appear. A more serious, but less common, manifestation of LSS is pulmonary (lung) hypertension without pulmonary fibrosis (scarring).

Patients who fall into the PSS category have more extensive skin disease that may involve the proximal limbs and trunk. These patients may present with Raynaud's but rapidly progress to significant major organ involvement. Rapidly progressive skin disease may lead to significant disability. The overall course of PSS is variable. Clinical features that herald a poorer prognosis are diffuse skin involvement, later age of disease onset, African American or Native American heritage, impaired diffusion capacity, blood or protein in the urine, anemia, high sedimentation rate (abnormal tests indicating acute or chronic effects), pericardial effusion (fluid around the heart), and anemia. These patients may develop contractures from skin tightening and subsequent disuse muscle atrophy. Lung impairment is a leading cause of mortality and is commonly from interstitial lung disease and vascular disease. The cardiac manifestations may be more subtle but patchy fibrosis

of the entire myocardium (heart muscle) may occur. There may be diastolic dysfunction, myocarditis, and cardiomyopathy (all types of disorders of heart muscle).

Gastrointestinal manifestations of PSS include wide mouth diverticulae (intestinal polyps) as well as dysmotility (abnormal movement) of the intestines due to fibrotic deposition. Bacteria may become entrapped and dissect through the bowel wall causing pneumatosis cystoides intestinalis (multiple gas-filled cysts of various sizes located in intestine), which may clinically mimic a ruptured bowel. Attempts at surgery should be avoided since there is no surgical solution for this and the wound healing is impaired in scleroderma and may become quite difficult to manage. Conservative therapy and bowel rest in the best course of action. As the skin disease affects the face, the mouth may be diminished and oral hygiene issues become problematic. In some cases the skin is so taut that the patient is unable to close the mouth and this results in dryness and ulceration. Malnutrition and malabsorption is also a problem as the intestine becomes less mobile. Fecal incontinence may also occur due to fibrosis of the rectal sphincter. Renal involvement in PSS is universal and the most severe clinical presentation is scleroderma renal crisis characterized by malignant hypertension (out of central elevated blood pressure) and rapidly progressive renal failure. Patients at risk for this may have a specific type of anemia, microangiopathic anemia, just before the onset of the crisis. Although this was formerly the clinical manifestation with high mortality, the early and prompt use of medications such as angiotensin-converting enzyme (ACE) inhibitors has helped to control this.

Treatment of PSS is difficult. Spontaneous improvement may occur. The use of medications such as penicillamine and chlorambucil has been helpful, although further studies have not supported their use. Methotrexate has also been used, but again larger clinical trials did not support it. The clinical effectiveness of medications that act on the immune system such as cyclosporine and interferons are underway. Although the above systemic treatments are still being used, attention to treatment of specific organ involvement seems best. Constipation is best treated with hydration and stool softeners with attention to increasing dietary fiber. Diarrhea should be treated carefully with antidiarrheal medications and antibiotics if due to bacterial overgrowth. The cardiopulmonary manifestations are best managed with the medications cyclophosphamide

or azathioprine combined with low dose prednisone (steroid), especially in alveolitis (lung inflammation). Pulmonary hypertension can be treated with vasodilators. As mentioned earlier, ACE inhibitors are used for renal manifestations. Analgesics and careful use of non-steroidal anti-inflammatory medications can be used for the musculoskeletal pain.

Other disease states may mimic PSS and should be considered, because some of the other conditions might be more easily treated or managed. Some of the scleroderma-like conditions include localized scleroderma, thyroid disorders, or skin changes as a result of chemotherapeutic medications or toxin exposure.

Scleroderma encompasses a vast array of clinical presentations and each patient is unique. The treatment is essentially symptomatic and this debilitating disease is very difficult to treat. Research is ongoing and new treatments are emerging. It is important to recognize the symptoms early and educate the patient so they can avoid any complicating factors.

Related Topics

➤ [Autoimmune disease disorders](#), ➤ [Systemic lupus erythematosus](#)

Suggested Readings

- Klippel JH (2001) Primer on rheumatic diseases, 12th edn. Arthritis Foundation, Atlanta, GA
 Klippel JH, Dieppe PA (1998) Rheumatology, 2nd ed. C.V. Mosby, St. Louis, MO
 Klippel JH, Dieppe PA, Ferri FF (2000) Primary care rheumatology. Harcourt, London

Self-Esteem

William J. Meyer

Self-esteem is one's sense of pride or self-respect. Self-esteem is often thought of in conjunction with adolescence due to the rapid changes in self-esteem that seem to accompany the preteen and teenage years. However,

an individual's sense of self-esteem remains throughout life and even continues to fluctuate especially in the elder years.

Typically self-esteem seems to rise gradually throughout childhood. Then, as an individual reaches adolescence, self-esteem levels seem to drop dramatically. This drop tends to be more drastic for females. Self-esteem then stabilizes and rises throughout the college years with self-esteem peaking in the late 60s. Then, as an individual ages through his or her seventies and eighties, self-esteem begins to decline again. This time the decline tends to be more drastic for males. The exact reasons for changes in self-esteem are unknown. However, there seem to be important changes that accompany the decline in one's self-esteem. The change in adolescence could very well be the onset of puberty, while the change in the elderly years could be a loss of physical capabilities coupled with events such as the loss of a spouse or partner and retirement.

There are numerous methods to try to increase self-esteem including associating with positive, supportive people, and engaging in consistent exercise. Social support and engagement in activities in which the individuals perceive themselves to be valued and appreciated can be important in maintaining self-esteem in older adults.

Related Topics

➤ [Body image](#), ➤ [Coping](#), ➤ [Friendship](#), ➤ [Generativity](#)

Suggested Readings

- McAuley E, Elavsky S, Motl RW, Konopack JF, Hu L, Marquez DX (2005) Physical activity, self-efficacy, and self-esteem: Longitudinal relationships in older adults. *Journal of Gerontology: Psychological Sciences* 60B(5):268–275

Suggested Resources

- Global Action on Aging; www.globalaging.org/health/us/peak.htm
 The National Association for Self Esteem (NASE); www.self-esteem-nase.org

Senior Centers

Jason S. Keri

Multipurpose senior centers are community facilities that organize and provide a broad spectrum of health, social, educational, and recreational services for older persons. A senior center can also be considered as a community focal point that provides both regular and frequent activities. This definition does not include the vast array of “senior clubs” that meet less frequently or church-related senior groups, which provide only a few activities, yet perform vital roles in their communities. Although this definition may tend to homogenize senior centers, it is important to note that regional variation, as well as shifting state and private funding, results in an ever-changing variety of centers that are as unique as they are similar.

The National Institute of Senior Centers (NISC) estimates that 10 million older adults are provided services annually by the estimated 12,000–16,000 senior centers nationwide. Of these centers, more than 8,000 receive federal funding from the Older Americans Act (OAA) managed by the US Administration on Aging and disbursed through state and area agencies. The OAA was initially signed in 1965 and provides vital support for older Americans at risk of losing their ability to live independently. The wide range of OAA services are often carried out by local senior centers and include congregate and home-delivered meals, transportation, adult day services, referrals, information, advocacy, and legal services. Despite the provisions made by the OAA, only 30% of senior center funding is derived from federal sources. The remainder of center funding is from local government, charitable and religious organizations, and private sources. Senior center gambling trips are significant sources of revenue for some centers and have attracted noteworthy philosophical and legislative debate.

Senior centers are by far the most utilized source of community-based service for older individuals, 4–12 times greater than any other source. The National Health Interview Survey of 1984 sampled approximately 14,000 participants and indicated that the following characteristics predict utilization of senior centers: female, aged 76–84, residence in suburban or rural nonfarm areas, lower income, living alone, less difficulty with activities of daily living (ADL), and

more education until college. Race did not predict participation. In essence, the highest center use is among the less advantaged elderly, but not the least advantaged (those who are frail or require assistance with their ADLs.) Nonetheless, users are more aware of specific service agencies and more likely to consult resources when making service decisions, when compared to nonusers.

Though specific services and staffing vary widely from center to center, surveys from both participants and staff indicate that essential programming includes exercise, crafts, assistance and information, socialization, meals, and transportation. The most desirable supplemental programs include continuing education courses, trips, health services, support groups, and arts such as drama, music, and painting.

The latest NISC assessment suggests a remarkable ability of senior centers to promote healthy aging. Participants reported attending their senior center for more than 8 years, and a vast majority reported that senior center programming has improved their mental and physical health. More than 90% of participants report their physical health as the same or better than the previous year. Notably, 75% of participants report that the center has helped them to remain independent. More than 90% indicate that they formed close friendships since coming to the senior center, and over 80% provide assistance to friends at the center, while 50% receive assistance from friends at the center.

Related Topics

- ▶ Activities of daily living, ▶ Older Americans Act, ▶ Social Security

Suggested Readings

- Beisgen BA, Kraitchman MC (2002) Senior centers: Opportunities for successful aging. Springer Publishing Company, New York
- Krout JA (1989) Senior centers in America: Contributions to the study of aging. Greenwood Press, CT

Suggested Resources

- National Institute of Senior Centers; www.ncoa.org

Sexual Abuse

Tira J. Stebbins

It is estimated that every year 2.1 million elderly Americans are abused or neglected. It is also estimated that for every case of elder abuse and neglect that is reported to authorities, as many as five cases go unreported. Sexual abuse is often not reported as a type of elder abuse.

Elder sexual abuse is defined as nonconsensual sexual contact of any kind with an elderly person. Sexual contact with a person who is unable to give consent due to cognitive limitation such as dementia, is also considered sexual abuse. Sexual abuse includes but is not limited to unwanted sexual touching, sexual assault or battery including rape, sexually explicit photography, forcing the person to look at pornography, forcing sexual contact with a third person, and coerced nudity or sodomy. Sexual abusers may be spouses or partners, adult children, family members, friends or peers, caregivers, or strangers. Sexual abuse may occur in the older person's own home or in a short- or long-term care facility. Sexual abuse of older adults has not been well-researched or well-documented. It is often not recognized or reported and therefore it is difficult to estimate the occurrence. What is clear is that the elderly are vulnerable to sexual abuse, it must be identified when it occurs, and the impact of sexual abuse is great. Those who are abused must be treated appropriately and education is essential to the prevention of elder sexual abuse.

Many theories have been developed to explain why people abuse elderly persons. One theory is that perpetrators of assault often search for individuals who are vulnerable and easier to victimize, and the cognitive and physical impairments that are a part of aging make older adults more vulnerable. Relying on the assistance of others—family or professional caregivers—either in their own home or in assisted-living facilities also makes individuals vulnerable to perpetrators. Older adults may be perceived as easier to manipulate or overpower, and less likely to report abuse due to dependence on others or feelings of shame and guilt. Another theory is one of transgenerational violence, which means that family violence or abuse is a learned behavior from one generation to another. Along this line, sexual abuse within a family may continue throughout a lifetime. The psychopathology, or psychological

deficiency, of the abuser such as drug and alcohol addiction, personality disorders, mental retardation, and dementia may be a factor. Elderly adults are often vulnerable to sexual assault due to shared living arrangements between the elderly person and the abuser, dependence of the abuser on the victim, and social isolation of the elder person.

Because older adults are less likely to report sexual abuse, identifying the abuse is difficult. Symptoms of sexual abuse may be the same as other physical or emotional symptoms the elderly person is experiencing, also making it difficult to identify that abuse has occurred. Cognitive impairments such as dementia may make it difficult for the individual to remember or explain the abuse; however, there are physical and emotional symptoms of sexual abuse. Physical signs of sexual abuse include: bruising on inner thighs or breasts, genital or anal bleeding, sexually transmitted diseases, difficulty walking or standing, pain or itching in the genital area, torn or bloody undergarments, and exacerbation of existing illness. Emotional signs of sexual abuse include: scared or timid behavior, depressed or withdrawn behavior, sudden changes in personality, odd or misplaced comments about sex or sexual behavior, and fear of certain people or of physical characteristics.

The impact of sexual abuse on an older adult is often different than that of children and younger adults. A small support system due to the death of friends, lack of mobility, and lack of social interaction makes it difficult for older adults to emotionally recover from an assault. Physical illness may also make emotional and physical recovery more difficult, and elderly adults are more likely to endure serious physical injury from the assault, such as genital tearing or bruising that does not heal properly. Brittle bones may lead to greater injury from an assault, as well as a prolonged healing process.

Care workers for the elderly are mandated to report abuse to local law enforcement, and anyone may report cases of suspected elder abuse to Adult Protective Services. Immediate care of an elderly individual who has been sexually abused may include hospital admission, obtaining a court protective order, and/or placing the individual in a safe home. Medical consultations may include psychiatry, geriatrics, neurology or neurosurgical, and/or orthopedics. Long-term assessment and care vary from individual to individual. Assessments should be made regarding the person's functional status, living environment, and the condition of the caregiver.

Recognizing and acknowledging that older adults are sexually abused is, perhaps, the most important step in preventing elder sexual abuse. Increasing awareness is instrumental in preventing abuse, and therefore educational efforts can be made at the community level. Increasing the availability of respite care, promoting social contact with and support for families with dependent older adults, and encouraging counseling and treatment to cope with personal and family problems that contribute to abuse are all very necessary steps in addressing elder sexual abuse.

Related topics

▶ [Adult Protective Services](#), ▶ [Crime](#), ▶ [Elder abuse and neglect](#), ▶ [Rape](#), ▶ [Violence](#)

Suggested Resources

www.apa.org
www.ec-online.net
www.emedicine.com
www.seniorjournal.com

Sexual Assault

Rachel Rose · Amy House

Sexual assault consists of a wide range of unwanted, coerced, or forced actions involving unwanted sexual contact. Every state has a different legal definition of what constitutes sexual assault. Sexual assault may include rape or attempted rape, grabbing and fondling, and verbal threats. The most researched, studied, and reported type of sexual assault is rape, which includes unwanted or coerced penetration of the vagina or anus by finger(s), penis or other object, or by performing or receiving unwanted oral sex.

Sexual assault is the most underreported of all crimes, and it is estimated that only 30% of sexual crimes are reported to authorities. However, the National Violence against Women Survey found that 1 in 6 women and 1 in 33 men in the United States have experienced an attempted or completed rape in their

lifetimes. Although sexual assault occurs most often in the young (more than half of rapes occur before the age of 18), older populations are also at risk. For instance, one study suggests that 18% of women raped each year are 60 years of age or older. Statistics from the US Department of Justice shed light on the circumstances surrounding the sexual assault of older adults: about 71% of older victims are assaulted in a nursing home, 15% are assaulted in the home of the perpetrator, 12% are assaulted in their homes, and 2% are assaulted in adult care residences.

Sexual assaults are more likely when the victim is reliant on others or is perceived to be unable to say no or defend herself or himself. The main purpose of a sexual assault is to exert power and dominance over the victim. This then makes the elderly, children, physically or cognitively impaired individuals, and those under the influence of drugs or alcohol more at risk for sexual assault. Sexual assaults on female victims are more likely to be perpetrated by individuals that the person knows such as a husband, ex-boyfriend, son, stepfather, or friend. Sexual assaults perpetrated on male victims are more likely to occur when they are young and to be perpetrated by an authority figure or a stranger. Heterosexual men are perpetrators in most sexual assaults, accounting for 86% of all sexual assaults against male victims and almost all sexual assaults against female victims. In addition, 98% of sexually abused older men and women are abused by men.

Sexual assault impacts the victim both mentally and physically, and alters his or her self-image. A number of studies have shown that women and men who have been sexually assaulted experience increased levels of depressive and anxiety symptoms. Depression and posttraumatic stress disorder (PTSD) are often consequences of a sexual assault, and the more severe the assault, the worse the psychological consequences. One study found that rates of depression were about 46% in women who were raped once and close to 80% in women who had been victimized more than once. Men who have been sexually assaulted also experience severe psychological distress. Men are more likely than women to experience PTSD and substance abuse problems after a sexual assault. For example, the rate of alcohol problems for men who have been sexually assaulted is 80%, as compared to 11% for men who have never experienced sexual assault.

Although sexual assault has been shown to impact the emotional health of the victim, sexual assault is also

related to physical health problems and public health concerns. Studies that have examined the relationship between physical health and sexual assault have found that women with a history of sexual assault were more likely to report that they have reproductive or gynecological problems, neurological problems, gastrointestinal problems, and pulmonary problems. In addition, researchers have found that a history of sexual assault is associated with breast cancer, arthritis, headaches, diabetes, physical disability, and a greater likelihood of both medically explained and unexplained somatic symptoms. Of concern for the aging population is the increased possibility of having physical complications from sexual assault such as broken bones, internal injuries, and possibly an early death. According to one study, about half of the elderly sexual assault victims living in nursing homes died within one year of their assaults.

Health risk behaviors have also been associated with experiences of sexual trauma. In particular, sexual trauma appears to increase the risk of alcohol abuse, drug abuse, driving while intoxicated, unsafe sex, physical inactivity, and failing to use seat belts. Women who have experienced childhood sexual abuse are also less likely to have a gynecological exam thus placing them at a greater risk for cervical dysplasia and cancer. Additionally, sexual trauma can increase the likelihood of transmitting a sexually transmitted disease through sexual force because of vaginal or anal trauma, bleeding, and lack of protection. Estimates of the occurrence of sexually transmitted diseases resulting from rape range from 3.6% to 30%. More specifically, for HIV the rate of transmission from rape is estimated to be 1 in 500.

Fortunately, victims of sexual assault who experience psychological distress can recover. Certain psychotherapies, especially cognitive-behavioral therapy, are quite effective in helping victims heal from sexual assault. In addition, certain medications have been shown to be helpful in treating symptoms associated with depression and posttraumatic stress secondary to sexual trauma.

Related Topics

[▶ Acquired immunodeficiency syndrome](#),
 [▶ Chronic pain](#),
 [▶ Depression](#),
 [▶ Intimate partner violence](#),
 [▶ Post-traumatic stress disorder](#),
 [▶ Rape](#),
 [▶ Sexually transmitted diseases](#)

Suggested Readings

- Matsakis A (2003) *The rape recovery handbook: Step-by-step help for survivors of sexual assault*. New Harbinger Publications, Oakland, CA
- Muram D, Miller K, Cutler A (1992) Sexual assault of the elderly victim. *J Interpers Violence* 7(1):70–77
- Resnick HS, Acierno R, Kilpatrick DG (1997) Health impact of interpersonal violence 2: Medical and mental health outcomes. *Behav Med* 23(2):65–78
- Tjaden P, Thoennes N (2000) Full report of the prevalence, incidence, and consequences of violence against women: Findings from the national violence against women survey. National Institute of Justice; Report NCJ 183781, Washington, D.C.

Suggested Resources

- National Center for PTSD; www.ncptsd.org
- National Committee for the Prevention of Elder Abuse; www.preventelderabuse.org
- Rape, Abuse and Incest National Network; www.rainn.org

Sexual Behavior

Melissa Santos · Lara Stepleman

Sexual behavior is generally defined as an act of physical intimacy. Functionally, consensual sexual behaviors occur for reproduction, enjoyment, or as an act of affection. Sexual behavior may occur alone, with another individual, or with multiple individuals. Further, sexual behavior may occur with those of the opposite sex or with those of the same sex.

Sexual behavior consists of many different kinds of behavior. Some sexual behaviors such as vaginal sex, oral sex, and masturbation are viewed as commonplace. Other sexual behaviors such as group sex, sado-masochism, and anal sex are viewed as less common and often get labeled as being deviant. A variety of forces can shape our definition and views of sexual behavior including family, society, the media, and religion. One of the most overriding influences of sexual behavior is culture.

Culture norms often determine what is considered acceptable within a given community. An American view on sexual behavior may be similar or quite distinct from another country's conceptualization

of sexual behavior. Throughout history, American culture has continually redefined what constitutes appropriate sexual behavior. For example, the social acceptance of homosexual behavior has fluctuated over time. Recent historical changes such as the increasing frequency of positive representations of gays and lesbians in the media, the removal of homosexuality as a disorder from the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM), and the striking down of sodomy laws are examples of forces that have influenced changing perceptions.

Within modern American culture, the medical profession has exerted great influence over what gets construed as healthy sexual behavior. In particular, the field of psychiatry has contributed widely to the definition of disordered sexual behaviors through the DSM. The American Psychiatric Association's development of the DSM provides an evolving definition of behaviors viewed as deviant. Presently, the DSM-IV-TR lists three groups of sexual disorders: sexual dysfunctions, paraphilias, and gender identity disorder. Specifically, the paraphilias focus on sexual behaviors viewed to be abnormal and to cause disturbance in various realms of life functioning. Paraphilias refer to an individual finding unconventional objects or nonconsenting individuals to be sexually arousing. They tend to occur primarily in males although females are likely underestimated and underrepresented in research. The paraphilias include pedophilia, exhibitionism, fetishism, frotteurism, sexual masochism, transvestic fetishism, voyeurism, and paraphilia not otherwise specified (which includes necrophilia and urophilia). There has been considerable debate among health professionals as to whether many of these behaviors are truly disordered or instead represent normal variation in the human sexual experience.

In addition to the medical profession, the legal system can also impact our view of what is acceptable sexual behavior. Laws dictate with whom we can have sex, in what manner, and for what purpose. For example, until a 1965 US Supreme Court decision, the state of Connecticut attempted to ban married couples from having sex for any other reason but procreation by making it illegal for married couples to engage in sexual behavior while using birth control. In 2003, the US Supreme Court ruled that homosexual sodomy laws, or laws targeted at individuals who engage in sexual behaviors that do not lead to procreation (e.g.,

anal and oral sex) are illegal. Adultery continues to be illegal in some states, but these laws are infrequently enforced. Furthermore, nonconsensual sexual behavior such as rape and sexual acts with minors is illegal throughout the United States.

Another factor that can influence our view of sexual behavior is age. Although not often viewed as such, sexuality and sexual behavior is a lifelong process. It is a commonly held belief that with age, a person's interest and ability to engage in sexual behavior decreases. However, research supports the notion that even with increased age, desire, and engagement in sexual relationships do continue. And while sexual engagement may decrease for many reasons, desire continues to remain at levels congruent with younger age groups. Several factors may play a role in the engagement of sexual behavior in aging individuals that can be viewed from a biopsychosocial perspective.

Biologically, factors such as illness and medication may influence sexual behavior. Diabetes, hypertension, and arthritis may impact the ability of an individual to engage in sexual behavior. Psychologically, mental illness such as anxiety or depression and substance use can affect sexual behavior and may be underdiagnosed and undertreated in the elderly. Socially, representations of older individuals engaging in sexual behavior are often negative such that individuals are portrayed as either asexual or as sexual deviants (e.g., dirty old man). American society, which values youth, may fail to appreciate the significance of sexual relationships among aging individuals. Although there are a growing number of exceptions, few positive images are available in the media or elsewhere of sexual behavior between older adults.

The advent of medical treatments for sexual dysfunctions have provided benefit to many individuals who desire sexual behavior involving penetration but encounter medical obstacles. On the other hand, the process of aging may also result in a broadening definition of "normal" and "healthy" sexual relationships. Because of health, disability, or for other reasons, a sexual relationship may no longer primarily consist of intercourse. Rather, behaviors such as petting or oral sex may become predominant sexual behaviors within a relationship.

Medical professionals may contribute to the idea that sexual behavior among older adults is not important by not providing regular opportunities for open conversation with their patients about their sexual

health concerns. Inaccurate perceptions regarding the lack of engagement in or importance of sexual behavior in the aging are pervasive. As opposed to other age groups, medical professionals may not view sexual behavior as a vital area for discussion or concern in older adults.

Inadequate discussions about sexual behavior and sexual health in aging populations can have deleterious effects. One particular consequence of sexual behavior that has been the topic of recent research is the increase in newly infected HIV cases in older populations. Reports suggest that HIV infection in individuals over the age of 50 has doubled over the past 5 years. Some studies suggest that health care providers' lack of discussion about sexual health, combined with beliefs about infrequent engagement in sexual behavior by older populations may provide missed opportunities for prevention as well as early detection of infection. Further, few age-sensitive preventative interventions have been designed to target this population.

In summary, sexual behavior is an important area for discussion throughout the lifespan. Many factors influence our views of what constitutes healthy sexual behavior. Further, these views about sexual behavior are continuously evolving. It is essential that medical and mental health providers elicit concerns about sexual behavior regardless of the age of their patient. Culturally, it is essential that accurate, positive representations of sexual behavior across the lifespan become more widely available.

Related Topics

[▶ Acquired immunodeficiency syndrome](#), [▶ Anxiety disorders](#), [▶ Depression](#), [▶ Domestic partnerships](#), [▶ Homosexuality](#), [▶ Homosexuals](#), [▶ Marriage](#), [▶ Masturbation](#), [▶ Safer sex](#), [▶ Sexual dysfunction](#), [▶ Sexuality](#), [▶ Sexually transmitted disease](#)

Suggested Readings

Block JD, Bakos SC (2005) *Sex over 50*. Prentice Hall, Paramus, NJ
 Crooks RL, Baur K (2004) *Our sexuality*. Wadsworth, Belmont, CA
 King B (2004) *Human sexuality today*. Pearson Education/Prentice Hall, Upper Saddle River, NJ
 Nusbaum M, Lenahan P, Sadovsky R (2005) Sexual health in aging men and women: Addressing the physiologic and psychological sexual changes that occur with age. *Geriatrics* 60(9):18–23

Sexual Dysfunction

Kathleen Franco · John Franco · Mohammed Alishahie

Before the 1960s sexual revolution, sexual dysfunction, if not impotency, was felt to be a normal characteristic of aging, which could be left untreated. More recent research indicates that sexual activity persists in over half of males and one fifth of females over the age of 75 years. Oral agents improving erectile dysfunction for men and hormonal replacement for women have allowed longer, more active sex lives. National, political, and sports celebrities who advertise their own use destigmatize reliance on these medications and encourage men to “ask your doctor” rather than feeling embarrassed or ashamed. Older couples can present their concerns and find more knowledgeable physicians with increasing options for treatment. The level of sexual activity will depend on the availability of the partner, the health of each, prior interest and activity of both, and current interest. Older men are more sexually active than women, and partners more active than singles. Nearly two thirds of older men describe sexual activity as important to their overall quality of life compared to one third of women between 60 and 74 years of age. In a 1998 survey by the National Council on the Aging, 80% of those between 60 and 90 had sex at least once in a month. As a group, older men are twice as likely as older women to want more sex than they are having.

Women often experience lower sexual-desire and difficulty achieving orgasm. For men, erectile dysfunction is more common, occurring in 50% of men between 40 and 70 years of age and 70% in those aged 70 or more years old. Erectile dysfunction hampers self-esteem even when men are aware that physiological changes or medications are the cause. The inability to achieve and maintain an erection adequate for sexual function is most often induced by medical or psychological conditions: diabetes mellitus, cardiac and vascular disease, cancer, degenerative joint disease, or psychiatric disorders such as anxiety, depression or dementia. Increased depression or anxiety can be initiated by the death of a loved one, separation, retirement, financial difficulties, or physical illness. A snowball effect can occur as one factor increases another before or after the onset of erectile dysfunction. Pain, difficulty moving, or fatigue may compound the symptom causing additional

loss of confidence or desire. Premature ejaculation, common in younger men, can continue into later years, but the frequency is unknown.

There are also many medications that can precipitate sexual dysfunction. Among these are drugs that control blood pressure, cardiac disease, allergies, or autoimmune disorders. In addition, medicine used to reduce anxiety, depression, mania, or psychosis can also cause dysfunction in various forms from reduced desire or erectile dysfunction to anorgasmia and retrograde ejaculation. Chemotherapy agents for treating cancer and drugs reducing symptoms of Parkinson's disease join the large list of drugs with sexual side-effects. As with physical illnesses, medications are likely to cause more sexual dysfunction in the older population who already carry greater physiological burden from the aging process.

Hypoactive sexual desire occurs in younger women, but not uncommonly, its onset is in the years after menopause when estrogen and testosterone levels are low. Spousal or cultural expectations can increase the pressure a woman may feel and further increase guilt and lower self-esteem. Orgasmic disorders are frequent in women of all ages. Many will not interpret anorgasmia as a problem in their relationship or feel the need to seek a physician's advice or referral for behavioral therapy. For newer onset, cases of sexual dysfunction medication side effects may have increased anorgasmia or significantly prolonged the time required to reach orgasm. Often a medication switch is possible allowing return of normal function.

There are multiple concerns grouped under the subheading of sexual pain disorders. Dyspareunia refers to pain women feel during intercourse and is quite common after menopause, secondary to vaginal dryness or other medical conditions. Gynecological malignancies or their various treatments are frequently associated with pain. Vaginismus, another disorder associated with painful intercourse, is believed to begin much earlier at the onset of sexual activity, but may persist into older age in life if not treated successfully.

It is recommended that patients with sexual concerns have a thorough physical examination with enough time to present a thorough history to their primary care or specialist physician. Among other items, this history should include medical conditions, medications plus supplements, emotional and cognitive assessment, and discussion of the health of the relationship. Without these, the likelihood of successful treatment is diminished.

Sexual dysfunction associated with dementia can have diverse presentations. Difficulty with performance and inability to follow cues is not atypical. In other individuals, increased sexual interest, disinhibition or sexually inappropriate behavior in public can be upsetting to the spouse or caretakers. The nondemented partner can be drawn to sexual relationships outside of the marriage further fueling paranoid ideations of the cognitively impaired partner. If the couple is still sexually active, in another scenario, it may be necessary to determine if the demented individual is honestly consenting to intercourse. Overall, however, there is generally a reduction in sexual activity in these couples. After a thorough assessment with medical evaluation of the urogenital, vascular, and neurological systems, the patient and physician can jointly decide on the best treatment options. For example treating major depression with one of the medications that does not reduce desire or ability to climax could be immensely helpful to the patient and spouse. Cholinesterase inhibiting medications for patients with dementia can help memory and self-esteem to improve sexual activity. In some instances, individuals with dementia may be hypersexual, causing problems to partners or those around them. If behavioral approaches have been unsuccessful, antidepressant and antipsychotic medication may reduce libido. Anti-hypertensive agents as in a *B*-blocker may have a similar result.

Treatments

Behavior therapies for sexual dysfunction can be useful if both members of the couple desire to participate and are willing to follow recommendations of the therapist. Some couples may be uncomfortable reinterpreting their own self-expectations or may have trouble with sensate focus exercises. Physical illness may require changes in types of sexual activity the couple once enjoyed. Difficulty moving, painful joints, and briefer spurts of energy may hinder the couple's sexual abilities. Non-sedating analgesic medication, regular exercise, or physical therapy can indirectly improve sexual well-being. If blood sugars of diabetic patients and oxygenation of those with pulmonary disease are monitored regularly, the individual may find improvement in their sexual capacity. Changing medications the individual is already taking to the ones with lesser side-effect or trying additional others to offset side

effects may be options. This requires constant reassessment when different physicians are caring for the individual and close communication to all with the patient being highest on the list.

Male sexual dysfunction treatments: A discussion with one's doctor can explore the best therapeutic choices for improving erectile dysfunction. There are a variety of treatment options available for erectile dysfunction including pumps, injections, patches, and pills. The latter has resulted in more men asking about medication commercials they have seen on television. There are three "phosphodiesterase type 5" medications for treatment of sexual dysfunction with onset at 30–60 min and lasting from roughly 436 hours depending on which is chosen. With physical stimulation, 70–80% of those using medication will have success. Besides cost, there are side effects that can limit use, including dizziness from drop in blood pressure especially in the presence of some cardiovascular medications. Headaches and gastrointestinal symptoms can also occur. Individuals with some blood disorders should avoid these medications and those with chronic liver or renal disease should use these medications with caution. Agents placed under the tongue and that act more quickly through dopamine system are being developed.

If an individual's blood test indicates low levels of testosterone, a patch on the skin can be worn to supply this important hormone. There are injectable agents of different varieties that have onset in one third of the time needed for the oral agents and similar success rates. The injection into the base of the penis can be painful and on occasion causes a more severe side effect, priapism.

Vacuum devices have been available for sometime that allow blood to come into the penis to produce an erection. The individual attaches a plastic tube with a tiny pump that will be removed once a ring is put into place to maintain the penile erection. Although the effect is immediate, it can be difficult to manage the procedural steps for some older individuals. Delayed orgasm is one side effect that can occur. Penile implants carry surgical risk and are not always successful. They are permanent in that once they are in place, erectile function can never be achieved in any other fashion due to surgical alterations.

Female sexual dysfunction treatments: Besides behavioral therapies for reduced sexual desire in

women, estrogen replacement after menopause may help. Certainly vaginal dryness is improved and reduced pain from lack of lubrication will be noticed. Estrogen, however, carries significant cardiovascular risk in the first 2 years of use. The male hormone testosterone is also present in premenopausal women but falls after menopause. Testosterone has been given with some benefit to women, but unwanted hair, weight gain, and other side-effects limit its use. Sildenafil has been studied in women. The success rates for low desire and other disorders has been far less helpful than the outcomes for men with erectile dysfunction.

In conclusion, taking sexual concerns to a physician can be beneficial as one ages. Today there are multiple available treatments with therapies in many cases that are easy and safe. Always starting with a physical examination and laboratory testing to augment the thorough history is a must with any sexual dysfunction. From that point, the doctor and patient as a team can make a decision that can help achieve the patient's goals.

Related Topics

[Body image](#), [Coitus and vaginal dryness](#), [Dementia](#), [Depression](#), [Femininity](#), [Hormones](#), [Masculinity](#), [Sexual behavior](#), [Sexuality](#)

Suggested Reading

Camacho ME Reyes-Ortiz CA (2005) Sexual dysfunction in the elderly: Age or disease? *Int J Impot Res* 17(Suppl 1):S52–S56

Rosen RC, Wing R, Schneider S, Gendrano N (2005) Epidemiology of erectile dysfunction: The role of medical comorbidities and lifestyle factors. *Urol Clin North Am* 32(4):403–417

Sexuality

Sarah Shelton · Lara M. Stepleman

The term sexuality denotes a biopsychosocial phenomenon that consists of physiological, psychological, interpersonal, social, and cultural processes. In this regard, sexuality is a basic human experience that is multidetermined. It is much more than a simple

biologically driven instinct. Although physical responses and sexual behaviors are the most obvious signs of sexuality, there are a host of more subtle factors that contribute to sexual experiences.

One biological component of sexuality includes the genetic contribution to determination of sexuality, which has been implicated in recent research. Also contributing to sexuality are the physiological mechanisms of the sexual response cycle, which includes the phases of desire, arousal, orgasm, and resolution. This cycle involves complex relationships between hormones and neurotransmitters that are not fully understood. Furthermore, the physical nature of the sexual response cycle does not operate independently as it is heavily influenced by social and cultural norms.

An individual's thoughts, feelings, attitudes, and beliefs about sexuality are shaped by the learning process throughout development. People acquire their own understanding of sexuality through observing the behavior of others, messages and images about sexuality communicated through the media, explicit teaching from family, friends, and authority figures, as well as their own personal sexual experiences.

Although some aspects of sexuality are universal (e.g., the sexual response cycle), many features of sexuality vary between cultures, communities, generations, and individuals as a result of differing norms, mores, and values. These differences between groups of people and individuals make it difficult to define what is "healthy" versus "unhealthy" sexuality. Religious beliefs and teachings have historically shaped the public's views on sexual behaviors and continue to exert a heavy influence on sexual standards today. For example, there is currently dissent between many religious groups regarding sexual orientation, gay marriage, and issues of birth control that directly and indirectly affect public policy and legislation.

The American Psychiatric Association has chosen to define sexual dysfunction as disturbances in the psychological and physiological characteristics of the sexual response cycle that result in significant distress and interpersonal problems. The guidelines for diagnosing sexual dysfunction take into account cultural differences that influence sexual norms. There is currently controversy in the mental health field regarding whether to label sexual behaviors that occur between consenting adults as "disorders," even if those behaviors deviate from those of the majority. Examples of currently debated sexual disorders include sexual sadism–masochism and some fetishes that may be strongly culture bound.

Sexuality changes with the aging process. These changes are often related to physiological, psychological, and social changes that typify growing older. Both men and women are affected by the physical changes associated with age. Postmenopausal women often experience a change in their sexuality due to a change in hormone levels, specifically decreases in testosterone and estrogen that tends to affect the physical aspect of arousal. Otherwise, sexual problems tend to decrease with age among females. For males, the most common sexual problem is erectile dysfunction, as it becomes increasingly difficult for men to obtain and maintain an erection as they become older. The primary age-related factor that can negatively impact sexuality is health status. As people age, they become increasingly prone to physical ailments that can make sexual behavior difficult and uncomfortable. Furthermore, medications given to treat health maladies may have negative side effects where sex drive or sexual functioning are concerned.

Psychological factors include, but are not limited to, a decrease in libido as well as a sense of fatigue among older adults. Although the incidence of depression in the population tends to decrease with age, depression in the elderly is often under diagnosed and left untreated. This is because some depressive symptoms are inaccurately attributed to the natural aging process in this population. Since loss of sexual interest may reflect a depressive episode, individuals who experience a decreased sex drive should consult with a mental health professional for a depression screening rather than accept their experience as a normal part of aging.

Another important psychological variable is that of body image. However, it appears to be a person's satisfaction with his or her own body image that influences sexuality as opposed to the attraction of one partner to the other. In fact, partners tend to rate each other as increasingly attractive with age. Also, the more an individual perceives his or her partner to enjoy sexual activity, the more frequently it will be initiated.

Social influences on sexuality among older individuals include benefits as well as challenges. Many are enjoying a "second honeymoon" with their partner, as free time increases due to factors such as retirement and children being out of the home. Some may re-enter the dating world if divorced or widowed. Challenges related to sexuality later in life include the loss of a sexual partner and lack of partner availability. Statistically, in heterosexual relationships, men are less

affected by partner loss because women tend to live longer on average.

Until relatively recently, society (including the medical profession) was under the impression that the importance of sexuality decreased with age. However, the widespread popularity of hormone replacement therapy for women and erectile dysfunction medications for men among older adults has revealed the importance of sexuality to aging individuals. The changing conceptualization of sexuality later in life is still in progress. Patients and doctors alike acknowledge that addressing issues of sexuality at regular medical appointments is not as common as it should be but is increasing in frequency. This is especially notable, as sexual disturbance can be a sign of psychological problems, such as depression, as well as some serious medical problems including heart disease.

The response of patients and their medical providers to these concerns is the biggest change over recent years. Currently, when sexual problems are identified they are viewed as something to be overcome rather than something to be accepted as a natural part of the aging process. This change in attitude is considered by some to be a “second sexual revolution,” as sexual attitudes and behaviors among older adults are changing dramatically.

Changes in the way medical providers and society at large view sexuality later in life include concerns about sexually transmitted diseases. Although younger people remain the population most at risk, the incidence of STDs, including HIV or AIDS, in older adults is rising. For example, one out of every ten individuals diagnosed with AIDS is over the age of 50. The rise in STDs among older Americans is thought to be the result of three factors. First, people with AIDS are now living longer due to advances in medical treatment and are therefore included in the demographic statistics. The second factor is an unfortunate and ironic consequence of the medical successes in HIV or AIDS care. Because of recent medical advances, individuals across all age groups are minimizing the gravity of the illness and are engaging in an increasing amount of risky sexual behaviors. The third factor is that improvements in treatments for sexual dysfunction allow for more frequent sex, thereby increasing the likelihood of STD contraction and transmission. Implications for the rise of STDs among older adults include the need for public education campaigns about safe sex for this population and routine STD

screenings for older individuals who are considered at risk for infection.

Several landmark studies on aging and sexuality have been conducted in the last decade. In 1998, the National Council on Aging (NCOA) conducted a survey and reported that almost half of Americans age 60 and over are still sexually active. The majority reported having sex less frequently than when they were younger and most reported a desire to increase the frequency of their sexual behavior. This was true in all age groups, including individuals over 80 years old. Even though respondents reported less frequent sexual behavior, most reported finding sex as satisfying of an experience as it was in early and mid-adulthood.

In 1999, the American Association of Retired Persons (AARP) and *Modern Maturity* magazine conducted a national study examining sex among people 45 years and older. Although frequency drops with age, more than 70% of surveyed men and women with regular partners are sexually active enough to have intercourse at least monthly. About two-thirds of those polled were extremely or very satisfied with their physical relationships. In 2004, the AARP conducted a survey to update their findings. They found that sexuality is at least as important and maybe even more important to aging Americans as in their 1999 study. Major updates in findings include that more than twice as many men are utilizing erectile dysfunction drugs compared to those polled 5 years earlier.

Despite common trends, significant variability exists between individuals with regard to if and how the aging process influences sexuality. However, experts agree that sexuality can remain a healthy, important, and rewarding part of the human experience throughout the life span. This is provided one possesses understanding and acceptance of how sexuality changes as part of the normal aging process.

Related Topics

[Body image](#), [Depression](#), [Menopause](#), [Sexual behavior](#), [Sexual dysfunction](#), [Sexually transmitted disease](#)

Suggested Readings

Foley S (2004) *Sex & love for grownups: A no-nonsense guide to a life of passion*. AARP, Washington, D.C.

- Levine A, Kelley C (eds) (1999) *Sexuality in middle and later life*. SIECUS Publications, New York
- Reuben D (1997) Everything you always wanted to know about sex after 50 (but were afraid to ask). *New choices: living even better after 50*. 37(5):45–47

Suggested Resources

- American Association of Retired Persons (AARP); <http://www.aarp.org>
- American Psychological Association (APA); <http://www.apa.org/pi/aging/sexuality.html>
- National Council on Aging (NCOA); <http://www.ncoa.org>
- National Institute on Aging (NIA). Age Page: Sexuality in Later Life; <http://www.nia.nih.gov>

Sexually Transmitted Disease

Tomas Gigena · Simran K. Singh

Sexually transmitted diseases (STDs) are a major public health problem and account for major disability worldwide. Untreated infections can lead to complications including upper genital tract infections, infertility, cervical cancer, and enhanced transmission and acquisition of the human immunodeficiency virus (HIV). Infections are spread through oral, vaginal, or anal contacts. The best way to avoid transmission is to abstain from sexual contact. A long-term monogamous relationship with a partner who has been tested and is known to be uninfected and barrier protection during any type of sexual interaction are ways to reduce the risk of an STD.

Chlamydia is the most commonly reported bacterial STD in the US, with approximately 4 million cases per year. It affects nearly 5% of sexually active adolescent girls and is one the leading causes of infertility in women.

Chlamydia is often confused with gonorrhea, and it is traditionally known as the “silent” disease because symptoms are often not present. Infected persons may unknowingly pass chlamydia to their sexual partners and mothers can transmit the infection to their newborn late in pregnancy. If symptoms are present, they appear within 1–3 weeks of exposure. In women, the most common symptoms are vaginal discharge,

burning with urination, and pelvic pain. Men typically experience burning with urination, rectal discharge (from anal intercourse), or a urethral discharge. Neonates affected by chlamydia usually have bilateral purulent conjunctivitis.

There are two types of laboratory tests commonly used to diagnose chlamydia. One involves collecting a specimen from an infected site (cervix or penis) to detect the bacterium directly. From the specimen, diagnosis can be made from specialized techniques such as a cell culture analysis, direct fluorescent antibody (DFA), or nucleic acid amplification techniques. Another test known as an enzyme immunoassay uses a urine sample to detect the chlamydia bacteria.

Chlamydial infections are treated with antibiotics such as oral doxycycline or azithromycin. It is essential to also treat the partner of the affected individual to prevent repeat transmission. As many individuals with chlamydial infection concomitantly have gonorrhea, it is recommended that both infections be treated simultaneously.

Gonorrhea is one of the most common sexually transmitted infections in the United States, affecting approximately 800,000 people each year. However, it is difficult to determine an exact number of cases as a significant number are not reported.

Gonorrhea is caused by a bacterium called *Neisseria gonorrhoea*. Symptoms in women are usually absent but may include a burning sensation with urination, a discharge from the vagina, bleeding between menstrual periods, and pain during intercourse. Men usually complain of a burning sensation with urination, a pus-like discharge from the penis, swollen or painful testicles, and pain during intercourse.

Diagnosis of gonorrhea can be made with gram stain, culture, or DNA probe of the oral, urethral, cervical, or anal regions. Treatment of gonorrhea involves antibiotics usually a cephalosporin called ceftriaxone or a macrolide called azithromycin. Partners of infected individuals should also be treated to prevent transmission. Concomitant therapy for chlamydia is also strongly suggested. Unfortunately, there is an increasing problem with bacterial resistance to these medications.

Although bacterial vaginosis (BV) is the most common vaginal infection, it is not considered an STD. BV develops when there is replacement of the normal bacterial vaginal flora with an overgrowth of anaerobic microorganisms, *Mycoplasma hominis*, and *Gardnerella vaginalis*. The reason for this shift in bacteria is

not completely understood, but associations have been made with multiple sexual partners, douching, intrauterine devices (IUDs), and not using a condom.

The most common symptoms include an abnormal vaginal discharge with a strong fishy odor (especially after intercourse), burning with urination, and itching or irritation around the outside of the vagina. In some instances, women may have no symptoms at all.

The diagnosis of BV is clinical, based upon a homogenous, grayish-white discharge, vaginal pH > 4.5, positive whiff-amine test (“fishy” odor when 10% potassium hydroxide is added to the sample), and clue cells on saline wet mount (vaginal epithelial cells studded with adherent bacteria). Gram stain, culture, and DNA probes are alternative methods.

Bacterial vaginosis is treated in symptomatic women with oral or intravaginal antibiotics such as metronidazole. In general, male sexual partners do not require treatment. Women may get recurrent episodes of BV, but it is unclear if treatment of male partners may reduce these recurrences.

Trichomoniasis is an STD caused by a protozoan parasite, *Trichomonas vaginalis*. Men may notice an irritation inside the penis and a mild discharge or burning after urination or ejaculation, but typically do not have symptoms. Symptoms in women include a frothy, yellow-green vaginal discharge with a strong odor, as well as irritation and itching of the genital area. Diagnosis is made microscopically by demonstrating motile trichomonads from a vaginal discharge or urine cultures. Trichomoniasis can be cured with a single oral dose of metronidazole but both partners should be treated simultaneously to avoid reinfection.

Genital herpes is a highly prevalent infection in the United States, affecting 45 million individuals, or one in five adolescents and adults, and is a risk factor for acquisition of HIV. Most genital herpes are caused by herpes simplex virus type 2 (HSV-2), but there is an increasing incidence of type-1 (HSV-1) infections.

The first outbreak of genital herpes usually occurs within a week after the initial exposure and consists of small, painful genital blisters filled with clear or cloudy fluid. These blisters break easily, quickly becoming shallow, red, open sores. Other symptoms may include burning with urination, fever, painful swelling, or a flu-like illness. However, most individuals never have symptoms or lesions, but still are able to transmit this infection to susceptible sexual partners.

Most herpetic infections are diagnosed clinically based on multiple, shallow, tender vesicular genital

ulcers; laboratory studies may also be used for confirmation. Genital herpes cannot be cured, but the antiviral medications Acyclovir, famciclovir, and valacyclovir, reduce the number of outbreaks, shorten the duration of active viral shedding, and reduce pain.

Human papilloma virus (HPV) is the most common STD in the United States, affecting nearly 20 million Americans, with an annual incidence of approximately 6.2 million cases. Most infections are asymptomatic, and infection may occur despite the use of condoms.

HPV may appear as genital warts weeks to months after exposure and later cause cancers of the cervix, vulva, anus, or penis. Genital warts are usually diagnosed by visual inspection of the effected area. The Papanicolaou (Pap) smear is the cytologic technique used to detect disease of the cervix and vagina and is recommended annually for women.

No antiretroviral therapy for HPV is currently approved. Anogenital warts can be treated topically with podophyllotoxin, trichloroacetic acid, 5-fluorouracil, or immune modulators such as imiquimod. Cryotherapy (freezing with liquid nitrogen) and surgical excision are other treatment modalities.

Syphilis is an infection caused by the bacteria *Treponema pallidum*. Although there was a “mini-epidemic” of new cases of syphilis in the late 1980s and early 1990s, the number of new cases reported has been decreasing. There is a higher rate of cases among men than women, with the highest incidence in men having sex with men. Although some individuals never develop symptoms (latent disease) and thus are unaware of their illness, all remain at risk for late complications of syphilis without treatment.

The signs and symptoms of the disease are divided into different stages. The primary stage is marked by single or multiple sores called chancres, which appear 10–90 days after exposure to an infected lesion. The chancre is usually a firm, round, small, painless lesion, lasting 3–6 weeks and may heal without treatment. The secondary stage may appear months later and is characterized by the presence of a rash usually on the palms of the hands and soles of the feet that does not itch. Other common symptoms of secondary stage include swollen lymph glands, sore throat, headache, fever, muscle ache, and fatigue. Without treatment, the late stage develops and this is when permanent organ damage occurs, typically affecting the brain, eyes, heart, blood vessels, liver, bones and joints. Symptoms may also include paralysis of certain muscles, numbness, gradual blindness, dementia, or even death.

The diagnosis of syphilis can be made in the primary stage with direct visualization of the organism under a microscope using a special darkfield examination. During the secondary or late stage of syphilis, blood tests are utilized. VDRL and RPR are screening tests, while FTA-ABS and MHA-TP are confirmatory tests.

Early syphilis is still effectively treated with a single injection of penicillin, but later stages may require additional doses of penicillin. However, permanent organ damage caused by the later stages of the disease is irreversible.

Related Topics

➤ [Acquired immunodeficiency syndrome \(AIDS\)](#)

Suggested Readings

Miller K et al (2003) Update on the prevention and treatment of sexually transmitted diseases. *Am Fam Physician* 67:1915–1922

Woodward C et al (1999) Drug treatment of common STDs: Part I. Herpes, syphilis, urethritis, chlamydia, and gonorrhea. *Am Fam Physician* 60:1387–1394

Suggested Resources

CDC National Prevention Information Network (NPIN). STDs Today; <http://www.cdcnpin.org/scripts/std/std.asp>
eMedicine http://www.emedicine.com/emerg/INFECTIOUS_DI SEASES.htm

National Institute of Allergy and Infectious Diseases; <http://www.niaid.nih.gov/publications/stds.htm>

United States Department of Health and Human Services Center for Disease Control and Prevention. STD Fact Sheets; <http://www.cdc.gov/std>

Shingles

Mohamed H. Yassin · Robert A. Bonomo

Varicella zoster virus (VZV) is the cause of two clinically distinct illnesses, chickenpox (Varicella) that is primarily a disease of children and Herpes zoster (HZ) or *Shingles* that is primarily a disease of elderly

and individuals who are immunocompromized. VZV is a type of herpes virus (α -herpesvirus) also named as human herpes virus III.

After the initial VZV infection (chickenpox) or vaccination (live-attenuated vaccine), patients develop lifelong immunity against chickenpox. Soon after the primary infection or vaccination, the VZ virions (virus components) travel to the nerve cell centers (nuclei). After the initial phase of virus replication, VZV goes into a dormant state (latency) with absence of virus release and persistence in the nerve (dorsal root ganglia [DRG]). The VZV vaccine causes an exactly similar reaction as the primary VZV infection.

With aging there is considerable decrease in VZV-specific cell-mediated immunity (lowered resistance to herpes virus). In vitro (laboratory-based) studies show diminished capacity of a type of infection-fighting peripheral blood cell (T-cells) to spread or proliferate in response to VZV. The loss of specific T-cell response is thought to be the main cause for susceptibility to shingles in elderly. In contrast patients continue to have a lifelong immunity against chickenpox.

The above-mentioned immunological background explains the sharp increase in contracting HZ in the elderly. The incidence of HZ increases from <1 in 1000 person-years in children <10 years, to >10 per 1000 person-years in older individuals >65 years. The incidence of post herpetic neuralgia (nerve pain due to herpes infection or postherpetic neuralgia [PHN]) is much higher in individuals >60 years affecting over 50% of HZ infected elderly. The persistence of the VZV virions in the DRG and lack of specific T-cell response is responsible for the continued damage and persistence of PHN.

Clinical Picture

The word shingles is from the Latin *cingulum* or girdle. Shingles are much more common in older age, but it has been reported in younger people as well as children. Unlike chickenpox, HZ does not give a lifelong immunity and recurrence can happen. HZ is much less infectious when compared to chickenpox. HZ lesions contain active VZV and potentially can transmit the virus. Shingles or HZ lesions are unilateral (confined to one side of the body), vesicular (blister-like) eruptions that follow a dermatomal distribution (appear in specific sections/segments of the body). The most common sites are thoracic (trunk), cervical

(neck), or ophthalmic (eye). Pain usually appears 48–72 h before the lesions and last usually for 2 weeks. Pain is usually deep aching pain, burning pain, or altered sensitivity to touch. Pain may occasionally be the only symptom of HZ. Lesions take 7–10 days to crust and may take up to a month to heal.

Involvement of the nerves leading to the eye (ophthalmic division of the trigeminal nerve V1) carries more risk of complication than pain. Zoster involving V1 can result in keratitis (inflammation of the cornea), corneal ulceration, iridocyclitis (disease of the iris of the eye), and secondary glaucoma. The key issue is immediate ophthalmic referral with the earliest symptoms of visual disturbance. Patients with V1 zoster are more likely to have concomitant VZV meningoencephalitis (brain infection due to herpes). Another possible presentation of Shingles is Ramsay Hunt syndrome with involvement of a part of the nervous system called the geniculate ganglion. Patients with geniculate ganglion Zoster have lesions on the external ear, loss of taste in the anterior two thirds of the tongue and may have a one-sided facial paralysis or droop (ipsilateral facial palsy). Immunocompromised individuals (for example those receiving treatment for cancer) can have a more severe illness, with more diffuse and deeper tissue involvement.

Postherpetic neuralgia is the most common complication of VZV reactivation in immunocompetent (those without weakened immune systems) patients. VZV reactivation is rarely life-threatening, but the prolonged neuropathic pain of shingles can adversely affect the quality of life of older individuals markedly. The most common definition of PHN is the presence of pain more than a month after the onset of the eruption of HZ. The risk of PHN increases with age but is not increased in immunosuppressed patients. Pain may resolve in many of the patients with PHN. Multiple nervous system disorders are caused by VZV reactivation including postherpetic neuralgia, encephalitis (inflammation of the brain tissues), CNS arteritis (inflammation of blood vessels in the brain), myelitis (bone inflammation), and postinfectious polyneuropathy (a severe illness involving muscle paralysis also known as Guillian–Barré syndrome).

Diagnosis

The diagnosis of HZ is usually made on the basis of history and clinical examination. The majority of

herpes zoster (shingles) cases are diagnosed based on clinical grounds. Routine diagnostic studies are not requested in most of the cases. However, diagnostic studies can be useful in immunocompromised hosts or complicated VZV infection as meningoencephalitis (infection of brain and related tissues) or pneumonia. Diagnostic tests for herpes zoster include obtaining fluid from the vesicles (skin eruptions), and analyzing the fluid with special preparations or procedures.

Therapy

Prevention and Infection control Universal VZV vaccination of children in the past led to dramatic decrease in *varicella* and related complications. However, the effect of universal VZV vaccination in children on the incidence of HZ in adults is not known. Some experts are expecting an increase in HZ among the elderly that poses a great risk to the aging community. In a recent clinical trial on VZV immune adults 60 years or older, VZV vaccination was helpful in preventing VZV reactivation and PHN. These data showed reduction of HZ by 51% and PHN by 67%. The side-effects profile was favorable and the cost effectiveness will be dependant on the price of the vaccine. These data are very promising but routine vaccination can not be a general recommendation yet.

Transmission of VZV from HZ lesions is primarily by contact and to a less extent by airborne transmission. Although documented on case-report level, many authorities believe that HZ represents reactivation rather than a transmissible illness. No isolation is needed for household cases. Droplet and contact isolation is required for *varicella*, disseminated HZ, and localized *zoster* in immunocompromised patients. Many of the elderly live in long-term nursing facilities that can potentially lead to outbreaks of the HZ.

Exposed patients are classified according to their immunological status and previous VZV exposure or vaccination. For immune cases little is needed. VZV susceptible, immunocompetent patients should be vaccinated as soon as possible (up to 120 h). Immunocompromised individuals should receive *varicella zoster* immune globulin (VZIG) or the medication acyclovir if VZIG is unavailable. Exposed susceptible patients should be placed on strict isolation from day 9 until day 21 after the last exposure. Exposed

susceptible health care workers should be vaccinated and excluded from work from day 9 until 21 after exposure. Vaccination for susceptible adults is two doses 4–8 weeks apart.

Patients with HZ should receive antiviral therapy for 7 days. Longer treatment does not show any additional benefit. Treatment should be started as soon as vesicles appear. Typically antiviral therapy should be started within 72 h of rash appearance. It can also be started if new vesicles are still erupting. The goal for antiviral therapy is to promote skin healing and decrease discomfort.

Pain control for PHN is a real clinical challenge. Multiple modalities have been used with variable success; nonsteroidal anti-inflammatory drugs (NSAIDs), tricyclic antidepressants, carbamazepine, depakote, gabapentin, nerve block, local heat, acupuncture, and behavioral techniques. Antiviral therapy with acyclovir or other medications does not prevent PHN. Most experts believe that the risk of corticosteroids is not worth the possible limited benefit and corticosteroids are usually not recommended. Vaccination of elderly individuals appears to be effective in decreasing PHN as mentioned earlier in prevention.

Related Topics

➤ [Neuropathy](#), ➤ [Pain](#), ➤ [Pain management](#)

Suggested Readings

- Arvin A (2005) Aging, immunity, and the varicella-zoster virus. *N Engl J Med* 352:2266–2267
- Gilden DH, DeMaster BK, LaGuardia JJ, Mahalingam R, Cohrs RJ (2000) Neurologic complications of the reactivation of varicella-zoster virus. *N Engl J Med* 342:635–644
- Gnann JW, Whitley RJ (2002) Herpes zoster. *N Engl J Med* 347:340–346
- Josephson A, Gomert ME (1988) Airborne transmission of nosocomial varicella from localized zoster. *J Infect Dis* 158:238–241
- Oxman MN, Levin MJ, Johnson GR, Schmader KE, Straus SE, Gelb LD (2005) A vaccine to prevent herpes zoster postherpetic neuralgia in older adults. *N Engl J Med* 352:2271–2284
- Wood MJ, Johnson RW, McKendrick MW, Taylor J, Mandal BK, Crooks J (1996) A randomized trial of acyclovir for 7 days or 21 days with and without prednisolone for treatment of acute herpes zoster. *N Engl J Med* 330:896–900

Siblings

Jenice Contreras · Ingrid Vargas

Sibling relationship is a popular subfield in family gerontology. It is estimated that over 80% of Americans have at least one sibling. *Webster's Dictionary* defines sibling as one of two or more individuals having one common parent. Siblings are often individuals' first peer relationships. Social and cognitive learning begins through sibling relationships. Siblings play a huge role in the development of their counterparts and continue to be an intricate part of the individual, even through adulthood.

Siblings share commonalities that make such relationships unique. Some of these commonalities can be attributed to a long history of shared culture, values, experiences, and beliefs. Because of the genetic similarities of siblings, they often experience similar physical characteristics and health conditions such as diabetes, high blood pressure, and heart disease among others. Understanding the family's predisposition to conditions such as dementia and Alzheimer's disease can be very important in detecting early signs of such conditions and accessing preventative health care.

There are different ways in which siblings relate to one another. However it is important to understand that sibling relationships do change from childhood to adulthood and even through the aging process. Sibling interactions are impacted by such factors as gender, birth order, age spacing, and personality traits, and may assume a quality as intimate, congenial, loyal, apathetic, or hostile.

Siblings who engage in an intimate relationship provide assistance to each other. They often times find themselves feeling incomplete without the other. The congenial type relationship is one of closeness and affection. Through adulthood, the siblings maintain contact but do not share the same closeness that characterizes the intimate type of sibling relationship. The loyal relationship is characterized by an allegiance that is based on family cultural norms. Siblings in an apathetic relationship see each other relatively infrequently and have different interests in life, therefore making it difficult to relate to each other; this may be exacerbated during adulthood. The hostile type of sibling relationship is characterized by the existence of negative feelings between the siblings, such as anger and resentment.

Rivalry between siblings is common. This is not necessarily a negative occurrence. Through sibling rivalry, individuals learn to express their needs and wants. They test each others' limits, learn about competition, and speak out to advocate for themselves. On the other hand, sibling rivalry can be a source of trauma to some, such as might occur when one sibling excels at an activity that is a source of difficulty to another. Adults often intervene to resolve disputes and assist siblings in communicating more efficiently. The adults' approach to sibling rivalry plays a critical role in the outcome of the rivalry.

As siblings age, they may confide in each other to a greater extent because they view each other as best friends and often depend on each other as a part of their social network. Research suggest that older adults generally find their sibling relationships rewarding.

Related Topics

[Family relationships](#), [Social support](#)

Suggested Readings

- Cicirelli VG (1995) Sibling relationships across the life span. Plenum Press: New York
- Gold DT (1989) Sibling relationships in old age: A typology. *Int J Aging Hum Dev* 28(1):32–33
- Goode E (1994) The secret world of siblings. *US News & World Report* 116:44–51

Sigmoidoscopy

Kathleen M. Wolner

Sigmoidoscopy is a type of examination used to screen for colorectal cancer. Colorectal cancer is the second leading cause of cancer deaths. Over 130,000 cases of this occur per year, with more than 50,000 deaths. While other types of cancer can occur in the colon in addition to the common colorectal cancer, including lymphoma, carcinoid, and melanoma, only colorectal

cancer will be discussed here. Colon cancer is almost always treatable if diagnosed early. The factors that increase one's risk of colon cancer include certain types of polyps and other cancers. Colon cancer can also run in families. Ulcerative colitis is another risk factor for colorectal cancer. It has long been felt that diets high in meat, high fat, and low fiber increase the risk of colon cancer. However, research has failed to show that changing to a high-fiber diet prevents colon cancer. If one had colon cancer earlier in his life, then there is an increased risk of developing another colon cancer. Not all polyps are precursors of colon cancer. Specifically, adenomatous polyps have a 10% chance of turning into a cancer after 10 years. Other polyps, called hyperplastic polyps, are simply overgrowth of normal tissue and do not carry any risk of developing into colon cancer.

A sigmoidoscopy is an examination of the lower portion of the colon, called the sigmoid or descending colon. Primary care providers and gastroenterologists perform sigmoidoscopies. The purpose of sigmoidoscopy is to look for early signs of colon cancer. One looks for bleeding, inflammation, growths (or polyps), and ulcers. It is commonly used along with guaiac-based test cards used to look for trace amounts of blood in the stool that cannot be seen with the naked eye. The preparation for a sigmoidoscopy varies. In general, two enemas 2 h before the examination are included as a minimum preparation. More extensive preparations include a clear-liquid diet the evening before and the morning of the test. Clear liquids are defined as "anything that you can see through you can eat," and that includes fat-free bouillon or broth, gelatin, strained fruit juice, water, plain coffee, etc. Recently, a multidisciplinary panel consisting of representatives from the American Cancer Society, the US Preventive Services Task Force, and others agreed that sigmoidoscopy is appropriate for screening average-risk persons 50 years of age or older. Other options for this age group of average risk include a colonoscopy every 10 years or a double-contrast barium enema every 5–10 years. Flexible sigmoidoscopy is recommended every 5 years in conjunction with three, yearly stool guaiac-based tests. Make sure that you tell your physician if you have developed rectal bleeding, unintended weight loss, or a change in bowel habits so that you can be referred for a full colonoscopy. Blood in your stool or toilet tissue, often attributed to hemorrhoids, should be fully evaluated with a colonoscopy.

Informed consent is obtained before the examination. The risks of the procedure include a feeling of gas, potential bleeding from scope trauma or biopsy and, the most serious complication, perforation, requiring surgery. Perforation is extremely uncommon and occurs in one of every 10,000 examinations. During the examination, the patient lies on his or her left side and the examiner utilizes a mild lubricant to ease insertion of the scope. The examiner inserts the scope 60–70 cm (24–28 in.). It is during withdrawal of the scope that most of the examination takes place because a good mvie of all colon surfaces can be obtained. Biopsies do not hurt because there are no nerve endings in the colon. However, it is important to tell your physician if you are taking any blood thinners or anticoagulants such as warfarin as they may increase your tendency to bleed after a biopsy.

The normal colon consists of very large circular folds called haustra. When the folds become triangular in appearance this indicates that the examiner has reached the transverse colon, the part that goes across the abdomen. The descending or sigmoid colon is a relatively straight part of the colon in most persons. The colon can be very winding, especially in persons who have had a history of abdominal surgery. In the healing process, scarring can develop that tacks down the colon and creates sharp turns. The endoscopist looks behind the folds for polyps.

Diverticula are protruding sacs (or pockets) that are most commonly seen in the sigmoid colon. They occur after the age of 40 and half of persons older than 60 have them. Only a small percentage of persons have complications from diverticula. Inflamed, infected diverticula are referred to as diverticulitis and imply an inflammation or perforation. The mere presence of diverticula is not a cause for concern. The latter condition, known as diverticulosis, is simply a reason to make sure that one maintains a high-fiber, high-water intake so that the bowels move regularly. When there is a complication, however, it can be very serious.

Polyps are growths in the colon. They can appear as a button, flat and closely adherent to the colon wall, or they can be connected to the wall of the colon by a stalk. Five to ten percent are adenomatous and 10% of these can become malignant over 10 years. They occur in different sizes with the larger being more likely to be cancer. When a polyp is removed during a colonoscopy or sigmoidoscopy, it is examined for the presence of potentially cancerous cells. Colon cancers vary from a

round polyp to an angry cauliflower-shaped bleeding lesion that may wrap around the inside of the colon. Cancers can have a very rough and bloody surface that immediately suggests the cancer diagnosis.

Hemorrhoids are engorged veins in the rectum that are similar to the engorged veins that result in varicose veins on our legs. They can be internal or external and are very painful if they are thrombosed. “Thrombosed” means that there is a clot present that is causing part of this tissue to be starved of oxygen, resulting in severe pain.

Anal fissures can also be found at the time of the sigmoidoscopy. These are very painful tears in the mucosa and one questions whether the patient has an inflammatory bowel disease, as anal fissures can be seen in this bowel disease. Persons who are immunosuppressed, meaning that their immune system is being suppressed for some reason (such as chemotherapy), may also be at risk for anal fissures. Other causes of fissures include syphilis and cancer.

It is very important to be screened for colon cancer and sigmoidoscopy is a very acceptable way of screening normal risk persons. Any problems, such as rectal bleeding, unintentional weight loss, severe rectal pain on defecation, or a family member with colon cancer should be immediately reported to your doctor. The most important message, however, is that in most people there are no symptoms. Early detection is the key to cure.

Related Topics

▶ Cancer screening, ▶ Colonoscopy, ▶ Colorectal cancer

Suggested Readings

American Academy of Family Physicians 1999 What you should know about flexible sigmoidoscopy. Leawood, KS (2006); www.aafp.org/asp/990115/ap313.html

National Digestive Diseases Information Clearinghouse 2004 Flexible Sigmoidoscopy. Bethesda, MD (2006); www.digestive.niddk.nih.gov/ddiseases/pubs/sigmoidoscopy

United States National Library of Medicine 2006 MedlinePlus, health information for the general public. National Institutes of Health, Rockville, MD (January 13, 2006); www.nlm.nih.gov/medlineplus

UpToDate 2006 Medical information for patients. Waltham, MA;
<http://patients.uptodate.com>

Sjogren's Syndrome

Lori B. Siegel

Sjogren's syndrome (SS) is a serious disorder in which the body fights against its own tear and saliva glands. This autoimmune process causes the body to produce less tears and less saliva, which can lead to complications in both the eyes and the mouth. The frequency of SS increases with increasing age and diagnosis may be delayed because the symptoms occur gradually and increase over time. SS is more common in women than in men.

The classic symptoms of SS are a complaint or sensation of dry eyes or dry mouth. People report that they feel a dry and gritty sensation in the eyes, as if there is sand in them. People try various eye drops without success and often have difficulty wearing contact lenses. Also, people may note that they are constantly thirsty and either carry water with them at all times or they know where all the drinking fountains are at their place of work or in the places where they spend a large amount of time. They also have difficulty swallowing solid foods without taking in liquid at the same time. Patients also have more dental problems such as cavities and tooth loss. They may have problems tasting food and may complain of a burning sensation in the mouth, which can become quite severe. Some patients with saliva problems develop enlarged saliva glands over time and note that they have fullness in their lower face where the saliva glands are located.

The cause of SS is not clear but it is thought that there is a viral trigger in those people who have a genetic predisposition to autoimmune diseases. Because women are affected nine times as much as men, there are theories that hormones may play a role in the development of SS. Sjogren's syndrome (SS) may be a primary condition, independent of any other disease process or condition. More often, however, SS is associated with other autoimmune diseases, commonly rheumatoid arthritis, systemic lupus erythematosus, or other connective tissue diseases. SS is not part of the formal classification of these conditions but a common association. Fulfilling the criteria established by the American College of Rheumatology as summarized below, a diagnosis of SS is having three of the following six items:

1. Ocular (eye) symptoms
2. Oral symptoms
3. Ocular signs such as decreased tear production measured by objective ophthalmologic tests
4. Salivary gland involvement as proven by measuring saliva flow, parotid sialography, or salivary scintigraphy
5. Positive biopsy of minor or major salivary glands
6. Serologic evidence of autoantibodies such as anti Ro/La, ANA, RF

SS may also extend beyond the eyes and mouth as well, although less frequently. Patients may have associated dry skin, decreased sweating, itching and peripheral nerve problems. There may be an associated vasculitis, or inflammation of the blood vessels. Thyroid disease is common in patients with SS. Some patients may have a dry cough as a result of dryness of the airways and decreased mucous production. Patients may also suffer from other joint and muscle aches. The bladder may also become affected, resulting in irritable bladder and decreased frequency of urination. In the aging population, vaginal dryness may be exaggerated and severe. The most serious association is the potential for lymphoma.

The treatment of SS is difficult and it is best that the patient be educated in self-care to avoid complications. Treatment of dry eyes includes tear replacement and topical eye-medications along with oral medications such as pilocarpine. These must be used with caution as many tear preparations may have preservatives in them that can worsen the already irritated eye. Oral hygiene is essential, so frequent dental care is important. Some patients require daily fluoride and antibiotic rinses. Medications that cause oral dryness should be avoided. Sugar-free gum or candy may help promote saliva production. Humidifiers and oral lubricants can be used as well. Swollen parotid or salivary glands may respond well to warm compresses and massage.

Other medications that are used to treat other connective tissue diseases may be successful in SS. Local treatments of the involved area or system are essential. Treatments should be more aggressive if local treatments are insufficient. Pilocarpine may help salivary secretion and oral antifungals may be necessary for secondary infections. If immunosuppressants are used, attention to increased risk of infection is important. Because of the associated increased in lymphoma, this should be monitored as well, especi-

ally with more aggressive treatments. All patients suffering from SS should be given information on their condition and encouraged to learn all that they can, so that they can live better with this difficult condition.

Related Topics

➤ [Autoimmune diseases disorders](#), ➤ [Rheumatoid arthritis](#)

Suggested Readings

- Arthritis Foundation (2001) *Primer on rheumatic diseases*, 12th edn. Atlanta, GA
- Klippel JH, Dieppe PA (1998) *Rheumatology*, 2nd edn. CV Mosby, St. Louis, MO
- Klippel JH, Dieppe PA, Ferri FF (2000) *Primary care rheumatology*. Harcourt, London

Skilled Nursing Facility

Kristin A. Cassidy

Skilled nursing facility (SNF) is a type of nursing home that has round-the-clock “skilled” care (care given by professional nursing or rehabilitative staff) available to residents. SNFs can provide either long-term care for a person who is no longer able to care for his or her own needs, or temporary care for someone who has been discharged from the hospital and needs additional assistance with recovery before returning home. Residents of SNFs generally have physical or cognitive impairments which require 24-hours-a-day care or medical needs that require special equipment.

Many large SNFs are divided into smaller units often based on the needs of the residents in that unit. For example, many SNFs have separate units for residents with memory impairments or units specifically for patients who are there only temporarily to recover from surgery or an acute illness. The skilled nursing staff on each unit generally consists of at least one registered nurse (RN) and a few licensed practical nurses (LPN). The RN supervises the unit’s staff; assesses the residents’ health; develops treatment

plans; administers invasive procedures (such as intravenous fluids); and usually distributes the prescribed medications to the residents. The LPNs provide routine bedside care such as monitoring the patients’ fluid intake, catheters, and vital signs; changing dressings; preventing new and treating existing bedsores; preparing and administering injections and enemas; and in some states the LPNs administer prescribed medications. Many SNF units will also have several “unskilled” nursing staff such as state tested nurse assistants (STNAs). These nonprofessional workers help the residents with activities of daily living such as dressing, eating, bathing, and toileting.

In addition to the nursing staff on each unit, SNFs usually employ or have contracts with a variety of other skilled health professionals such as physical and occupational therapists, speech-language pathologists, and audiologists. Many SNFs also have art therapists, respiratory therapists, psychologists, social workers, dietitians, and activities professionals to provide assistance and support specific to each resident’s need. Licensed and certified SNFs must also employ a licensed physician as Medical Director and a licensed nursing home administrator.

SNFs must be licensed by the state in which they operate. To receive funding from Medicare or Medicaid, SNFs need to be certified also by the state. According to the American Health Care Association, there were 15,989 certified nursing facilities with a total of 1,435,761 residents in the United States, as of December 2005. On an average each facility had 90 residents. Medicare paid for 12.9% of the patients and Medicaid was responsible for 65.5%.

Unannounced inspections are conducted by official state inspectors every 9 to 15 months to ensure that the certified facilities are up to federal and state standards. Any violations are reported to the facility and a plan of correction is required from the SNF, if it is not in compliance with the standards. SNFs can also be fined for serious violations and have their certification taken away if corrections are not implemented within a specified amount of time. The results of these inspections are available to the public and are easily accessible on the internet.

Medicare only covers up to 100 days of skilled care in a Medicare certified SNF after a qualifying hospital stay of at least 3 days. If skilled nursing care is still required after using up the Medicare benefits or if a patient has not had a qualifying hospital stay before entering the SNF, the cost is usually paid for by the

patient or their family using savings and income, by Medicaid, or by long-term care insurance.

The rate for one day in an SNF averages from \$110 to \$210. That can add up to \$40,000–75,000 per year. Although some people are able to cover the cost of a nursing home out of their own pocket, most people need to find alternative ways to pay for the care.

Sixty percent of patients who enter a nursing home start off paying for it themselves; but with the high cost of long-term care, a person's life savings can quickly be exhausted. Medicaid pays for over 40% of the nation's long-term care. Many SNFs have a specified number of Medicaid beds. Since Medicaid is a state-administered welfare program there are limits for the maximum income and assets a person can have. Therefore, some people “spend-down” in order to qualify or switch to Medicaid coverage, once they have spent their assets on long-term care.

A more recent trend in paying for SNFs is by using long-term care insurance. The amount and services covered by long-term care insurance vary by policy. Since there are not any asset or income qualifications, personal savings, investments, property and family inheritance do not need to be spent down. Also, unlike with Medicaid, SNFs do not set aside a specified number of beds for residents covered by long-term care insurance and do not need to be specially certified by the government to accept long-term care insurance. Therefore, patients using long-term care insurance have more options available when shopping for an SNF.

Once in a SNF, patients and their families should keep in mind that each state is required to have a long-term care ombudsman available through the state office on aging. The ombudsman can be called on to investigate and help resolve any quality of care issues that have not been satisfactorily attended to by the facility's licensed administrator.

Related Topics

- ▶ [Activities of daily living](#), ▶ [Housing](#), ▶ [Long-term care](#), ▶ [Long-term care insurance](#), ▶ [Medicaid](#), ▶ [Medicare](#), ▶ [Nursing home](#), ▶ [Rehabilitation](#)

Suggested Readings

Jones A (2002) The national nursing home survey: 1999 summary. National center for health statistics. *Vital Health Stat* 13(152): 1–116

Suggested Resources

American Health Care Association Consumer information about long-term care—guide to planning, preparing, and paying for long term care; <http://www.longtermcareliving.com/>

American Health Care Association—Health Services Research and Evaluation; http://www.ahca.org/research/oscar_patient.htm

CarePathways.com's Nursing Home Checklist; <http://www.carepathways.com/checklist-nh.cfm>

Centers for Medicare & Medicaid Services, “Medicare coverage of skilled nursing facility care” booklet; <http://www.medicare.gov/publications/pubs/pdf/snf.pdf>

Medicare.gov Nursing Home Comparison tool—lists facilities by geographic location, whether they are covered by Medicare and Medicaid, and the results of their most recent inspection; <http://www.medicare.gov/Nhcompare/Home.asp>

National Long Term Care Ombudsman Resource Center; <http://www.ltombudsman.org/>

Skin Care

Paradi Mirmirani

The skin is the largest and most exposed organ of the body. Its functions are complex and include serving as a physical and immunologic barrier to external substances, retaining water, regulating body temperature, and acting as a sensory organ. The skin is also an integral part of our self-image and is often a focus of cosmetic and beautifying agents.

Because the skin is exposed to the environment, it is susceptible to damage over time. Ultraviolet rays from sunlight and smoking are the most common causes of environmental skin damage, thus sun protection is one of the most important parts of a skin care regimen. Research has shown that exposure to ultraviolet light can cause various skin cancers, the most common being basal cell cancer and squamous cell cancer. A less common but much more dangerous form of skin cancer, malignant melanoma, may be linked

to sunburns in childhood. In addition, sunlight exposure causes dramatically accelerated skin aging, including wrinkling, dryness, visible blood vessels, and changes in pigmentation. Healthy skin-care and habits can decrease this cumulative injury. Recommendations include the following:

- Minimizing sun exposure during peak hours (10 a.m.–2 p.m.)
- Wearing sun-protective clothing, hats, and sunglasses
- Using a broad-spectrum sunscreen (UV-A and UV-B protection) with a sun-protection factor (SPF) of greater than or equal to 15
- Avoiding sunlamps and tanning beds

These habits are most beneficial when started in childhood, as statistics show that in more than one half of a person's lifetime ultraviolet exposure occurs during childhood and adolescence. However, it is never too late to incorporate sun protection into a skin care regimen. Medical treatments for reversing some of the effects of sun damage are available and include topical creams, chemical peels, and laser therapy.

Other components of a skin care regimen need not be complicated. Mild, nonperfumed soaps are usually recommended for cleansing the skin, with a moisturizer applied as needed (consider products that have a built-in sunscreen). As we get older, our skin has fewer sweat and oil glands and is less efficient in retaining water, which can lead to dryness and itching. Dry skin can be worsened by frequent bathing or showering, and may be more sensitive to soaps, cosmetics, and certain fabrics. Frequent use of emollients and avoiding aggravating factors are basic measures for dry skin care. For those with oily or acne-prone skin, facial moisturizers are usually not needed and care should be taken to choose cosmetics that are oil-free and noncomedogenic.

Related Topics

- ▶ Body image, ▶ Liver spots, ▶ Skin disorders,
- ▶ Skin, hair and nails changes, ▶ Wrinkles

Suggested Readings

Habif TP (ed) (1996) Clinical dermatology, 3rd edn. Mosby-Year Book, Inc., St. Louis, MO

Suggested Resource

American Academy of Dermatology (www.aad.org)

Skin, Hair, and Nail Changes

Paradi Mirmirani

Skin, hair, and nail changes are commonly seen with advancing age. Some of these changes are physiologic, while others are attributable to genetics or to environmental exposure. Physiologic changes that occur in the skin include thinning or transparency of the skin, thinning of the fatty layer, less elasticity of the collagen fibers, dry skin, decreased sweating capacity, slowed or decreased hair growth, and thinning or ridging of the nails. Common manifestations include skin wrinkling, loss of firmness, easy bruising, and skin itching.

Skin Disorders

Skin disorders can be broadly categorized as either rashes or as growths. Rashes are often a result of skin inflammation and can be precipitated by a wide variety of causes, the scope of which is beyond this text (the reader is referred to the Suggested Reading for further

Skin Tumor Types

Benign	Premalignant	Malignant
Seborrheic keratoses	Actinic keratoses	Basal cell carcinoma
Skin tags		Squamous cell carcinoma
		Malignant melanoma

information.) Growths, or tumors are a frequent finding in older adults, the most common tumors are outlined below:

Seborrheic keratoses are extremely common skin tumors, usually affecting people older than 50 years but also seen in young adults. These lesions usually arise on the trunk, face, and upper extremities and can range in color from tan to red or even black. Their diagnosis is often made based on a clinically “stuck-on” appearance. The tendency for seborrheic keratoses may be inherited in an autosomal dominant fashion. No treatment is necessary for most lesions.

Skin tags are outgrowths of normal skin. Twenty-five percent of the adults have skin tags, and there is a familial tendency for these lesions. They usually occur at sites of friction such as the axillae (armpits), neck, underneath the breasts, and in the groin area. Treatment is indicated only if lesions are irritating or a patient desires removal for cosmetic reasons.

Actinic keratoses are common premalignant lesions of the skin, resulting from chronic, cumulative sun exposure and occurring most commonly in fair-skinned people on sun-exposed skin sites including the face and the dorsal hands. Actinic keratoses are characterized by an irregular shape and scaly or “sandpaper” texture. If left untreated, some actinic keratoses may progress to become cancerous. Treatment options include liquid nitrogen or prescription medications aimed at destroying the premalignant cells.

Basal cell carcinoma is a malignancy of the basal cells in the epidermis (skin). It is the most common human malignancy with approximately 750,000 new cases in the United States each year. Basal cell carcinoma occurs more commonly in men, almost exclusively in whites, and most frequently between the ages of 40 and 80. Predisposing factors include chronic ultraviolet sunlight exposure, arsenic, and ionizing radiation. Basal cell cancers are usually noticed as a new growth in sun-damaged skin that is skin colored, sometimes pearly, and has a tendency to bleed. Most basal cell tumors spread locally and do not metastasize (spread to other parts of the body). Treatment usually involves surgical excision but is influenced by size and location of the tumor.

Squamous cell carcinomas are malignant tumors of keratinocytes, the main cell type that comprises the skin. Squamous cell cancer occurs most commonly in white men older than 55 years. Other predisposing factors include ultraviolet sunlight exposure, old burn scars, sites of chronic inflammation, radiation therapy, arsenic, immunosuppression, and smoking (lip lesions). A squamous cell carcinoma commonly appears as a new growth that may be scaly and has a

tendency to bleed. Treatment typically involves excision of the lesion.

Melanoma is the malignant proliferation of pigment producing cells called melanocytes. Malignant melanoma represents 3% of all cancers, with tens of thousands of new cases in the United States annually. Representing 1–2% of all cancer-related deaths, the increase in the melanoma mortality rates is second only to lung cancer. Risk factors for developing malignant melanoma include fair hair and light eyes, extensive sun exposure, history of sunburns in childhood, multiple irregular moles, or a family history of melanoma. However, any patient with a history of change in a long-standing pigmented lesion or a new lesion with suspect features should alert the clinician to the possible diagnosis of melanoma. A mnemonic to remember suspect features of melanoma is

- A = asymmetry
- B = borders irregular and blurred
- C = color change or variable pigmentation
- D = diameter greater than 6 mm
- E = elevation of previously flat lesion

Diagnosis is based on excisional biopsy (surgical removal of the lesion) and characteristic histologic (microscopic) findings. Treatment of melanoma depends on the stage of the tumor: excisions are performed for thin lesion whereas thicker tumors may require adjuvant therapy.

Hair Disorders

The portion of hair that is seen is called the hair shaft. That which is below the surface of skin is the follicle. During our lifetime, each hair follicle undergoes repeated cycles of growth, rest, and regeneration. Hair loss can occur due to disturbances of the hair cycle, damage to the hair shaft, or disorders affecting the follicle.

Disturbances of the hair cycle Normally, the majority of scalp hair is in the growth phase. A small percentage of hairs in the resting phase are shed each day (100–200 hairs shed daily). Under certain circumstances, a higher percentage of hairs enter the resting phase, and a person may notice a sudden increase in hair shedding. Common causes include high fever, childbirth, severe infections; severe “flu,” severe chronic illness, major surgery, thyroid disorder, crash

diets, inadequate protein intake, and certain drugs. The shedding often starts months after the inciting cause but will stop after several weeks if the offending cause is removed or corrected.

Damage to the hair shaft Hair is composed primarily of the protein keratin, which is the same substance that forms fingernails and toenails. Damage to the hair shaft by improper cosmetic techniques can cause hair breakage. There is little damage from normal dyeing, bleaching, waving, or straightening. However breakage can occur from too much tension during waving, from waving solutions left on too long or improperly neutralized, from waving and bleaching on the same day, or from too-frequent hair treatments. Hair breakage will stop if the cosmetic procedure is stopped and the hair is handled gently, but hairs already broken cannot be mended.

Disorders affecting the follicle Hereditary hair thinning, or androgenetic alopecia, is the most common form of hair loss in humans. This condition is also known as male-pattern hair loss or common baldness in men and as female-pattern hair thinning in women. Onset may occur in either sex at any time after puberty. It is estimated that half of the population experiences hereditary hair loss by age 50. The cause of hereditary hair-thinning is a gradual diminution of the hair follicle, which occurs under the influence of androgens. The smaller hair follicle results in a finer and shorter hair-shaft.

Nail Disorders

The hard nail-plate is made up of compact keratin, which is synthesized by the nail matrix, a structure located directly underneath the cuticle. The cuticle provides a protective seal for the matrix, thus any damage or trauma to the cuticle or nail matrix can affect the nail plate, often manifesting as white spots or horizontal ridges. Vertical ridging and slowed growth of the nail plate are common findings seen with advancing age and are a result of physiologic changes in the matrix. Alterations in the nails can also be a reflection of our internal health and a physical examination will typically include a close inspection of the nails. A common example is the finding of pale nails in a person with anemia.

Related Topics

▶ Alopecia, ▶ Body image, ▶ Cancer, ▶ Hair replacement, ▶ Melanoma, ▶ Nail and hand care, ▶ Skin care, ▶ Wrinkles

Suggested Readings

- Freedberg I, Eisen A, Wolff K, et al (eds) (1999) Fitzpatrick's dermatology in general medicine, 5th edn. McGraw-Hill, New York, pp 769, 1464
- Goldstein BG, Goldstein AO (1997) Practical dermatology, 2nd edn. Mosby, St. Louis, MO, pp 128–157
- Gummer CL (2002) Cosmetics and hair loss. *Clin Exp Dermatol* 27(5):418–421
- Price VH (1999) Treatment of hair loss. *N Engl J Med* 341:964–973

Suggested Resources

- Aging skin net; www.skincarephysicians.com
- American Academy of Dermatology; www.aad.org
- North American Hair Research Society; www.nahrs.org

Sleep Disorders

John Sanitato, Jr.

Disturbed sleep is one of the most common presenting complaints in modern medicine. Ineffective sleep hygiene is very often the cause, but a large number of specific sleep disorders can be present as well. Sleep hygiene refers to the sum total of the waking behaviors that affect the quality and quantity of a person's sleep.

The comprehensive assessment of a potential sleep disorder includes a thorough history of sleep dysfunction, a review of sleep hygiene, a medical and mental health history, a review of current medications, an assessment of drug and alcohol use, a physical examination with targeted laboratory testing, and an overnight sleep study known as a polysomnogram. Polysomnography is the systematic evaluation of brainwave, muscular, ocular, and respiratory function during sleep. The study is done across a typical night's sleep, and may reveal apneas (periods when breathing is absent), hypopneas (periods of slowed respiration), or abnormal bodily movements.

The latency (duration from bedtime to sleep onset), continuity, efficiency, and architecture of sleep are assessed. Sleep architecture refers to the duration of, and transitions between, the unique physiologic stages of sleep.

Five stages are identified. One stage of rapid eye movement (REM) sleep and four stages of non-REM (NREM) sleep, which are labeled stages 1 through 4, are noted. Stage 1 NREM is relatively brief and signifies the transition from a waking state to sleep. Stage 2 NREM, significant for “sleep spindles” and “K complexes” on the electroencephalogram (EEG), comprises up to 50% of total sleep time. Progressively deeper stages of sleep—stages 3 and 4, or “slow-wave” sleep—occupy up to 20% of sleep time, while REM sleep, in which dream activity and loss of muscle tone occur, occupies up to 25% of sleep time. REM sleep occurs roughly every 90 min, and the duration of REM periods increase across the night. NREM stages 3 and 4 are more prominent during the first half of the night, and tend to deteriorate in duration and frequency as we age. Perhaps as a result, up to half of all Americans over age 65 may have a diagnosable sleep disorder.

There are a number of typical changes in sleep pattern seen with aging. Slow wave sleep decreases on average from 20% to less than 10% of total sleep time by the age of 70, and both REM amount and REM latency also decline. Total sleep time and sleep efficiency (amount of time in bed actually spent sleeping) both decrease as well. Snoring does appear to increase with age, however the significance of this is unclear.

The treatment of all sleep disorders includes a thoughtful review of ideal sleep hygiene. The bed is identified as a sanctuary for sleep and sex only. Reliable daily sleep and wake times should be established and adhered to, and daytime napping minimized to 30 min or less. Although the ideal duration of nightly sleep varies between individuals and by age, a rough goal is 6–7 h per night for most adults, with fewer hours needed with aging. Avoiding rigorous exercise or hot showers close to bedtime is also a helpful rule. If unable to fall asleep after 45 min, one should spend 30 min or so occupied in an activity away from the bedroom and then try to retire again. Caffeine and tobacco should be avoided within 4 h of bedtime, as should meals and significant fluid intake. Alcohol has for many a soporific, or sleep-inducing, effect but will reliably decrease the quality and continuity of ensuing sleep. The elderly as a group are thought to be at an increased risk for suboptimal sleep hygiene due to lifestyle changes

(retirement, nursing-home settings) and degenerative or chronic diseases (often resulting in pain or sedentary living).

Sleep disorders can be divided into four main groups. There are those caused by mental disorders, medical conditions, or substances (use of or discontinuation from), which are termed “secondary” sleep disorders. Additionally, there is the fourth group known as the “primary” sleep disorders, which include the dyssomnias and the parasomnias. Dyssomnias are disorders of the onset or maintenance of sleep, and parasomnias are disorders involving abnormal behaviors associated with sleep. Parasomnias include conditions such as nightmares, sleep terrors, REM sleep behavior disorder, bruxism (teeth-grinding), enuresis (bedwetting), somnambulism (sleepwalking), and somniloquy (sleeptalking). Another parasomnia worth noting here is REM-sleep behavior disorder, in which the lack of muscle tone normally seen during REM sleep is lost, and disorganized, possibly injurious behaviors can occur in the deeply asleep and dreaming subject. This syndrome can be seen as a prelude to, or a feature of, Parkinson’s disease or dementia with Lewy bodies.

Mood and anxiety disorders commonly perturb sleep. Sleep disorders secondary to other mental disorders are more common in women than in men. Up to 50% of individuals with chronic insomnia may have a diagnosable mental disorder responsible for the sleep disturbance. Major depression, bipolar disorder, schizophrenia, adjustment disorder, and anxiety disorders (panic disorder, generalized anxiety disorder, post-traumatic stress disorder) typically involve an alteration in the timing and amount of sleep. In major depression for example, sleep latency is prolonged, REM latency is decreased, and REM sleep becomes denser. Slow-wave sleep is reduced as well. Unfortunately, there is a small but significant risk that the medications used to treat these disorders may also potentiate disturbances in sleep, such as insomnia, hypersomnia, vivid dreams, nightmares, or bruxism.

Intoxication or withdrawal from drugs and alcohol may cause significant sleep disruption. Alcohol intoxication increases slow-wave sleep and suppresses REM, yielding fitful sleep with increased dream activity. Its use may also worsen preexisting sleep apneas. Withdrawal from chronic alcohol use tends to cause a loss of slow-wave sleep and an increase in REM sleep. The use of amphetamines, cocaine, or caffeine will increase wakefulness and cause insomnia acutely, with hypersomnia or fatigue ensuing during withdrawal. Opioids,

sedatives, and many antianxiety medications are acutely sedating, but provoke insomnia when used chronically, as tolerance develops. As with alcohol, a rebound in REM-sleep amount may be seen after discontinuation of these agents.

Dozens of medical conditions may derange sleep. Common culprits include infections, dementia, arthritis, gastroesophageal reflux disease (GERD), epilepsy, endocrine disorders, cardiopulmonary disease, headaches, and neurodegenerative disorders. Women are at greater risk during pregnancy and postmenopausally. In hospitals and nursing homes, delirium is a very common cause of sleep disruption. A delirium is an acute confusional state due to an acute medical condition or the use of a substance. The syndrome is characterized by impairments in attention, concentration, cognition, and perception. Sleep is often restless, non-restorative, and exhibits a pattern of day–night reversal.

Returning to the primary sleep disorders, we will focus on the dyssomnias, as a more detailed discussion of the parasomnias is beyond our scope here. The more common dyssomnias include primary insomnia, primary hypersomnia, sleep apnea, restless legs syndrome, circadian rhythm sleep disorders, and narcolepsy. Primary insomnia and hypersomnia can often be resolved with better sleep hygiene and lifestyle modification.

Sleep apnea may be either central or obstructive in type. Central sleep apnea is rare and involves diminished respiratory drive at the level of the brainstem. Obstructive sleep apnea (OSA) is much more common, and affects 1–10% of the population. OSA is caused by the mechanical obstruction of ventilation by increased palatal and pharyngeal tissues. Obese persons are at greater risk. Excessive daytime sleepiness, morning headaches, loud snoring, and apneas observed by sleeping partners can aid in diagnosis, which is confirmed by polysomnography. Diagnosis often occurs between 40 and 60 years of age. Untreated OSA carries a risk of increased mortality. Treatment involves weight loss, smoking cessation, control of blood pressure and cholesterol reduction, and nocturnal ventilation with nasal continuous positive airway pressure (CPAP). Surgery to reduce posterior palatopharyngeal tissues has not been routinely helpful. Studies suggest that rates of sleep apnea increase significantly by age 65 (perhaps as high as 30% at age 70), although treatment may be less necessary than in younger patients with clear obstructive apneic disease. Older adults with apnea but without subjective sleep disruption may not require treatment.

Restless legs syndrome (RLS) involves random, repetitive irregular movements of the feet and legs, and unpleasant aches and pains sensed deeply in the lower extremities. The discomfort often mandates walking or rubbing of the legs by the sufferer for temporary relief. The symptoms occur in the evening and during earlier phases of sleep, and may respond to dopamine agonist medications, tricyclic antidepressants, or opiate analgesics. Diabetes, kidney dysfunction, peripheral nerve disorders, pregnancy, anemia, and medications are all associated with RLS. Periodic limb movement disorder is a similar syndrome that involves repetitious involuntary movements, which intrude upon normal sleep maintenance and cause nonrestorative sleep and excessive daytime sleepiness. RLS and OSA are the two most common primary sleep disorders in the elderly.

Circadian rhythm sleep disorders include jet lag, shift work, and delayed sleep phase disorders. Jet lag is appreciated when people travel two or more time zones, typically west to east, and subsequently have difficulty advancing their sleep schedule. Exposure to light may help to delay, and the use of sedative-hypnotic medicines may help to advance, sleep onset. Shift work disorders occur when work schedules are advanced by one shift (moving from days to evenings). Delayed sleep phase disorders result when the onset of sleep is intentionally delayed because of lifestyle concerns and the ensuing normal sleep duration causes social or occupational dysfunction the following day.

Daytime sleep attacks, cataplexy (brief episodes of loss of muscle tone, often triggered by intense emotion), hallucinations occurring during the sleep–wake transition, and sleep paralysis, form the core symptoms of narcolepsy. Onset is typically during adolescence, and genetic vulnerability plays a strong role. The disorder is rare, occurring in less than 1 in 1000 persons, and treatment is aimed at maintaining daytime wakefulness and consolidating restorative sleep at night. Amphetamine stimulants and the non-amphetamine modafinil can promote wakefulness by day, and sedative medications may help reorder nighttime sleep.

Treatment strategies are diverse, as one can detect from the multiple causes of sleep impairment seen in clinical practice. Optimal sleep hygiene is vitally important. Underlying medical, neurological, and psychiatric conditions should be identified and treated, and offending medications or substance use stopped. Sedative medications should only be used whenever absolutely necessary and for the shortest possible durations.

Benzodiazepine sedative-hypnotics such as lorazepam, diazepam, or alprazolam carry with them a significant risk of adverse effects such as slowed respiration, confusion, unsteadiness and falls, memory dysfunction, and the risk of dependence with chronic use.

Related Topics

[Alcohol use](#), [Alzheimer's disease](#), [Delirium](#),
[Depression](#), [Insomnia](#), [Mental illness](#),
[Parkinson's disease](#), [Sleep hygiene](#)

Suggested Readings

- American Psychiatric Association (2000) Diagnostic and statistical manual of mental disorders, 4th edn. Text revisions (DSM-IV-TR). American Psychiatric Association, Washington, D.C.
- Barthlen GM (2002) Sleep disorders [Review]. *Geriatrics* 57:34–39
- Coffey CE, Cummings JL (2000) Textbook of geriatric neuropsychiatry, 2nd edn. American Psychiatric Press, Washington, D.C.
- Hoch C, Reynolds CF III, Monk TH et al (1990) Comparison of sleep disordered breathing among healthy elderly in the seventh, eighth, and ninth decades of life. *Sleep* 13:502–511
- Kaplan HI, Sadock BJ (1998) Synopsis of psychiatry, 8th edn. Williams & Wilkins, Baltimore, MD
- Malhotra A, White DP (2002) Obstructive sleep apnoea [Review]. *Lancet* 360:237–245

Sleep Hygiene

Phillip Dines

Assuming that underlying causes of sleep disturbance have been addressed from neurological, psychiatric, and medical causes, and acute stressors are not an immediate cause, then sleep hygiene is an important consideration that should not be ignored. Even in the case where there are other issues at play, as just enumerated, sleep hygiene still needs to be applied appropriately.

What is sleep hygiene? This refers patterns of behavior and attitudes about sleep for a given person. Probably one of the most significant factors is the misunderstanding that surrounds sleep. There are often significant maladaptive behaviors that can arise when a person develops sleep disturbances. This leads to a negative spiral that tends to exacerbate the symp-

toms that results in the inability to sleep, or insomnia. Underlying this problem are misconceptions about sleep. Therefore, it is imperative, at the outset of helping a person with sleep issues, to educate them about their problem. This involves understanding that sleep is a natural process. When known pathology has been ruled out, it is important to reassure the suffering person that sleep will occur.

Accordingly under these circumstances, insomnia, for example, occurs when an individual undermines or interferes with one's own sleep. This occurs as the result of factors that are under a person's immediate control. These issues require adaptation to external factors or modification of those factors.

Factors under a person's direct control involve making a choice about what times a person chooses to sleep. It is not advisable, under most circumstances, to take naps greater than one-half hour during the day if one expects to sleep at traditional times at night. Avoiding vigorous activities or eating substantially close to anticipated times of sleep are steps that can help with insomnia. Avoiding stimulants such as caffeine are also important. It must be understood that forcing oneself to sleep is a common misconception. Going to bed only when sleepy, not when arbitrary times are chosen, needs to be appreciated. The tendency to over-control sleep instead of learning to work with an individual's sleep needs flexibility, without anxious overlay or self-induced stress, and is critical to good sleeping habits. Treatment needs to be directed toward the development of behaviors and adaptations to sleep needs that are flexible.

Accordingly, it is important that the effects of external factors on sleep need to be understood and help affected people to negotiate these issues. With more challenging issues, psychotherapy may be indicated. The anticipation of going into a job or endeavor the next day can contribute to enough anxiety and the ability to sleep becomes very compromised. Making the necessary changes could be difficult. Sometimes being made aware of the cognitive connections is enough, other times more work may be necessary to be able to adapt to changes required.

Chronic sedative use in the absence of applications of these principles is not helpful and counter-productive. In fact, chronic sedative use is usually a sign of underlying issues, as previously discussed at the outset, that have not been addressed.

Regarding the geropsychiatric population, the incidence of almost all sleep disorders increases with age. The

major categories of sleep disorders can be characterized by disorders of sleep initiation and maintenance, excessive daytime sleepiness, and disorders of circadian rhythm. Apart from this, there is a global change in sleep with aging. There is an overall reduction in sleep quality and a lowering of the arousal threshold. Further, changes in vital functions have significant effects upon sleep. In addition, loss of significant activities has a powerful effect on sleep. Unplanned naps or using sleep to fill time results in marked effects on circadian rhythms, resulting in many frustrating hours of wakefulness, just lying in bed at night. Sleep hygiene principles then become exquisitely germane. This involves increasing activity and new options with time management that can be challenging, but powerfully effective when successfully implemented.

In the geriatric population, misconceptions about sleep are the first targets of sleep hygiene intervention. This is done primarily through education and structure to dispel ideas such that all people need to get 8 h of sleep a night and that in the aged, sleep problems cannot be corrected or that pharmacological management is the first or only meaningful intervention. Rather, nonpharmacological management would be the preferred approach. In this regard, behavioral interventions are diverse and valuable resources. They include relaxation therapies, cognitive therapies, and treatments with goals of addressing specific disruptive or dysfunctional sleep habits. Stimulus control therapy, as developed by Bootzin, promotes the curtailing of daytime napping and enforces a consistent sleep–wake schedule. Elimination behaviors that are incompatible with sleep is a core of this approach. This involves instructions to go to bed only when sleepy, to establish a regular wake-up time, not to remain in bed when not sleepy, and to avoid sleep-incompatible behaviors in bed. Sleep-incompatible behaviors in bed include reading, watching TV, eating, worrying, or other counterproductive behaviors.

Furthermore, as older people have a reduced sleep drive and therefore they have a greater propensity to spend excessive time in bed, so interventions to reduce the amount of time set aside for nocturnal sleep time is another nonpharmacological intervention. This involves the individual keeping a sleep log followed up by calculating the average sleep time and then setting time-in-bed targets that are adjusted over subsequent weeks. The goal is to minimize the time in bed when the older person is not sleeping. This is an example of sleep restriction therapy.

Research indicates that stimulus control and sleep restriction therapies are more effective than most other nonpharmacological interventions. Further, behavioral therapies are comparable with pharmacological interventions for short-term treatment effects but in the long term, benefits are more sustained with fewer side-effects. Combination therapies of stimulus control, sleep restriction, and cognitive behavioral have been promising.

Sleep hygiene involves education and techniques of adaptation that reflect appropriate management of direct and indirect factors that affect sleep function. It is critical to understand the multidimensional nature of sleep hygiene to implement it successfully.

Related Topics

[Depression](#), [Insomnia](#), [Sleep disorders](#)

Suggested Readings

- American Sleep Disorders Association (1997) The international classification of sleep disorders: Diagnostic and coding manual, rev edn. American Sleep Disorders Association, Rochester, MN
- Bootzin RR (1972) A stimulus control treatment for insomnia. *Proc Am Psychol Assoc* 7:395–396
- Carskadon MA, Brown ED, Dement WC (1982) Sleep fragmentation in the elderly: Relationship to daytime sleep tendency. *Neurobiol Aging* 3:321–327
- Dijk DJ, Duffy JF, Riel E et al (1997) Altered interaction of circadian and homeostatic aspects of sleep propensity result in awakening at an earlier circadian phase in older people. *J Sleep Res* 26:710
- Hirshkowitz M, Moore CA, Hamilton CR et al (1992) Polysomnography of adults and elderly: Sleep architecture, respiration, and leg movement. *J Clin Neurophysiol* 9:56–62
- Morin CM, Stone J, Trinkle D et al (1993) Dysfunctional beliefs and attitudes about sleep among older adults with and without insomnia complaints. *Psychol Aging* 8:463–467
- Smith MT, Perlis ML, Park A et al (2002) Comparative meta-analysis of pharmacotherapy and behavior therapy for persistent insomnia. *Am J Psychiatry* 159:5–11

Smoking

Nicoleta Coconcea

The most prevalent form of nicotine addiction in the United States is cigarette smoking, involving over 25% of the adult population. This figure represents a gradual, but substantial decline from 42% in 1965. The scientific literature today clearly establishes nicotine as a powerful drug of addiction, with distinct biological effects. Cigarette smoking was identified 40 years ago by the Surgeon General as a leading preventable cause of death and disability, and a serious health and economic burden to the society. There are multiple programs for smoking cessation in adult and adolescent populations, with much less attention being given to older smokers. The fastest growing segment of the US population is older adults 65 years and older, making up 12% of the entire population (and totaling almost 40 million). Overall, smoking rates continue to decline for adult populations. However, smoking prevalence is consistently higher among Blacks than Whites, higher in non-Hispanics than Hispanics, higher in people with less education, and the differences between men and women are narrowing.

Cigarette smoking is a significant contributor to general mortality, with more than 400,000 deaths each year (20% of total US deaths) caused by illnesses attributable to smoking. Cigarette smoking significantly increases the risk of cardiovascular disease (e.g., stroke, sudden death), chronic respiratory diseases (asthma, chronic bronchitis, chronic obstructive pulmonary disease), lung cancer, and other forms of cancer (e.g., mouth, pharynx, larynx, esophagus, stomach, pancreas, uterus, cervix, kidney, ureter and bladder). The smoking habit is also associated with increased risk for vascular disease (stroke, peripheral vascular disease), gastrointestinal disease (peptic ulcer, gastroesophageal reflux), and osteoporosis.

Only 9% of adults 65 years and older smoke, but 22% of adults between 45 and 64 years of age are current smokers, a significant concern to the health care system in the near future. Smoking cessation programs should involve in particular this fast growing segment of the population. The absolute risk of dying prematurely due to smoking increases with the age of the smoker. Excess mortality from all causes of death increases with the age of the smoker and the total years of smoking. Research shows that the mechanism by which smoking carcinogens produce cancer is the production of free radicals. A second mechanism is via DNA modification. Free radicals are unstable molecules that try to replace its missing electron by taking

it from other compounds in order to regain stability. To prevent free radical damage, the body has a defense system of antioxidants (vitamins E and C). The body can normally manage free radicals, but if antioxidants are unavailable or if the free-radical production is excessive, permanent damage from their reaction with DNA or the cell membrane occurs. Evidence suggests that free radical-induced damage is more substantial in older smokers than in young ones, with elderly women being the most susceptible to tobacco carcinogens.

The evident conclusion is that, overall, the elderly are more susceptible to the dangers of smoking. Older smokers have higher rates of cardiovascular and cancer mortality than their nonsmoking counterparts, and have a demonstrated decline in quality of life. Smoking aggravates existing diseases and can interact adversely with the efficacy of many medications, further increasing the medical burden for the elderly, the population segment with the highest medication use. In the elderly, the following associations were found to be significantly related to patterns of behavior: heavy smoking was associated to long-term smoking, living with another smoker or socially interacting with other smokers reinforced smoking, male smokers had increased risk for impairment in mobility and high life stress, and smokers attended church-related activities less frequently.

In terms of motivation, studies show that older smokers were more likely to smoke due to long-term formation of an automatic stress-reducing habit, but obtained less pleasure from smoking than younger smokers. Older smokers also report that smoking helps them concentrate and sustain attention over longer periods of time, so there may be potential perceived cognitive benefits. Benefits of smoking cessation are tremendous for men and women of all ages according to the 1990 *Report of the Surgeon General*. In the elderly with existing conditions or disease states, quitting smoking has been shown to reduce further impairment and disability. The extent of the reduction in risk depends on the total years of smoking, the number of cigarettes smoked per day, and the presence or absence of disease at the time of quitting. Smoking cessation has proved to reduce the risk of lung cancer mortality at any age, including old age. Older smokers who stopped smoking for 5 years reduced their cardiovascular mortality to that of nonsmokers. In general, the decline in risk of all-cause mortality begins

shortly after quitting and continues for about 10–15 years, eventually approximating the mortality risk of never-smokers.

In summary, there is overwhelming evidence that smoking cessation is tremendously beneficial, yet people continue to smoke. A key characteristic of nicotine addiction is repetitive self-administration due to the reinforcing effect of the drug. Significantly, more effort should be put forth by health care professionals in outreach and counseling on smoking cessation and abstinence programs for all their patients, including the elderly. The old belief that there is little benefit to smoking cessation in the elderly or that the elderly are less susceptible to the hazards of smoking has no place in modern medicine.

Related Topics

[Addiction](#), [Cancer](#), [Cardiovascular disease](#),
[Harm reduction](#), [Health promotion](#), [Oral health](#)

Suggested Readings

- Agency for Health Care Policy and Research (1996) Smoking cessation clinical practice. *J Am Med Assoc* 275:1270–1280
- Burns DM (2000) Cigarette smoking among the elderly: Disease, consequences and the benefits of cessation. *Am J Health Promot* 14(6):357–361
- Centers for Disease Control and Prevention (2003) Cigarette smoking among adults—United States 2001. *MMWR* 52(4):953–956

Suggested Resources

- Centers for Disease Control and Prevention How to Quit Useful resources to quit smoking. Atlanta, GA (November 8, 2005); <http://www.cdc.gov/tobacco/how2quit.htm>
- U.S. Department of Health and Human Services Tobacco Cessation—You Can Quit Now!, Washington, D.C.; <http://www.surgeongeneral.gov/tobacco>

Social Security Benefits

Janet L. Lowder · Mary B. McKee

Hubert Humphrey observed that “The moral test of government is how it treats those who are in the dawn of life, the children; those who are in the twilight of life, the aged; and those who are in the shadows of life, the sick, the needy and the handicapped.” According to the Social Security Administration, the Social Security Act aims to provide for the material needs of individuals and families, protect aged and disabled persons against the expenses of illnesses that may otherwise use up their savings, keep families together, and give children the chance to grow up healthy and secure. Social Security benefit programs are designed to make all of us feel and be more socially secure. The Social Security Act created various federal and state benefit programs commonly known as Social Security retirement benefits (SSRB), Social Security disability insurance (SSDI), Supplemental Security Income (SSI), Medicare, and Medicaid.

Entitlement to SSRB and SSDI programs is earned through Federal Insurance Contributions Act (FICA) paycheck contributions. The worker may consider his or her FICA contributions as insurance premiums on a policy that will entitle him or her to future benefits, even though today’s workers are paying for today’s beneficiaries. Other programs, like SSI and Medicaid, are “need-based” or “means-tested,” meaning that an individual must have low income and assets to qualify.

Although the means-tested SSI benefit for noninsured disabled and elderly people is approximately \$603 per month for 2006, the Social Security retirement or disability benefit may be higher, as high as \$2,000 or so per month depending on age of retirement, plus auxiliary benefits for dependent children, depending on how much the worker earned and contributed to the system during his or her working years. Various offsets may apply (workers’ compensation, veterans’ benefits) to preserve the notion that working should always be more financially attractive than drawing disability benefits. If the Social Security amount is less than the SSI amount, the individual may be eligible for both “concurrent” benefits.

To attain “insured status” or become vested in the Social Security retirement or disability insurance system, a worker must generally have worked 20 out of the last 40 quarters, or 5 of the last 10 years. “Quarters of coverage” are now known as “credits,” but whatever the updated term may be, one may want to know, at

any given point in life, whether he or she is “insured” or not. As one plans for the future, or reflects on the past, keep in mind that over time a number of “zero years” can reduce the amount of retirement benefits available on one’s work record, as opposed to that of a wage-earning spouse, or divorced spouse.

Social Security retirement and disability benefits are based on earnings averaged over most of an individual worker’s lifetime. For determining retirement benefits, actual earnings are first adjusted, or indexed, to account for changes in average wages since the years the individual received those earnings. Next, average monthly indexed earnings during the 35 years in which the individual earned the most are calculated. Social Security then applies a formula to these earnings and arrives at the individual’s basic benefit, or “primary insurance amount,” the amount the individual receives at her full retirement age. This benefit amount, however, increases each year to protect recipients against inflation. Social Security provides annual-cost-of-living increases based on the consumer price index. The 2006 increase for benefit recipients was 4.1%.

An individual may begin to receive reduced Social Security retirement benefits as early as 62 years, the minimum retirement age; however, those who retire at the full retirement age will receive full retirement benefits. Since the 1983 Social Security Amendments were enacted, the full retirement age has gone up for those people born in 1938 or later, and will gradually increase until it reaches 67 years for people born after 1959. The full retirement age for someone born in 1942, for example, is 65 years and 10 months and, for someone born in 1952, it is 66 years. The average male is expected to live for 78 years, according to the Social Security Administration, and receive retirement benefits for 13 years. Women are expected to live for 82 years on average and receive retirement benefits for 17 years.

Each additional year a person continues to work full-time beyond retirement age adds another year of earnings to their Social Security record. The higher one’s life-time earnings are, the higher their benefits may be when they retire. A person’s retirement benefit will also increase by a certain percentage if he or she delays retirement. These “delayed retirement credits” are added automatically from the time one reaches full retirement age until that individual starts taking benefits, or reaches 70 years. For example, if an individual

was born in 1939, their retirement benefits will increase 7% for each year they delay retirement.

The Social Security Administration advises individuals to apply for retirement benefits no more than 4 months before they want their benefits to begin. Individuals may apply online using the Internet, call Social Security’s toll-free telephone number, or go to their local Social Security office and apply in person. Special accommodations are available for individuals who are deaf or hard of hearing. Various documents and personal records are needed in order to make an application for benefits, including the applicant’s social security number, birth certificate and the birth certificates of his or her spouse and children if applicable, and proof of US citizenship or lawful alien status.

In addition to personal records, eligibility for means-tested programs (Medicaid and SSI) require documentation of all sources of income and the amount of one’s, or one’s family’s, assets. Eligibility criteria may vary from state to state, depending on the program, because these means-tested programs are joint federal-state programs administered by state and local agencies, often known by such names as the Department of Human Services or the Department of Family Services. Often, income guidelines are tied to the Federal Poverty Level. To be eligible for SSI disability benefits, for example, a single individual is allowed no more than \$2,000 in assets, not counting one’s home and car. Any income over a minimal, specified amount will reduce the benefit, depending on whether the income is earned or unearned. Earned income is often treated more kindly than unearned income when it comes to calculating benefits in order to give people receiving public benefits the incentive to return to work. Allowances for various trial work periods are also meant to encourage people with disabilities to venture back into the workforce as soon as they can.

Perhaps two of the most unsettling aspects of the Social Security benefits system are that disability coverage does not last forever, and that not every person with disabilities is entitled to government benefits. First, women and others who work in the home should be aware that SSDI coverage does not typically last more than 5 years after a period of steady work, called the date last insured, or DLI. If an individual, who has been out of the workforce for more than 5 years or seriously injures herself in a household or car accident is not likely to be eligible for Social Security disability

benefits, no matter how much she contributed to the Social Security system before leaving the workforce.

Second, not every disabled person is entitled to government benefits. A claimant may be entitled to disability benefits under one, both, or neither of two different programs: SSDI and SSI. Some people with very significant disabilities, particularly those who have not worked much outside the home over the years, will not be entitled to any government benefit because they have neither earned the right to draw Social Security benefits on their own work record, nor are they impoverished enough to be eligible for SSI.

Certain other Social Security benefits are available to those who have not worked outside the home through a spouse or parent who has enough work credits. For example, “surviving spouse” benefits are available to widows over 60 years old, or 50 years old and disabled. In certain limited circumstances, a remarried woman can keep receiving widow’s benefits on her deceased husband’s earnings record. Older women receiving benefits should always explore the financial implications of remarriage. Disabled Adult Child (DAC) benefits are available to developmentally disabled adult children whose parents retire, become disabled, or die. However, someone receiving DAC benefits may not marry and maintain benefits, unless he or she marries another person receiving DAC benefits. Children’s SSI is available to help support severely disabled children, but only if their parents have very little in the way of income and assets. Social Security provides no automatic family benefit to full-time wage earners with some savings who happen to have a disabled minor child or spouse.

Nationally, about 50% of claimants who apply for Social Security disability benefits are eventually granted benefits. In some regions, it can take over a year, sometimes two, to obtain benefits under this system. If one chooses to hire a lawyer to assist in the benefits application process, claimants should know that legal fees are highly regulated to protect these vulnerable and often desperate individuals from unscrupulous lawyers. If a case goes all the way to federal court, sometimes the US government will be required to pay the legal bill under the Equal Access to Justice Act (EAJA), a law intended to help individual citizens “fight city hall.”

Also, potential SSDI claims should not be ignored, even if one is receiving private long-term disability (LTD) benefits and no immediate dollar benefit is read-

ily apparent, because future Medicare and Social Security retirement benefits may be affected by whether and for how long one has received SSDI benefits.

Related Topics

- ▶ Disability, ▶ Early retirement, ▶ Medicaid,
- ▶ Medicare, ▶ Pension, ▶ Retirement, ▶ Veterans,
- ▶ Widowhood

Suggested Readings

- AARP (American Association of Retired Persons) *The Social Security Book: What Every Woman Absolutely Needs to Know*
 United States House of Representatives, House Ways and Means Committee. *The 2000 Green Book: Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means*, 17th ed
- Treanor J Robert 2003 *Mercer guide to Social Security and Medicare*, 31st edn. William Mercer, Washington, D.C.

Suggested Resources

- Social Security Administration, Social Security Online, *Social Security Handbook*, 2005 Washington, D.C. (December 12, 2005); http://www.ssa.gov/OP_Home/handbook/handbook.html
- Social Security Administration, Social Security Online, *Frequently Asked Questions: Disability*, 2005 Washington, D.C. (October 14, 2005); <http://www.ssa.gov/disability>

Social Stress

Katherine Crow · Natalie Colabianchi

Social stress plays a major role in a person’s well-being. Although many researchers do not differentiate between the terms social stress and stress, social stress is different from physical stress in that physical stress is due to stressors (e.g. sources of stress) that directly tax the physical condition of the body such as excessive physical labor or physical restraint. Some sources of social stress are social isolation, unhappy or difficult marriage or

partnership, anxiety resulting from a significant change in one's life (e.g., death of spouse, retirement, change in living status), socioeconomic disadvantage, as well as age, race, or sex discrimination.

Social stress has been found to be deleterious to health. In a study of mice, socially stressed mice were more likely to die after exposure to infection relative to physically stressed mice. In this study, socially stressed mice were defined as those that were put in a cage for a portion of the day with an aggressive mouse, whereas physical stress was defined as being physically restrained in a cylindrical tube for 16 hours a day with no food or water.

Human studies are complicated by the fact that responses to stressors are dependent on the individual experiencing the stressor. The coping mechanisms that follow a stressful event have been described in the transactional model of stress and coping. In this model, the impact of a stressor is mediated by the person's appraisal of the stressor, which is comprised of two assessments. The primary, or immediate, assessment allows an individual to decide whether the stressor is good or bad and important or irrelevant. The secondary assessment ascertains whether the individual believes that they can alter or manage the situation or deal with the emotions that come along with the stressor or do both.

These assessments are influenced by different coping mechanisms. Generally, two different coping mechanisms are described. The first is problem management coping (problem-focused) in which efforts are focused on changing the stressor or the stressful situation. This may include problem solving or information seeking. The second coping strategy is emotional regulation coping (emotion-focused) in which efforts are focused on changing one's feelings about the stressor or stressful situation. This may include denial, venting of feelings, avoidance, and seeking social support.

Other lines of research have investigated the degree to which a person engages (i.e., information seeking, social support) or disengages (i.e., denial) from the stressor. When the source of stress is very threatening or not perceived to be under one's control, disengaging coping strategies are often used. On the contrary, when the stressor is perceived to be controllable, engaging coping strategies may be more likely. In general, research shows there are psychological benefits to using active coping styles over disengaging coping styles, at least in the long term. Furthermore, avoidant coping styles have

been associated with negative health behaviors. These coping mechanisms may be moderated by psychological traits including optimism, locus of control, information-seeking styles along with social support and stress management interventions. Although coping efforts may vary over different stressors, coping styles or psychological traits are inherent characteristics of the individual and remain constant over situations.

The realization that one is growing old can be traumatic. Ideas and attitudes toward aging are very important in how older adults cope with and enjoy the passing years. Studies have shown that older adults who stay busy with a lot of social interaction and can identify their purpose in life are healthier. If this does not happen, or is compounded by other events such as physical illness, the risk of depression increases. Treating depression in this population is important because suicide rates increase with age and are very high among those 65 years and older.

Growing older brings with it many changes, including changes in health, lifestyle, roles, and support. These can include death of spouse or partner, moving to a smaller residence, retirement, or physical illness. Older adults may experience fewer opportunities to develop new friendships. Physical pain and mobility issues can prevent older adults from getting out and enjoying activities and other people. Older adults who are the primary caregivers for their ill or immobile spouses or partners may experience isolation and depression.

Becoming more involved and finding ways to contribute to the broader community can improve overall well-being. There are many ways to be involved, including providing family assistance such as babysitting, participating in group activities, volunteering, or taking a part-time job. Social involvement also helps to fight depression, which is more common among those who withdraw from their friends, family, and community. Social isolation is a strong risk factor for health problems and early death. Social networks provide emotional support and physical support in times of crisis. For example, family and friends can support older adults through the death of a spouse or partner or close friend. They can also provide help if an older adult experiences functional losses. Some benefits of social networks include less risk of early death, better physical and mental health, less risk of disability or decline in activities of daily living, better chance of recovering one's ability to perform activities of daily living, buffered impact of major life events, and greater

feeling of personal control. Having a large social network can have both positive and negative effects. A large social network offers the opportunity for greater involvement and contribution. However, a large social network also means a greater number of losses (death or disability) within the network.

Due to the negative effects of stress, various recommendations have been made for reducing general stress and social isolation. These recommendations include physical activity, eating a healthy diet, practicing relaxation or stress-reduction techniques such as meditation, and use of antidepressant or anti-anxiety medication if necessary. Furthermore, taking advantage of opportunities in which to develop and maintain social networks such as participation in group activities at senior centers, churches, and other groups can help combat social isolation. Those older adults experiencing grief and loss over the death of a spouse or close friend, those dealing with new challenges as a result of ill health, or those who are shy, may need particular assistance to help deal with these specific issues to be able to take part in social activities and avoid isolation.

Stress can have a major effect on one's health. It is important to recognize stress as a normal part of life, but also realize that chronic stress can have ill effects on the body. Understanding the stress process, coping styles, and ways to combat stress are the first steps for better well-being.

Related Topics

[Bereavement](#), [Coping](#), [Depression](#), [Grief and grieving](#), [Social support](#), [Stress](#), [Widowhood](#)

Suggested Readings

- Cassel J (1976) The contribution of the social environment to host resistance. *Am J Epidemiol* 104:107–123
- Lazarus RS (1993) Coping theory and research: Past, present, and future. *Psychosom Med* 55(3):234–247
- Lerman C, Glanz K (1997) Stress, coping, and health behavior. In: Glanz K, Lewis FM, Rimer B (eds) *Health behavior and health education: Theory, research, and practice*, 2nd edn. Jossey-Bass, San Francisco, CA
- Stanley MA, Novy DM (2000) Cognitive-behavior therapy for generalized anxiety in later life: An evaluative overview. *J Anxiety Disord* 14:191–207

- Quan N, Avitsur R, Stark JL, He L, Shah M, Caligiuri M et al (2001) Social stress increases the susceptibility to endotoxin shock. *J Neuroimmunol* 115:36–45

Suggested Resources

- Alcohol and Seniors (2004) *Seniors Speak Out About Loneliness*. Vancouver, British Columbia (2005); www.agingincanada.ca/Seniors%20Speak%20Out%20About...Loneliness2.pdf
- American Geriatrics Society, Foundation for Health in Aging. *Psychological and Social Issues*. New York, NY (1999–2002); www.healthinaging.org/agingintheknow/chapters_print_ch_trial.asp?ch=3
- Australian Government Department of Health and Ageing. *Managing Stress* (2005); www.seniors.gov.au/internet/seniors/publishing.nsf/Content/Managing+stress
- Eure M About Health and Loneliness Fitness, Can Make You Sick (2005); <http://seniorhealth.about.com/od/mentalemotionalhealth/a/lonely.htm>
- Kaplan EW (2003) Seniors and depression. *Medical Moment* (2002–2005); www.medicalmoment.org/_content/signs/jul03/151175.asp

Social Support

Bettina A. Rausa

Social support is defined as a fundamental form of human interaction central to the human experience. At various times in peoples' lives, individuals either seek or provide support. Social support includes interpersonal communication and interaction, love and understanding, caring and concern, affection and companionship, financial assistance, and respect and acceptance. Social support has an impact on mental and physical health throughout the life span and may be especially important later in life. Negative stereotypes of older adults and the elderly paint a picture of isolation and unwanted social interaction. In contrast, many studies over the last 30 years have shown that not only do the elderly want and seek social support and interaction, but also social support is complex and changes over the span of a person's life.

The types of relationships that make up social support networks include marriage, parenthood and other intimate ties, friendships, relationships with colleagues at work, memberships in religious congregations, and in social, cultural, political, and recreational associations, and acquaintances with neighbors, shopkeepers, and

service providers. Social support through these networks helps the individual mobilize his or her resources, whether physical or psychological. Support systems help the individual by sharing tasks, providing extra money, food, and other materials and cognitive guidance to improve handling a series of life situations. These relationships give individuals a feeling of belonging, of being accepted, loved, needed, and appreciated.

Functions of social support include instrumental help, emotional support, and affirmation of values and attitudes. Instrumental support includes aid that is tangible. For older people this may be as simple as providing a ride to the grocery store or mowing the lawn and often takes the form of help with daily living tasks. Emotional support is the quality of a person's relationships with others including love, trust, caring, companionship, and empathy. Affirmation is the knowledge and understanding that one's beliefs and attitudes are similar to others, therefore providing membership and acceptance in a group. Social support functions are often intertwined. Those who provide tangible support may also be providing reassurance and emotional support. Furthermore, different network members provide different types of support. People tend to turn to their families for instrumental support, friends for emotional support, and during times of illness, health care workers for advice and aid.

There are two basic types of social support: informal and formal. Informal support networks consist of family, friends, and neighbors. This group provides instrumental and emotional support, companionship, acceptance, love, understanding, and respect. The inner circle of the informal network is usually composed of immediate family and perhaps very close friends. Members just outside of the inner circle typically include people who are progressively less close, such as other family members, friends, neighbors, and coworkers, with those on the outer circle consisting of acquaintances. Those in the innermost circle are the most stable members of the group; there may be a fair amount of turnover in the members in the less central circles. The innermost circle members provide safety and comfort for the person that helps in meeting the challenges of life. As the person ages, these people continue to provide them with support.

Informal support members are generally the primary caregivers to the older adult who needs assistance. Often, family and friends provide emotional support and companionship and help with daily necessities such as shopping, cooking, gardening, laundry, personal

care, information and advice, and in making major decisions, especially those related to health care. Daughters, for example, typically provide care of a more intimate nature to their older parents such as assistance with bathing or eating. Sons are generally not as involved in personal care as daughters are with the exception of the father, if he needs it. Instead, sons tend to perform other instrumental tasks such as financial management, home repair, and transportation. Siblings, grandchildren, nephews, and nieces also provide support to their older relatives. Siblings appear to take on increasing importance in later years and this is particularly true of sisters after widowhood. Among people who have no children, siblings can provide emotional support and instrumental help. Couples who do not have children may intentionally develop strong relationships with relatives such as nephews and nieces because these relatives serve as informal support to them when children would otherwise assume support.

Approximately 20% of the women aged 65 and over in the United States are childless. Although the childless elderly have fewer social ties and are at higher risk of social isolation than elderly parents, research indicates that they are not necessarily less satisfied with life. However, those who are childless by circumstance (i.e., infertility) have lower subjective well-being than do parents. Studies do, however, show that the elderly with no children have less life stress than elderly parents. It has also been shown that insufficient support from children may increase the risk of depression among elderly parents. Thus, having children does not guarantee happiness and support in later life, nor are the childless elderly doomed to social isolation and loneliness. Many childless elderly people have, over their lifetime, secured a stable support network, though their networks are often smaller than those of parents.

The perception of social support plays a significant role for the elderly. Researchers suggest that there is a direct relationship between perceived social support, social involvement, and social contact and the childless elderly's mental health. Studies report that among the childless elderly, women have more psychological distress than men. Marital status has also been shown to be important. Married and cohabitating individuals, those who were never married, and the widowed all showed less stress than the separated or divorced group. Social support therefore may play a greater role in predicting mental health than does parental status.

When confronting loneliness or needing assistance with social issues, older adults prefer friendships to

family, specifically spouses and children. In fact, social support from family members, specifically children, is more strongly associated with physical health, while support from friends is associated with psychological health. The reasons that older adults prefer friendships to family in cases of emotional support are primarily due to sense of continuity with the past that friends can provide. Children may make less adequate companions because, unlike peers, they do not share the same history and life perspective. Additionally, friendships tend to be a matter of choice rather than birth. People choose friends because of shared interests and desire for contact. The relationship itself often helps well-being: to be a friend means that one is desirable as a friend. Finally, friendships share a form of reciprocity that may be absent in family relationships and reciprocity has a strong effect on the satisfaction level of seniors and their friendships.

Formal social support comes from outside of an individual's intimate circles of friends, family, and neighbors. Formal support is in many cases essential to an older adult's well-being because it provides practical support that becomes increasingly dependent as a person ages. Formal support comes from those individuals and institutions one depends upon for services and assistance such as health care providers, social workers, case managers, shopkeepers, delivery persons, and others in institutional settings. As a person ages and outlives many of his or her informal support ties, formal support sources become an increasingly important part of a person's informal support network.

Research indicates that social support is a protective factor. Social support is related to lower levels of mortality among the general population, and it is related to better recovery from illness. For example, a study of patients with coronary artery disease who had low levels of social support (unmarried or without a confidant) had a significantly lower survival rate (50%) compared to those having a high level of social support (82%). The effect of social support in the patients of this study was found to be independent of medical risk and economic resources. In fact, some believe that social support may act to avert the onset of disease, to reduce the severity of disease, or to enhance recovery from illness.

Social support, especially in the form of a confidant, is related to increased self-esteem. Studies suggest that having a confidant accounts for reduced depression in the elderly. A number of studies show that reduced levels of depression due to social support

occurs because the perception that support is available decreases the perceived severity of stresses, thus decreasing anxiety and increasing a person's ability to cope with stressful situations. The reasonable hope or strong certainty that social support will be available has a more beneficial effect on the mental and physical health of the elderly, especially those under economic stress, than actually receiving help. In fact, a national study of economically stressed older adults shows that those who believed that no one would come to their aid in the future had the greatest number of depressive symptoms. Interestingly enough, this same study showed that in contrast to anticipated support, actually receiving assistance was not beneficial to mental health.

Some studies have suggested that social support prevents the onset of health problems by providing reinforcement for healthy behavior, increases compliance with medical treatment plans, and improves self-esteem. The relationship between social support and health however, is complicated by demographic variables such as sex, marital status, socioeconomic status, and age. Elderly men in general appear to be at greater risk than elderly women for increased psychological and physical health problems due to weaker social support systems. The presence of a spouse or partner typically has a protective health influence for the elderly; however, if the relationship is not supportive and positive, the opposite is true. In fact, intimate relationships that are not supportive, trusting, and loving have negative influences on the physical and mental health and overall well-being of the elderly. Socioeconomic status and education levels seem to be factors that place older adults at risk as well. Additionally, the very old tend to have smaller circles of social support as many people have outlived spouses, other family members, friends, and sometimes even children.

Social support can have negative effects. As previously mentioned, a spouse or partner relationship that is not supportive and positive can be detrimental, especially on the health status of the person. Poor social interactions can cause distress and disappointment, placing stress on the individual and affecting well-being. Negative interchanges can be more damaging to emotional health than positive ones that are beneficial. The extent that social ties are beneficial to health depends on their quality. Older persons may use dependency to manipulate and therefore control their support system. Dependency can be used as leverage

for visits from family members and people can feign helplessness to control others.

Social support is important for both mental and physical health throughout the life span, but it may be especially important in later life. A common negative stereotype has been that older adults and the elderly are socially isolated, but the past three decades of research have painted a much more complete picture of how social support changes in both structure and function with age.

Related Topics

- ▶ Activities of daily living, ▶ Caregiving and caregiver burden, ▶ Depression, ▶ Family relationships, ▶ Friendship, ▶ Siblings

Suggested Readings

- Aldwin CM, Rudney GL, Glimmer D (2003) Health, illness and optimal aging: Biological and psychosocial perspectives. Sage Publications Inc., Thousand Oaks, CA
- Baum A, West R, Weinman J, Newman S, McManus C (1997) Cambridge handbook of psychology, health and medicine. Cambridge University Press, Cambridge
- Blumenthal SJ (2003) Suicide over the life span. American Psychiatric Publishing Inc., Arlington, VA
- Knapp M, Daly JA (2002) Handbook of interpersonal communication. Sage Publications Inc., Thousand Oaks, CA
- Seeman TE, Berkman LF (1998) Characteristics of social networks and their relationship with social support in the elderly: Who provides support? *Soc Sci Med* 26(7):737–749
- Wisocki P (1991) Handbook of clinical behavior therapy with the elderly client. Springer, New York

Suggested Resources

- Krause NM (1997) University of Michigan news service (online) anticipated, not actual, social support eases money-pressed elderly; <http://66.102.7.104/u/umich?q=cache:San9hNuEV-kj:www.umich.edu/news/%3FReleases/1997/Dec97/chr121797a+anticipated,+not+actual,+social+support&hl=en&ie=UTF-8> The Regents of the University of Michigan 2005
- Peters R (2003) Center on aging. The mental health of the childless elderly, Social networks support their quality of life; http://www.coag.uvic.ca/documents/research_snapshots/The_Mental_Health_Childless_Elderly.htm (web page updated October 2005)
- Snyder S (1997) Depression among the elderly (Online); <http://www.hope.edu/academic/psychology/335/webrep2/depres2.html> (Hope College, Michigan, web page updated/copyright 2006)

University of California, Davis (Online) Does the source of support matter for different health outcomes? Findings from the normative aging study, DuPertuis LL, Aldwin CM, Bosse R; <http://hcd.ucdavis.edu/faculty/aldwin/Support.pdf#search='Leslee%20DuPertuis>

Socioeconomic Status

Bettina A. Rausa

Socioeconomic status can be defined as an indicator of a person's economic and social position. It represents general social standing in the relative distribution of opportunities and quality of life. Researchers agree that socioeconomic status is best demonstrated by occupation or employment and what is typically used to measure social standing, including education and income. Additional measures include employment status (full-time, part-time, retired, homemaker), work characteristic (type of work), and possessions (e.g. home ownership). Employment status differentiates categories of labor, distinguishes among being employed, full-time, part-time, laid off or unemployed, in school full-time, retired, or keeping house. Work characteristic corresponds to various aspects of productive activity and it includes occupational prestige, rank and social class, and the conditions and qualities of activities for employed persons. Education includes the number of years of schooling and degrees earned. It indicates the knowledge, skills, values and behaviors learned at school, as well as the credentials that lead to job opportunities. Income or economic status includes aspects of economic well-being such as personal earnings, household income, and material or economic hardship.

When socioeconomic indicators are included in predictions of health and mortality, some studies indicate that education has the largest effect followed by income. Part of the reason why education is associated with good health is that education is considered key to higher socioeconomic status because it shapes employment opportunities and income. Some of the reasons why the well-educated experience better health than the poorly educated is that they are more likely to be employed full-time rather than part-time or not at all; they have jobs that provide autonomy and opportunities to be creative, fulfilled, and perform nonroutine

tasks, as well as earn higher incomes. Full-time employment status also gives individuals the opportunity to be able to obtain health insurance through their employers. Higher incomes mean that they face fewer economic hardships, that is, less difficulty paying daily living expenses such as bills, food, clothing, and other essentials. Additionally, higher education levels are associated with better (preventative) health care seeking behaviors. Socioeconomic status affects the elderly most prominently in the status of their health. In fact, most studies of the elderly and socioeconomic status focus on issues of physical and psychological health. The problem facing investigators of socioeconomic inequalities is how best to measure socioeconomic status, particularly in older populations. The problem with using some of the common indicators is that they may not be relevant to older adults. For example, many older adults are no longer employed due to retirement or inability to work due to disability. If a person is retired, the diverse financial sources (e.g., social security, pension or an individual retirement account, stock dividends, and the like) may not necessarily be considered in the economic picture of this group of individuals, leading to potentially biased results of studies of the elderly and socioeconomic status.

Although the issue of socioeconomic inequalities in morbidity and mortality has attracted a large number of studies, very few have focused on the older adult and elderly populations. There is plentiful evidence indicating differences in rates of physical and psychological illness across socioeconomic groups. Lower social class is positively correlated with the incidence of mental illness and limited education levels is positively correlated to increased physical illness. The US Census Bureau has documented that a significantly higher percentage of people in lower-income brackets have physical activity limitations and that lower income is also associated with higher incidences of chronic diseases. Individuals with lower socioeconomic status experience poor health and live shorter lives than those with higher socioeconomic status. Data show that the lower one's socioeconomic status, the higher is the rate of mortality, as one ages. In other words, the lower one's socioeconomic status, the greater likelihood that one will die sooner rather than later.

Another important effect that socioeconomic status has on the elderly is in terms of social support. Decreases in socioeconomic status, education, and

income are each correlated with smaller social networks. The reverse is true for higher socioeconomic levels, education, and income. People of all age groups with higher educational levels report more diverse and broad support networks and those with higher income levels who report a larger number of non-kin network members. A national study of the elderly shows that those with reduced incomes and educational levels report more feelings of loneliness than elderly with financial resources and higher educational attainment.

As the United States prepares for an exponential growth in the number of older adults with the advancement in age of the baby boom generation (20% of the total US population by 2030), and as the country seeks to redesign Medicare, Medicaid, and Social Security policies, we still do not have a clear grasp on how socioeconomic status and health interact, and affect the lives of the elderly.

Related Topics

➤ [Morbidity](#), ➤ [Mortality](#), ➤ [Social Support](#), ➤ [Stress](#)

Suggested Readings

- Bowling A (2004) Socioeconomic differentials in mortality among older people, *J Epidemiol Community Health* 58:438–440
- Chatterji ME, Mirowsky J, Ross CE (2004) Education, social status and health. Aldine Transaction, New Jersey
- RAND Corporation, Center for the Study of Aging, Labor and Population Program (1998) The relationship between the socioeconomic status and health of the elderly. RAND Corporation, Santa Monica, California. Available at <http://www.rand.org/publications/RB/RB502>
- Wisocki PA (1991) Handbook of clinical behavior therapy with the elderly client. Springer, New York

Speech Disorders

Jane E. Prasse

The act of speaking is a process involving sight, sound, processing, motor planning, muscle strength, and cognitive function. It is quite complex, and thus the chance for difficulty in speech production is quite

high especially in individuals who have suffered a traumatic event, such as stroke or brain injury.

By definition, speech is the act of moving the muscles of the face and the articulators (the tongue, lips, teeth, soft palate, and glottis) in conjunction with the movement of air from the lungs over the vocal folds and out of the oral cavity to produce a sound. Language is the expression of ideas through a system developed over time. Thus, speech could be explained by the articulation of an utterance, whereas language is the sharing of a thought or idea. The execution of the articulators to achieve their target sound productions can at times be affected due to muscular weakness or damage to the nerves.

Types of Speech Disorders

Dysarthria Dysarthria is the term used to identify individuals with slowed or inaccurate speech due to such changes in muscles or nerves controlling speech output. Common in the elderly, it can be due to stroke, brain surgery, multiple sclerosis, head trauma, Parkinsonism, and nerve palsies.

Depending on the area of the damage, dysarthria can take on many different characteristics. One type of dysarthria, termed “flaccid dysarthria” involves the lower motor neurons (nerve cells leading from the spinal cord to a muscle), and often results in a weak, breathy voice, distorted consonants due to poor lip and tongue strength as well as overall weakness in sound production. “Ataxic dysarthria” on the other hand, is often caused by damage to the cerebellum (the part of the brain that controls movement and balance), in which the individual presents with poor breath support when speaking, difficulty with rhythm and slowed but imprecise and often poorly controlled speech movements.

Verbal Apraxia In adults with verbal apraxia, strength and range of motion of the speech muscles is usually adequate, however the sequencing of the speech movements is impaired. This type of speech disorder is often the result of neurological damage to the brain. The lack of control that individuals with verbal apraxia demonstrate over their speaking ability often lends itself to frustration as the individual may have every intention to speak a certain word, but upon its production, a distorted or wholly different word may be produced. Verbal apraxia is known to occur in conjunction with

language disorders caused by stroke, or brain surgery or injury.

Types of Language Disorders

Although speech disorders can be defined as a disruption in the production of meaningful sounds to communicate, language disorders impact the ability to share thoughts, ideas, and feelings either by verbal, written, or gesturing means.

Aphasia Aphasia, or difficulty comprehending or expressing language or both, often results following injury, such as stroke, to the language centers of the brain. It is generally divided into three types: expressive aphasia, receptive aphasia, and global aphasia.

The individual with expressive aphasia is often able to understand conversations and communication. However, he or she demonstrates varying levels of difficulty (from mild to moderate to severe) in sharing or expressing his or her own thoughts, words, and ideas. Expressive aphasia is also referred to as “non-fluent aphasia,” based on the extreme difficulty individuals with this condition display in attempting to produce speech or to write.

A person with receptive aphasia, also termed “fluent aphasia,” demonstrates little or no difficulty with the production of speech. However, the understanding and accuracy of their thoughts or words are impaired at either mild, moderate, or severe levels. Often, individuals with receptive aphasia are able to speak quite fluently but the content of what they are saying is difficult to understand due to usage of the wrong words or rote or automatic phrases. Depending on the level of severity, the individual with receptive aphasia may or may not recognize their deficits.

Global aphasia is usually the result of large damage to the speech and language centers. Individuals with global aphasia have little expressive or receptive abilities, either verbal or written.

Anomia The inability to access an appropriate word or name during speech or writing is often termed “anomia.” Although a person suffering from fatigue or exhaustion may demonstrate difficulty “finding the right word” at times (thus demonstrating a mild case of anomia), individuals with the chronic inability to recall names of items, places, or people have more

pronounced anomia. Usually, individuals with anomia demonstrate confusion when speaking or writing words similar in meaning. Often, ongoing inability to name objects, places, or people is one of the first indications that a more serious cognitive or language condition may exist.

Speech, Language, and Aging

As a normal, healthy adult ages, the rate of speech often slows and articulation of sounds becomes less precise. More often, voice changes are noted to impact overall understandability or intelligibility of the older adult's speech. For example, due to muscle weakness and decreased neurological function due to aging, the pitch of the geriatric voice may become lower and be perceived as less strong due to diminished breath support and control, and a tremor or vibratory quality be perceived due to structural changes in the vocal folds (vocal chords) associated with aging.

From a language perspective, the healthy older adult will often demonstrate more difficulty than their younger counterpart in recalling short-term events, names, and places. In addition, due to a variety of factors, such as decreased socialization and fewer interactions with others, older people tend to communicate less frequently and use fewer words than those younger people.

Diagnosis and Treatment of Speech and Language Disorders

Following referral from a primary care physician, neurologist or internist, a speech-language pathologist (SLP) often carries out assessment of speech and language disorders. Evaluation of speech function consists of assessing motor control, strength, and coordination of the speech muscles. In addition, breath support and the timing of speech sound productions are evaluated.

Language assessment is most often composed of tasks designed to determine written and spoken ability as well as reading, understanding, and listening functions. A variety of specialized tests are available to the speech and language pathologist for effective assessment of an individual suspected to have a speech or language disability. From there, the appropriate treatment plans may be designed.

Treatment of speech and language disorders often involves involvement of the individual and family members or friends to aid in rehabilitation or the use of compensatory strategies to help with communicative endeavors. For those with dysarthria and apraxia, oral, motor, strength, and coordination exercises may benefit in regaining some or all use of these muscles. Depending on the extent of the deficit, individuals with language disorders may benefit from cognitive and linguistic therapy exercises, the use of a picture or memory book, or augmentative communication devices designed to supplement impaired language function.

The speech–language pathologist often plays an integral role for the individual with a speech or language disorder. A comprehensive assessment of problem areas generally includes testing and observation to better aide in development of a treatment plan based on individual need. With a physician's order for speech therapy, most insurance companies, as well as Medicare and Medicaid, reimburse for speech therapy services when a speech or language need is present. Often, caregivers and family members are involved in the initial planning and treatment to assist in communicating and understanding the patient. The treatment approach used by the speech–language pathologist is based on the individual, and may consist of weekly, biweekly, or daily treatment sessions, lasting anywhere from a few weeks up to a year or more. In the case of severe expressive language difficulties, the speech–language pathologist may incorporate the assistance of a communication device or speech-generating device and train the individual and their family in its use.

Related Topics

- [Communication disorders](#), • [Multiple sclerosis](#), • [Parkinson's disease](#), • [Stroke](#)

Suggested Readings

- Darby JK (ed) (1985) *Speech and language evaluation in neurology: Adult disorders*. Grune & Stratton, New York
- Graham MS, Avent J (2004) Group treatment: Common threads across disorders. A discipline-wide approach to group treatment. *TLD* 24(2):105–117

- Holland AL, Greenhouse JB, Fromm D, Swindell CS (1989) Predictors of language restitution following stroke: A multivariate analysis. *J Speech Hear Res* 32(2):232–238
- Payne JC (1997) *Adult neurogenic language disorders: Assessment and treatment. A comprehensive ethnobiological approach.* Singular Press, San Diego
- Perkins WH (ed) (1983) *Language handicaps in adults (Current therapy of communication disorders).* Theme-Stratton Corp, New York
- Worrall LE, Hickson LM (2003) *Communication disability in aging: From prevention to intervention.* Singular, Delmar Learning, New York
- Yorkston KM, Dowden PA, Beukelman DR (1992) *Management of motor speech disorders in children and adults.* Pro-Ed, Austin, TX

Spirituality

JannatFay Clark

The term spirituality comes from a Latin term meaning “of breath.” It can be defined as relating to, consisting of, or having the nature of spirit. It is not tangible or material; it relates to the soul. Addressing issues of spirituality is increasingly seen as an important part of astute health care, and nearly 30 US medical schools now offer courses on the subject of spirituality and health. In addition, research is being conducted in this area by many professional disciplines such as nursing, anthropology, psychology, sociology, social work, and in the physical sciences.

Spirituality versus Religion

Spirituality and religion (and its related practices) are often used interchangeably in the literature, and though they can be related, the two concepts are different. Definitions for the term spirituality vary throughout the literature and encompass personal searches for meaning, religious beliefs and values, belief systems, spiritual and religious practices, mystical experiences, emotional fulfillment, self actualization, development of wisdom, an appreciation for life itself, engagement in the creative process, and the concept of a higher power or God. For many reasons, the concept of spirituality, as defined in quantitative studies, is subjective.

It is hard to assess the amount of spirituality that one experiences, as the very nature of collecting this data relies on self report. Even “The spirituality index of well-being: A recently developed instrument for health-related quality-of-life-research,” is theoretically founded on a qualitative approach and relies on information subjectively reported by study participants.

The concept of religion involves organization and structure and is associated with some form of ritual and practice centered around a belief in a higher power or God. Definitions of religion throughout the literature include organizational religious activity, no organizational activity, subjective or intrinsic religiosity, attending a faith-based gathering on a regular or infrequent basis, participating in faith-based prayer or study groups, engaging in prayer or meditation practices, reading faith based literature, and listening to faith based radio or television.

Spirituality can be related to religion for some persons, but not for all. For example, an atheist might embrace spirituality yet not engage in religious practices or center beliefs around the concept of God. Because the amount of religious practice a person engages in can sometimes be quantitatively measured, such as frequency of attending faith based institutions and involvement with related activities, research often relies on these factors to measure relationships between religious practices and quality of life.

Spirituality and Health

The literature reflects a weak relationship between spirituality and health. One study relating spirituality to cardiovascular disease showed older spiritual adults to have a 40% lower chance of having high blood pressure. A second study was completed using older persons under the age of 75 as subjects. These persons were medically ill and practiced spirituality by engaging in religious activities. These activities were positively correlated with overall better daily functioning and improved health status. However, another study showed an increase in development of cancer amongst older adults who engaged in regular religious practices. A third and 12-year-old prospective study of nearly 3,000 older adults found evidence that attending religious functions may delay the development of problems with daily function due to health reasons. The study showed that health problems related to aging

make it difficult to attend religious functions. However, the effect is usually short term and does not detract from the long-term positive effect of religious activity on health.

It is possible that organized religious activity enhances physical health by helping chronically ill older adults remain active and involved in the community. This provision of meaningful activities and social support may enhance ability to cope with daily challenges and with maintaining positive attitudes toward self care and motivation to recover from illness. Few other religious characteristics predict better physical health than organized religious activities.

Contrary to these findings, engaging in the act of watching religiously oriented television has been correlated with an increase in problems with physical illness. These persons also tended to report worse overall physical functioning including high blood pressure and an increase in depressive symptoms. This was true especially amongst those ranging from ages 50–64. This negative affect could be because of the lower level of physical activity required to watch television as well as its exclusion of personal interaction.

A complication that arises in completing research on relationships between health and practices of organized religious activity is that some religious organizations, such as Mormonism, highly discourage consumption of alcohol and use of nicotine, which have both been associated with promoting health problems, whereas other religions may promote less restrictive rules regarding use of these substances. Research results can easily have built in biases based on which religious organizations and their sample populations have been drawn from.

When coping with illness, spirituality can become an important mechanism for achieving a sense of hope. Interestingly, research studies have shown that hope enhances adaptive capacities of people with chronic illness, including among elders. In a study on Parkinson Disease, for instance, it was demonstrated that feelings of hopefulness helped motivate people towards successfully facing the demands of daily living. Specifically, it helped them to develop renewed interest in daily activities, to extend themselves to others through socialization, and to promote a more positive outlook toward their lives in general.

Depressive symptoms often increase through progression of the aging process. A cultural factor con-

tributing to this may include a current underlying value in US society, where ability to produce in an economic sense is largely how we determine a person's self-worth. As the aging process proceeds, persons in late-life stages are generally less likely to remain in the work force. Our tendency to devalue aged persons in conjunction with their increased likelihood of incurring losses such as death of loved ones and life partners, can cause an increase in depressive symptomology. Overall, the literature suggests that religious activities, religious practices outside of organized religious institutions, and spiritual experiences in general, are not only common in older persons, but are often used by them to assist in coping with depression.

Measurably better psychosocial functioning has been associated with older persons who practice spirituality. Reported levels of well-being associated with late adulthood and spirituality can be derived from engaging in positive relationships with others and involvement in tasks that serve the individual and the community in a positive manner. These community tasks can consist of providing volunteer child-care services, participating in telephone outreach services for home bound individuals, and volunteering at local food pantries or other food outreaches. It is challenging to track exact causes for this relationship. Research over three decades has shown that greater levels of religious involvement predicts future nonreligious group memberships, contacts with close friends, and marital stability. With regard to health issues, these increased levels of social supports may enhance the healing process by increased assistance with medical needs (i.e., help with bathing or receiving injections), meal preparation, getting to medical appointments, engaging in conversations to promote encouragement toward wellness, and developing a sense of hope for the future.

Storytelling can enhance the development of spirituality for persons in later-life stages by providing a rich creative outlet for them to honor their life experiences. As people approach their seventies, they tend to experience a more urgent desire to discover greater meaning in their lives through a process of looking back, summing up, and giving back. Creative expression in this phase of life includes sharing personal autobiographies, storytelling, engaging in activities that create opportunities to give back to others and

to the community. Reaching creative potential in these ways follows the natural course of development in the inner spiritual development involved with the second half of life.

Family and community members as well as professionals can encourage this creative sharing by being good listeners and extending friendship to older persons as they engage in the story telling process.

Related Topics

- ◆ Complementary and alternative health practices,
- ◆ Identity, ◆ Religion, ◆ Wisdom

Suggested Readings

- Coyle J (2001) Spirituality and health: Towards a framework for exploring the relationship between spirituality and health. *J Adv Nurs* 37(6):589–597
- Musick M, Traphagan J, Koenig H, Larson D (2000) Spirituality in physical health and aging. *J Adult Dev* 7(2):73–84
- Siefert L (2002) Toward a psychology of religion, spirituality, meaning-search, and aging: Past research and a practical application. *J Adult Dev* 9(1):61–70
- Tanyi R (2002) Towards clarification of the meaning of spirituality. *J Adv Nurs* 39(5):500–509
- Wink P, Dillon M (2003) Religiousness, spirituality, and psychosocial functioning in late adulthood: Findings from a longitudinal study. *Psychol Aging* 18(4):916–924

Suggested Resources

- American Society on Aging: Forum on religion, spirituality and aging, 2006, San Francisco, CA (28 February 2006); <http://www.asaging.org/networks/FORSA/a&s-122.cfm>
- Center for Spirituality, Theology and Health, Duke University, 2004, Durham, NC (29 February 2006); <http://www.dukespiritualityandhealth.org/index.html>

Stem Cell Research

Cynthia M. A. Geppert

Stem cells are among the most promising and controversial developments in the history of science. Stem cell

research offers enormous potential to improve the quality of life of older people and even to extend the life span. The technical, political, and ethical obstacles to the realization of this potential are also immense.

Stem Cells

Two main types of cells are the focus of current scientific hope and ethical concern: embryonic stem cells (ES) and adult stem cells (AS). ES cells are taken from embryos obtained through in-vitro fertilization and were first grown in a laboratory in 1998. AS cells are found in small numbers in many organs and tissues, such as bone marrow, brain, and liver where they mobilize to repair and regenerate damaged and diseased tissues. Scientists are working to find ways to grow adult stem cells in the lab. Both ES and AS cells have two amazing properties. First, because they are not yet specialized for a particular function in the body, they can undergo many divisions and renew their own lines. Second, certain scientific manipulations can induce the cells to develop into specialized cells, i.e., a heart or liver cell, and perform its function. Thus, stem cells can form tissues from many parts of the body; in Latin they are “pluripotent.”

Stem cell research may be particularly beneficial for elders. These cells could be used to treat injured organs or diseases like Parkinson’s disease, diabetes, and heart disease, all of which are more common and debilitating in the older population. Parkinson’s is a degenerative

■ Table 1

Differences between embryonic and adult stem cells

Embryonic stem cells	Adult stem cells
Pluripotent—can become any type of cell	Limited to differentiating into cell types from their tissue of origin, but some experiments suggest more plasticity
Large numbers can easily be grown in laboratory	Few in body and difficult to grow in laboratory (large numbers needed for therapies)
As from another person, could trigger rejection requiring immunosuppression, not yet shown that rejection will occur	Use of person’s own cells means they would not be rejected

neurological disease that afflicts over 2% of individuals over age 65 and results in progressive loss of dopamine producing neurons that control movement. The result is tremor, rigidity, and decreased ability to move and function. Stem cell treatment for Parkinson's would involve inducing ES to differentiate into these neurons and then transplanting them into human brains where it is hypothesized they would begin to produce dopamine, alleviating immobility and other symptoms.

However, many technical problems remain to be resolved before either ES or AS can enter the mainstream of clinical medicine, including distinguishing authentic stem cells, decoding the signals that trigger differentiation, avoiding uncontrolled growth as seen in tumors, targeting the delivery of the cells, and preventing rejection. There are also important differences between the two cell types with salient implications for aging and public health, which are summarized in [Table 1](#).

Stem Cells and Aging

Most cells have a defined period of between 30 and 50 divisions, after which they are no longer renewable. This limited replacement capacity is thought to be one of the main mechanisms of aging—it is our organs and their functioning that keep us alive. Scientists speculate that stem cells, with their limitless capacity for self-renewal, could become a “molecular fountain of youth” that would regenerate tissues indefinitely, thus extending life dramatically. This longer life would also be much freer from disease because the major diseases of old age such as heart disease, cancer, and stroke would be treatable with stem cell therapy. Twelve million older people in our country suffer from chronic conditions, such as arthritis, that cause disability, pain, and loss of function. These conditions would be either cured or improved through the use of stem cells. Even organs damaged beyond repair could be transplanted with stem cells. The public health savings in both dollars and human suffering would be incalculable.

Stem Cells, Aging, and Public Health Ethics

Perhaps even more daunting than the scientific challenges, which must be resolved before stem cell therapy becomes a reality, are the political and ethical dilem-

mas that will be difficult to reconcile. The central conflict in the ethics of stem cell research involves the use of ES cells that require experimentation and use of embryos. Opponents hold the destruction of human life to relieve the suffering of other persons as morally unacceptable. Religious considerations are paramount for many of those who oppose stem cell research with ES cells, as they believe all life is sacred and cannot be used as a means to an end. They instead advocate intensified research into AS cells. Proponents of ES cell research argue that the duty to relieve suffering justifies the use of embryos, particularly when the majority of those created for in-vitro fertilization are discarded rather than implanted. More philosophical and scientific values tend to influence those who see ES cell therapy as permissible. They believe that embryos are not yet persons. Therefore, their donation toward the worthy goal of saving lives of those who are persons offers the best prospects for effective stem cell based therapies.

Political positions derive from these moral stances and are the most contentious aspect of the debate, as political figures influence funding for scientific research into stem cells. President Bush established federal guidelines for stem cell research in 2001. Only stem cells derived from ES created for reproductive purposes may be used. The embryos must be no longer needed for fertility treatments, the donor must consent to use of the embryo, and no financial incentives can be provided to donors. Approximately 64 ES lines existed prior to these guidelines, but scientists argue that only a few lines are accessible and viable because of biological limitations and legal restrictions. States, private research companies, and foreign countries to which the criteria do not apply are making impressive progress in stem cell research. Even Congress is considering less restrictive provisions for US researchers precisely because the public health ramifications for older citizens are so wide-ranging and far reaching.

Related Topics

[Ageism](#), [Alzheimer's Disease](#), [Cardiovascular Disease](#), [Ethics](#), [Parkinson's Disease](#)

Suggested Readings

Lanza R, Rosenthal N (2004) The stem cell challenge. *Sci Am* 290(6):92–99

- Lo KC, Chuang WW, Lamb DJ (2003) Stem cell research: The facts, the myths and the promises *J Urol* 170(6):2453–2458
- Pedersen RA (1999) Embryonic stem cells for medicine. *Sci Am* 280(4):68–73

Suggested Resources

- American Federation for Aging Research (2003) Stem Cells Information Center (11 November 2005); www.afar.org
- Centers for Disease Control. Healthy aging: Preventing disease and improving quality of life in older Americans, July 2005, Atlanta, GA (11 November 2005); http://www.cdc.gov/nccddphp/aag/aag_aging.htm
- Guenin L The ethics of embryonic stem cell research (11 November 2005); <http://www.isscr.org/public/ethics.htm>
- International Society for Stem Cell Research (11 November 2005); <http://www.isscr.org/index.htm>
- National Institutes of Health (2002) Stem Cell Basics (11 November 2005); <http://stemcells.nih.gov/info/basics/>
- Scientific American Online (11 November 2005); <http://www.sciam.com/index.cfm>
- University of Wisconsin Stem Cell Web Site (11 November 2005) <http://www.news.wisc.edu/packages/stemcells/>

Stigma

Josh Reiher · Thomas Heinrich · Laura Roberts

Stigma is a term originally used by the ancient Greeks to refer to a sign or mark on the body that designated the bearer as a morally flawed person. Centuries later, the plural form “stigmata” would give reference to the marks left on Christ’s body during crucifixion. In the past century, however, the term has shifted away from the physical reference to give greater emphasis to the social and cultural meaning. Erving Goffman, the sociologist who pioneered modern social stigma research, defined the word in contemporary terms as “an attribute that is deeply discrediting.” More recently, Link and Phelan have emphasized how stigma exists “when elements of labeling, stereotyping, separation, status loss, and discrimination occur together in a power situation that allows them.”

Stigma is an inherently relational concept. For stigma to exist, there must be individuals who have a social identity that is distinct, separable, and devalued, and there must be individuals within the social context who see themselves “ideal” or “better” in some manner

that is distinguishable from the people who “belong” to the stigmatized group. An essential aspect of stigma is interpersonal influence or power; stigma does not exist in the absence of an asymmetry of social, economic, and political power across individuals and across groups in societies. It takes power to stigmatize others, and being empowered decreases one’s vulnerability to being stigmatized.

Stigma is understood to be different from shame, although these ideas are related. Shame is defined as a painful emotion caused by consciousness of guilt, shortcoming, or impropriety. It is conceptualized as representing an individual’s internalized subjective response to the assault of stigma. The devaluation of one’s social identity through stigma and shame may severely undermine one’s self-esteem, sense of self, and feeling of competence in the world. Many clinicians and social scientists have observed the phenomenon of “self-loathing” that people in stigmatized groups may experience. These powerful negative effects, taken together, serve to further diminish the positive social roles of stigmatized individuals.

Implications for Elders

The stigma process—the linking of labels to attributes that are perceived as flawed, not ideal, and of lesser value and worth—may be an important issue influencing the lives of elders in our society. Elderly persons may be understood as constituting a vulnerable group that differs from the norm of our society where youthfulness, strength, and independence are valued and admired. Elders may thus experience stigma associated with the perception of being weak, frail, and immobile. Stereotypes related to “failing” physical and mental health and diminished productivity and contribution within communities (even when contrary to the true health, productivity, and contribution of individual elders) may be an adverse pressure and source of age-related discrimination in our society. These concerns are especially keen for elders with multiple potential sources of vulnerability and stigma, such as older persons who suffer from serious physical or mental illnesses, who are immigrants, who are racial minorities, or who derive from distinct cultural or religious backgrounds.

Fisher performed an interesting study on the effects of stigma on elders who relocate to retirement facilities. The study concluded that facility residents felt

pitied and patronized by others and that relocation to an institutional setting was oftentimes psychologically damaging to the residents. Link's work suggests that stigmatizing conditions (e.g., alcoholism) are seen by some as being a reflection of moral failure rather than medical illnesses and that diseases that are seen as more "biologically determined" are less stigmatizing overall. Other studies have suggested that individuals respond to negative social labeling by becoming demoralized and fearful of interpersonal rejection, which in turn has its own adverse consequences. A study by Crocker and Major, for instance, indicated that stigma is linked with more negative outcomes in work lives and personal lives, and that the transition to a stigmatized group may be marked by unemployment and income loss. Finally, empirical work suggests that stigmatized individuals may develop maladaptive coping strategies, such as secrecy or concealment of disability; isolativeness; refusal or rejection of beneficial interventions such as medications, canes, wheelchairs, or hearing devices. Key challenges for stigmatized individuals are thus confronting the prejudicial attitudes of the general public and generating constructive adaptations despite the negative pressures associated with stigma.

Although stigma exists in all societies, the stigma associated with aging varies. In Western culture, physical disabilities, neurological deterioration, medical illness, and mental disorders are all stigmatized, and these contribute to the stigma experienced by elders. Hispanic communities, especially those with strong social networks, appear to attach less stigma to elders. Among Asian communities, elders are not stigmatized but affirmed and honored.

Stigma is a potent influence in our society, and it represents a negative factor affecting the lives of millions of elderly Americans. With the growing number and proportion of elders in our society, it may be that perceptions of "the norm" will naturally evolve in the future and older people will experience less stigma than they do presently. Nevertheless, proactive efforts to address and diminish the stigma attached to aging may allow our society to provide a more enlightened, compassionate, and respectful environment for our elders.

Related Topics

➤ [Americans with Disabilities Act](#), ➤ [Discrimination](#)

Suggested Readings

- Crocker J, Major B, Steele C (1998) Social stigma. In: Gilbert DT, Fiske ST (eds) *The handbook of social psychology*. McGraw Hill, Boston, MA
- Fisher BJ (1990) The stigma of relocation to a retirement facility. *J Aging Studies* 4(1):47–59
- Goffman E (1963) *Stigma: Notes on the management of spoiled identity*. Prentice Hall, Englewood Cliffs, NJ
- Link BG, Phelan JC (2001) Conceptualizing stigma. *Ann Rev Sociology* 27:363–385
- Markidas KS, Miranda MR (1997) *Minorities, aging, and health*. Sage Publications, Thousand Oaks, CA

Suggested Resources

- DHHS Resource Center to Address Discrimination and Stigma;
http://www.adscenter.org/topics_materials/g-orgs.htm

Stress

Katherine Crow

Stress is a medical term for a wide range of strong external stimuli, both physiological and psychological. Stress can cause a physiological response called the general adaptation syndrome, first described in 1936 by Hans Selye. Selye separated the physical effects of stress from other physical symptoms by observing that patients suffered physical effects not caused directly by their disease or medical condition. He described the general adaptation syndrome as having three stages: alarm reaction, where the body detects the external stimulus; adaptation, where the body defends against the stressor (e.g., source of stress); and exhaustion, where the body begins to run out of defenses.

There are two types of stress: eustress (positive stress) and distress (negative stress), roughly meaning challenge and overload respectively. Both types of stress may be the result of negative or positive events. Eustress is essential to life, like exercise to a muscle, however distress can cause disease. Furthermore, it is important to keep in mind that what causes distress for one person may cause eustress for another, depending upon each individual's perception of life. Stress can directly and indirectly contribute to general or specific

disorders of the body and mind, and have a major impact on the physical functioning of the body. Such stress raises the level of adrenaline and corticosterone in the body, which in turn increases the heart rate, respiration, and blood pressure and puts more physical stress on bodily organs. Long-term stress can be a contributing factor in obesity, heart disease, cancer, high blood pressure, stroke, and other illnesses.

Symptoms of stress can include physical symptoms (e.g., sleep disturbances; back, shoulder, or neck pain; high blood pressure; and immune system suppression making one more susceptible to colds, flu, and infections), emotional symptoms (e.g., anxiety, depression, irritability, memory problems, and substance abuse), and relational symptoms (e.g., increased arguments, isolation from social activities, road rage, and overreactions).

Except for major catastrophes, few events are stressful in themselves. Stress occurs when one perceives a situation as threatening. Stress may be linked to external factors such as the state of the world, the country, or one's community; unpredictable events; or family-related issues. Stress can also result from one's poor health-habits, negative attitudes and feelings, unrealistic expectations, or perfectionism.

Older adults often face a great number of stresses that can be caused by a broad range of events and situations. Stresses can be physical or social. They can be an ongoing part of day-to-day life or caused by sudden traumatic events. Common stresses for older people include diseases or health conditions, perceived loss of social status after retirement, and death of a spouse or partner.

Chronic diseases and conditions affect most older adults. Family members, especially spouses or partners, are most often caregivers. More than 44 million Americans (mostly women) care for family members of all ages. Many older adults are also caregivers for another family member. Caregivers have twice the risk as others for mental and physical health problems. They are also more than twice as likely to be taking medications to relieve anxiety or stress. Social isolation, family disagreements, and financial hardship are common problems associated with long-term caregiving.

As people age, the death of friends and family becomes more common. Losing and grieving for a spouse or partner is one of the most traumatic situations commonly faced by older adults. More than 1 million people (mostly women) were widowed in the United States in 2003. It is expected that this number

will increase to 1.5 million every year by 2030. Other losses that may also cause grief include loss of sight or hearing and losses in function caused by illnesses (e.g., trouble walking from arthritis.) These and other negative life events place a heavy burden on older adults.

People have many different roles throughout their lives. They are children, parents, friends, workers, patients, students, sports enthusiasts, artists, etc. One of the most dramatic role changes involves retirement. When older adults retire, they leave work and social roles that likely provided economic rewards as well as social status. In addition, older people may find that there are changes in their personal relationships after retirement. For example, spouses or partners may find themselves spending much more time together than they ever did before, which can cause increased stress. Older parents may add the role of grandparent or even great-grandparent, which brings both new rewards and demands. Losses in function may place older adults in the position of asking for help, rather than providing it. Similarly, another's losses may place someone in a caregiving role. These role changes can be stressful and affect both mental and physical health.

Many social factors affect how people think about themselves and how others think about them. Sex, race, and economic status all affect one's real and perceived social status. These factors also can affect the resources that are available to help cope with aging and health. For example, it is difficult for poorer people to use support programs or community activities that cost money. Ethnic or cultural backgrounds may also have a major effect on peoples' outlook and how they deal with situations. For instance, some people may agree to only those treatments that are acceptable in their culture.

Problems caused by stress often relate to how people deal with the stressful situation. There are positive ways to deal with stress, even when the stress is beyond one's control (e.g., the death of a loved one). Learning positive behaviors can improve how one understands and copes with stress. For example, people can learn how to take more control of their response to a stressful situation. They can also become more aware of social services and programs that are available. Family counseling and therapy can also strengthen social relationships with family and friends.

Coping strategies are emotional and mental responses that help one deal with stress through positive reinforcement and reinforced self-esteem. Al-

though there are a number of coping strategies, a strong belief in self and one's ability to deal with difficult situations is particularly successful. This is true for many kinds of stress, including those related to disease, loss in function, and changes in social roles. Feelings of self-confidence and personal control can help improve function and overall quality of life, even in the face of physical disability. For example, thinking confidently and optimistically in the face of bad news might help meet the challenge and increase the likelihood of a good result. Another coping strategy people tend to adopt with age is to reduce the number and kinds of things they do, but to maintain those activities that they like the most and do well. Although performance and abilities may lessen over time, older adults can continue to do the things they enjoy. Participating in family and community activities is a major source of personal satisfaction. Being involved plays an important role in improving self-esteem and giving meaning to life. This is true for people of all ages, but is especially important for older adults. Healthy behaviors have positive effects on overall well-being at any age. Positive behaviors include being physically active, eating a healthy diet, not smoking, drinking alcohol in moderation, and practicing relaxation or stress-reduction techniques. Although these are physical behaviors, they are also important psychologically and socially. For example, older adults with strong feelings of personal control and self-esteem are more likely to practice healthy behaviors. Similarly, healthy behaviors are likely to promote self-esteem and feelings of accomplishment in older adults.

Related Topics

[Caregiving and caregiver burden](#),
 [Coping](#),
 [Retirement](#),
 [Social stress](#),
 [Social support](#)

Suggested Readings

Stanley MA, Novy DM (2000) Cognitive-behavior therapy for generalized anxiety in later life: An evaluative overview. *J Anxiety Disord* 14:191–207

Suggested Resources

- American Geriatrics Society, Foundation for Health in Aging. Psychological and Social Issues. New York, NY (1999–2002); www.healthinaging.org/agingintheknow/chapters_print_ch_trial.asp?ch=3
- John D, Katherine T. MacArthur Research Network on Socioeconomic Status and Health. Network Administrator, University of California, San Francisco, San Francisco, CA (2005); www.macses.ucsf.edu/
- National Institute of Child Health and Human Development (2002) Stress System Malfunction Could Lead to Serious, Life Threatening Disease. Rockville, MD (2005); www.nih.gov/news/pr/sep2002/nichd-09.htm
- The Rotary Club of Santa Monica and Center for Healthy Aging. Stress: Signs and Symptoms, Causes and Effects. Santa Monica, CA (1996–2005); www.helpguide.org/mental/stress_signs.htm
- Wein, H. (2000). Stress and Disease: New Perspectives. National Institutes of Health. (2005); www.nih.gov/news/WordonHealth/oct2000/story01.htm
- Wikipedia. Stress. St. Petersburg, FL (2005); [http://en.wikipedia.org/wiki/Stress_\(medicine\)](http://en.wikipedia.org/wiki/Stress_(medicine))

Stroke

Julie K. Schulman

Strokes are the third leading cause of death in the United States, following only coronary heart disease and cancer. They are also the most common cause of neurologic impairment other than Alzheimer's disease. Each year, 700,000 people have a new or recurrent stroke. The Centers for Disease Control and Prevention (CDC) estimates that every 45 s, someone in the United States suffers a new or recurrent stroke, and every 3 min, someone in the United States dies from a stroke.

A stroke is a type of brain injury that occurs in one of two ways. The most common type, accounting for 88% of all strokes, is an ischemic stroke. This happens when a vessel that supplies blood to an area of the brain is blocked, causing the death of surrounding brain cells that are normally supplied by the oxygen carried in the blood. The second type of stroke is a hemorrhagic stroke, which occurs when a blood vessel ruptures and bleeds directly into the brain, damaging brain cells in that area. The area of cell death that results in either case is called an infarct.

The most common initial symptoms of stroke are sudden numbness or weakness of the face, arm, or leg, particularly on one side of the body; sudden confusion, or trouble speaking or understanding; sudden trouble with walking, dizziness, or loss of balance or coordination; or a sudden, severe headache with no known cause. The variety of presenting symptoms reflects the many different specialized areas of the brain in which a stroke can occur. A stroke that occurs in the motor cortex of the brain, for example, may produce a physical symptom such as weakness in one leg. On the other hand, a stroke in the language centers of the brain can produce sudden problems with communication such as slurred or incomprehensible speech, or difficulty in understanding speech.

A person can develop symptoms of a stroke that last less than a day. This is called a transient ischemic attack (TIA). TIAs usually last about 90 min and may be caused by a partly blocked blood vessel, a small embolus that briefly blocks a blood vessel and then disintegrates, or intermittent small amounts of blood leakage from an aneurysm. TIAs should always prompt a rapid medical evaluation, because the data shows that approximately one third of people who have TIAs will eventually have a stroke. One study showed that 10% of people treated in the emergency department for a TIA had a stroke within 90 days. The prevalence of TIAs, like strokes, increases with age. In men, the prevalence increases from 2.7% for ages 65–69 to 3.6% for ages 75–79. For women, it is 1.6% and 4.1%, respectively.

Almost three quarters of all strokes occur in adults over 65. The major risk factors for stroke include atherosclerosis, heart disease, hyperlipidemia, high blood pressure, diabetes, smoking, and arrhythmias. Atherosclerosis—the thickening of blood vessel walls with fatty deposits, which makes the vessels more prone to blockage and more vulnerable to rupture—develops slowly over many years, so that the risk of having atherosclerosis increases as people age. Most other medical risk factors, such as hypertension or heart disease, are either more common in the elderly, or more serious, which leads to the higher incidence of strokes.

The distribution of strokes is different in seniors than at younger ages. On average, men are more vulnerable to strokes, with an incidence rate of strokes that is 1.25 times that in women. However, women become increasingly vulnerable to stroke with age and particularly after menopause, so that at older

ages, the gender difference disappears. At age 65–69 the male/female incidence ratio is 1.59, but by age 75–79 it is 1.35, and by age 80 and older, it is 0.74. In fact, because women tend to live longer than men and there are larger numbers of women in the elderly population, each year 40,000 more women than men have a stroke.

Strokes have a particularly dramatic impact on mortality and morbidity in the elderly. In adults over 55, the lifetime risk of stroke is greater than 1 in 6. About 15% of people who have strokes die in the hospital, and this number is higher in the elderly. In those who survive, the consequences of a stroke—which include paresis (weakness) or paralysis on one (hemiparesis) or both sides of the body, blindness, or difficulties understanding or producing speech (aphasia)—can be mild or severe. In one study of people aged 65 and over who had an ischemic stroke 6 months earlier, 50% had some hemiparesis, 30% were unable to walk without assistance, and 19% had aphasia; 26% were living in a nursing home. The older that someone was at the time of the stroke, the more likely they were to have significant deficits afterwards.

It is vital to remember that many strokes are preventable, and should not be seen as an inevitable event as people age. Blood pressure and cholesterol levels can be improved by maintaining a normal weight and eating a healthy diet that is low-fat and limits salt intake. Quitting smoking leads to a significant decrease in the risk of stroke after 2 years, and to a risk that is no higher than that of nonsmokers after 5 years. Physical activity is also very important, and has been proven in a number of large studies to significantly reduce the risk of stroke in all age groups. People at particular risk for strokes can take antiplatelet medications such as aspirin or ticlopidine, or anticoagulant medications such as warfarin, which make blood clots less likely to form and thereby decrease the risk of strokes. Other medications can also be used to treat hyperlipidemia, hypertension, arrhythmias, or diabetes.

Another important point is that education about the symptoms of early strokes so that people get immediate medical treatment, can reduce morbidity and mortality. If a person has a clot blocking a blood vessel, they can be given tissue plasminogen activator (tPA) intravenously to break up the clot. However, it must be given within 3 h of having a stroke, so going to an emergency department as soon as symptoms begin is critical. In some instances, tPA can be applied endoscopically, directly at the site of the clot. If a person is

having a hemorrhagic stroke, medications that control blood pressure can improve the outcome. Excess brain pressure can be treated with medications, or in some cases, a ventriculostomy may be performed to drain excess fluid. If the bleeding is caused by an aneurysm that has ruptured, a coil can be placed endoscopically to seal off the aneurysm.

Related Topics

▶ Cholesterol, ▶ Heart disease, ▶ Rehabilitation, ▶ Smoking

Suggested Readings

American Heart Association (2005) Heart disease and stroke statistics—2005 update. American Heart Association, Dallas, TX

Kelly-Hayes M, Beiser A, Kase CS, Scaramucci A, D'Agostino RB, Wolf PA (2003) The influence of gender and age on disability following ischemic stroke: The Framingham study. *J Stroke Cerebrovasc Dis* 12(3):119–126

United States Department of Health and Human Services (2003) A public health action plan to prevent heart disease and stroke: Executive summary and overview. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Atlanta, GA

Suggested Resources

American Heart Association. Heart Attack/Stroke Warning Signs and American Stroke Association pages. Dallas, TX (2005); <http://www.americanheart.org>

Brain Attack Coalition. Bethesda, MD; <http://www.stroke-site.org>

Centers for Disease Control and Prevention. Cardiovascular Health Program. Atlanta, GA (21 December 2005); <http://www.cdc.gov/cvh>

National Institute of Neurological Disorders and Stroke. Bethesda, MD (2005); <http://www.ninds.nih.gov>

National Stroke Association. Englewood, CO; <http://www.stroke.org>

Subdural Hematoma

Jacqueline Spiegel

Subdural hematoma (SDH), sometimes referred to as subdural hemorrhage, is a condition in which a collection of blood forms between the dura (the thick, outermost protective covering of the brain) and the arachnoid (the transparent, middle covering of the brain). Tiny veins called bridging veins run between the dura and the surface of the brain. A subdural hematoma develops when these veins tear and leak blood, usually as the result of a head injury. There are two major forms of SDH: acute and chronic. Acute SDH typically occurs minutes to hours after direct head trauma; however, acute SDH can also occur from acceleration forces alone, as seen with whiplash, especially in the elderly and those taking anticoagulant medications. An acute SDH is considered a medical emergency. Chronic SDH usually develops over time. Chronic SDH may or may not be accompanied by a history of injury. Studies show that 20–30% of patients with chronic SDH recall no head injury. In a chronic SDH, the blood leaks from the same veins just at a slower rate resulting in distinctively different signs, symptoms, imaging characteristics, and prognosis from an acute SDH.

Risks include head injury, age, chronic use of aspirin, anti-inflammatory drugs such as ibuprofen or blood thinning (anticoagulant) medication, chronic heavy alcohol use, and numerous diseases associated with blood clotting problems. The risk for development of SDH is more common in people older than 60 years. The elderly are predisposed to cerebral atrophy (loss of brain cells and brain shrinkage) that stretches and weakens the bridging veins. Thus, these veins are more likely to break, even after a minor head injury.

The main symptoms of SDH are dependent on the type. Up to one third of patients with acute SDH are drowsy or comatose from the moment of injury. The other two thirds may experience symptoms of headache (one side), weakness or paralysis (one side), confusion, waxing and waning consciousness, and personality changes. On physical examination, the patient exhibits decreased consciousness, inability to respond to the external environment, changes in the shape or reaction of the pupils to light, and decreased motor strength or sensory loss in arms or legs. Signs of worsening condition include deteriorating level of consciousness an unresponsive pupil. The Glasgow Coma scale is used to evaluate patients in a coma. The symptoms and exam findings in chronic SDH are quite different. Headache is common, but not indicative of chronic SDH. The headache may fluctuate in severity, sometimes with position

changes. Other symptoms of slowed thinking, inattentiveness, change in personality, seizure, or mild weakness in an arm or leg emerges gradually over weeks or months after the original bleed. Because the presentation is vague, the initial impression is of a stroke, tumor, drug intoxication, depression, or dementia type illness. Occasionally, a chronic hematoma causes brief episodes of speech loss and weakness, which is indistinguishable from a transient ischemic attack (ministroke).

Diagnostic studies are indicated in patients with a history of head injury, symptoms indicating SDH, or high-risk populations (elderly, infants, alcoholics, anticoagulant therapy) with unexplained neurologic symptoms. The diagnostic approach to the evaluation of SDH is computed tomography or CT scan. On CT scan, the appearance of SDH is that of a “crescent moon” with the blood creating pressure on the brain tissue and shifting the contents within the skull. There can be more than one SDH at a time. Magnetic resonance imaging (MRI) can also be used in the evaluation of chronic SDH. MRI is not recommended in the evaluation of acute SDH.

As with the symptoms of SDH, the treatment also depends on type. Acute SDH typically requires immediate evacuation of the blood through burr hole craniotomy (surgical incision into the skull). In chronic SDH, clinical observation and repeat imaging studies are reasonable in patients with few symptoms, small blood collections, or who are poor candidates for surgery. Treatment with oral steroid medications alone may be sufficient, but surgical evacuation is more often successful to prevent recurrent fluid accumulations. In both cases, treating or controlling any underlying causes for the hematoma is necessary.

Acute SDH is associated with high death rate or long-term complications, not only due to the hematoma, but also the extensive brain injury resulting from the trauma. Simple SDH accounts for about half of all cases and implies that no brain injury is present. Complicated SDH implies that there is underlying injury to the brain. The death rate in simple and complicated SDH is 20% and 50% respectively. Acute SDH may go on to develop a subacute hematoma syndrome. This syndrome occurs days or weeks after the injury with symptoms of drowsiness, headache, confusion, or mild weakness on one side. Subacute hematoma syndrome is typically seen in alcoholics and the elderly. The prognosis in chronic SDH is much better than acute SDH, and many will heal

over time without surgery. However, the rate of recurrent chronic SDH is approximately 40%.

Related Topics

[▶ Headache](#), [▶ Stroke](#)

Suggested Readings

- El-Kadi H, Miele VJ, Kaufman HH (2000) Prognosis of chronic subdural hematomas. *Neurosurg Clin N Am* 11(3):553–567
- Nolan S (2005) Traumatic brain injury: A review. *Crit Care Nurs Q* 28(2):188–194
- Voelker JL (2000) Nonoperative treatment of chronic subdural hematoma. *Neurosurg Clin N Am* 11(3):507–13

Substance Use and Chemical Dependence

Ted Parran, Jr.

Euphoria-Producing Substances

Human beings have used euphoria producing substances—or drugs of potential abuse—for hundreds of thousands of years. Their use is due to the fact that all these drugs directly or indirectly produce quick surges of a neurotransmitter or brain chemical called dopamine. Dopamine is a substance which when released in the brain results in many different effects depending upon where in the brain it is released. When released in one part of the brain (the substantia nigra), dopamine relieves the symptoms of Parkinson’s disease. However when released from the middle part of the brain (the ventral tegmental area) to the front part of the brain (the prefrontal cortex) dopamine produces a feeling of pleasure or euphoria, in other words a “high.” Virtually every euphoria-producing substance of use, abuse, and addiction that has been carefully studied has been shown to result in this quick increase in dopamine and associated pleasurable euphoria sensation.

Classes of euphoria producing substances

Although this effect on dopamine is the characteristic

that results in the use of these drugs, they also have many other brain effects. It is these other brain effects that dictate the type or class of the drug. There are four main classes of euphoria-producing substances: stimulants, opioids, sedative hypnotics, and hallucinogens. Stimulants are drugs that result in the release of varying amounts of norepinephrine or adrenalin in addition to dopamine. Some examples of stimulants include cocaine, amphetamine, caffeine, nicotine, and many of the prescription medications for attention deficit disorder, narcolepsy, and weight reduction. The release of adrenaline results in dilated or widening of the pupils, increased attention, sharpened reflexes, increased blood pressure and heart rate, increased alertness, decrease need for sleep and decreased appetite. Therefore, stimulants directly produce euphoria from the release of dopamine, and produce “stimulation” from the release of adrenalin. In addition, the more potent amphetamines and cocaine tend to produce a high degree of judgment impairment as a consequence of over use and intoxication.

Opioids are natural or synthetic compounds related to opium that affects the mu or morphine receptor in the brain. Some examples of opioids include morphine, heroin, methadone, hydrocodone, oxycodone, and codeine. As a consequence of the stimulation of the μ receptors, opioids directly produce constriction of the pupils, dry eyes, dry mouth, constipation, sedation or sleepiness, slowing of the heart rate and breathing rate, decrease in blood pressure, and pronounced pain relief. An indirect effect, or unrelated side effect of opioids, is their stimulation of the release of dopamine, and hence production of euphoria. Interestingly, opioids do not tend to produce pronounced changes in judgment when producing intoxication and euphoria, certainly much less than that seen with potent stimulant or with alcohol intoxication.

The sedative hypnotic class of drugs is made up of substances that work on the γ -aminobutyrate (GABA) receptor system of the brain. GABA neurons are cells that excite and activate the brain, leading to wakefulness and at times even anxiety. Sedative hypnotic substances (like alcohol, antianxiety, and sleep medications) tend to depress or quiet down GABA nerve cells, causing a relief of anxiety, sleepiness, and when used at too high a dose unconsciousness (passing out), coma, or even death. Similar to opioids, sedative-hypnotics have an indirect effect of stimulating the release of dopamine, and hence production of euphoria. Similar to potent stimulants, sedative-hypnotic substances in general, but

especially alcohol, tend to produce a high degree of judgment impairment as a consequence of overuse and intoxication. Thus, bizarre behavior contrary to the patient’s up-bringing is commonplace with alcohol intoxication. These sedative hypnotics range from relatively weak substances like alcohol to very potent ones like the “date rape” drug rohypnol. An additional danger of sedative hypnotics is that they clearly increase in potency of effect when used in combination, markedly increasing the chances of serious overdose.

Hallucinogens are a diverse group of substances that alter perception as part of their central nervous system or brain effect. This group includes LSD, phencyclidine (PCP), marijuana, and many other naturally occurring hallucinogens contained in a variety of plants. Historically, the use of hallucinogens has been rare in the elderly. However, as the generation of people who came of age in America in the 1960s begins to approach old age, the prevalence of hallucinogen use—especially marijuana—will likely rise. Hallucinogens as a group, like the opioids, tend to produce a low degree of judgment impairment as a consequence of over use and intoxication. The altering of perception seems to include many different effects such as visual distortions, spatial distortions, and loss of time perception.

Euphoria-producing substances are primarily used for their ability to trigger a quick rise in dopamine, and thus an elevation in mood or euphoria. These same drugs have additional actions and effects that can generally be categorized into one of the above four classes.

The Continuum of Mood Altering Drug Use in the Elderly

Alcohol use, and to some extent other drug use, has been characterized as existing in our society as a gradual continuum. This continuum of levels of use is labeled as abstinence, low risk or casual use, risky use or “substance abuse,” and chemical dependence or addiction. Definitions of each of these use levels are as follows:

Abstinence These people are nonusers of mood-altering drugs and do not use even in low risk amounts. The highest rate of abstinence in American adults is seen among older women. Up to 50% of women over the age of 70 are abstinent from all euphoria-producing substances; many of them have been abstinent for life. As a

consequence, the prevalence of addiction or chemical dependence is substantially lower in older women, as much as one third less than their elderly male counterparts. Besides older women, abstinence is prevalent among three other groups in society: those from one of the relatively fundamentalist religious faith communities, those with a strong family history of addiction who do not want to take the risk of activating the disease in themselves, and those individuals with the disease of addiction who are in recovery and thus abstinent.

The most important challenge in abstinence for those who are in recovery from addictive disease is to maintain complete abstinence from euphoria-producing drugs. Although there are very rare instances when a medication that is euphoria-producing must be prescribed, the long-term use of these medications is generally considered quite dangerous for persons in recovery and should be avoided. Three common reasons for relapsing back to addiction are (1) trying to go back and control one's use of the previously addicting drug, (2) trying to use euphoria-producing drugs other than the one that was the previous addicting drug, and (3) being prescribed euphoria-producing drugs on a long term basis and reactivating addiction.

Low Risk Use These people are low level intermittent users of mood altering drugs who do not binge, use only in socially acceptable situations, and have little, if any, evidence of health risk from their use. The Federal Government has published *Sensible Drinking Guidelines* for adult men and women, which provides clear information about what drinking levels are associated with no detectable health risks. These guidelines stipulate at least a 30% lower level of alcohol use for women than for their male counterparts, and indicate that safe levels of consumption for the elderly should be at least 50% lower than safe levels of consumption for non-elderly adults.

Low-risk use is generally a very stable pattern of use, only in social situations, and always keeping to within the sensible use guidelines referenced above. The prevalence of this low-risk substance use (primarily alcohol) in the elderly population is about 50–60%, with substantially higher rates among elderly men. This is due to the fact outlined above that elderly women have quite high rates of complete abstinence. True social users never have to try to limit their use, consciously construct rules around their use, cut back on their use because of an embarrassing situation, etc. Persons with addiction problems constantly try to become low risk “social”

users, by cutting back and trying to control their use. In reality, low risk users never have to think about controlling their use; it just happens unconsciously.

The use of non-alcohol, non-nicotine, nonprescribed euphoria-producing substances (i.e. illegal drugs) is quite rare among the elderly. Also, it is difficult to discuss low-risk use of drugs other than alcohol in American society where possession of other drugs is illegal and thus carries serious potential consequences. For the foreseeable future, possession of non-alcohol, non-nicotine euphoria-producing drugs will remain illegal in this country, and thus low-risk use is not a term that can be easily applied to their use.

Substance abuse Substance abusers are individuals who use more alcohol than is considered healthy or who use any amount of nonalcohol or nonprescribed euphoria-producing drugs. The use-patterns (quantity and frequency of use) of substance abusers tend to fall within their general peer group norm, and there are rare adverse consequences from the use. Substance abuse is use of euphoria-producing drugs to a moderate to severe level of intoxication, but consistent with peer group norms. It is generally thought that substance abuse is a behavior that many people participate in during late adolescence and early adulthood, that evolves either into low-risk use or addiction, and that is under a good deal of voluntary control. Consequently, the elderly are basically not involved in substance abuse or “risky use.”

Chemical dependence or addiction Chemical dependence or addiction is clearly a chronic disease of the brain and bears no relationship with morality, education, social class, or ethnicity. (For more information on addictive disease see “Addiction.”) It is a primarily genetic illness that clusters fairly heavily in families. Addiction is characterized by the repetitive, intermittent, loss of control over the use of a euphoria-producing drug, resulting in problems in a person's life. As a consequence, addiction is generally not defined in terms of quantity and frequency of use, but rather in terms of patterns (loss of control) and consequences (repeated problems) of use.

The essential problem in addiction is this loss of control, and the resulting bizarre, uncharacteristic, erratic, or irresponsible behaviors. The societal costs of addictions are overwhelming. Over 70% of domestic violence, 70% of child abuse and 90% of childhood sexual abuse are thought to be addiction-related. In the

elderly, falls, progression of dementia, and incontinence are commonly associated with or worsened by addictive disease. The economic costs of addiction are estimated at 80–110 billion dollars per year, and addictions are considered the nation's number one health problem!

Related Topics

▶ Alcohol use, ▶ Depression, ▶ Substance use

Suggested Readings

- Council on Scientific Affairs, American Medical Association (1996) Alcoholism in the elderly. *JAMA* 275:797–801
- Liberto JG, Oslin DW, Ruskin PE (1992) Alcoholism in older persons: A review of the literature. *Hosp Community Psychiatry* 43:975–984
- Rigler SK (2000) Alcoholism in the elderly. *Am Fam Physician* 61(6):1710–1716

Suggested Resources

- <http://www.niaaa.nih.gov/>
<http://www.nida.nih.gov/>

Suicide

Deborah J. Gould

Suicide is one of the leading causes of death in the United States, with an incidence of 10.6 per 100,000 people. In 2000, almost 30,000 deaths in the United States were due to suicide, accounting for 1.2% of all deaths. Suicide was more frequent than homicide by a ratio of 5:3.

There are many factors that contribute to suicide. Some of the risk factors include male gender, age, substance abuse, a family history of suicide, poor social supports, medical illness, a history of previous suicide attempts, and history of abuse as a child. Most people who commit suicide have a psychiatric diagnosis such as depression, bipolar illness, or schizophrenia. In any given year, more than 18 million adults will experience some form of depression. Every year 12% of women

and 7% of men become depressed. The lifetime risk of developing depression is 20% for women.

Children and adolescents can also have depression. It has only been in recent years that depression in children has been acknowledged as being more than just a “phase” that the child or adolescent is going through. It is estimated that approximately 4% of adolescents become depressed annually. Suicide has become a major public health concern in this younger population. In 2000, the leading cause of death for 15–24 year olds was accidental injury followed by homicide and then suicide. Suicide was also the third leading cause of death for children aged 10–14.

On the other end of the age spectrum, older adults are disproportionately represented in the suicide statistics. In 2000, 13% of the US population was over the age of 65, but accounted for 18% of the suicides. The highest suicide rate is among males 85 years and older. In individuals aged 65 and above, the prevalence of a diagnosable depression is about 2%. Although depression is common in the older adult population, it should not be considered a normal part of aging. As in their younger counterparts, depression in the elderly requires treatment. It has been estimated that more than 75% of older adults who commit suicide have seen their primary care physician within a month of the suicide, and 40% have seen a physician within the week. This may be because older adults have a difficult time recognizing depression and often have physical rather than emotional symptoms. These physical symptoms are called “depressive equivalents.” Recognizing these symptoms as manifestations of depression can lead to timely diagnosis and initiation of appropriate treatment.

In all age groups, male gender is a major risk factor for suicide. Females attempt suicide three times as frequently as men, but the rate of suicide is four times greater for men. Men account for 81% of the suicides in people age 65 and above. For younger adults 20–24 years of age, the rate of suicide was seven times greater for men than it was for women.

Race also factors as a variable for the risk of suicide in the United States. In all age groups, African-American women have the lowest rate of suicide and white men have the highest. African-American males approach the rates for white males from ages 14 to 24, but then decline. For all age groups the rates for white-women are consistently higher than for African-American women and consistently lower than for African-American men.

The most common method of suicide is self-inflicted gunshot wound, accounting for 60% of all suicides. The presence of a firearm in the home has been found to be an independent risk factor for suicide in both sexes. In men the second leading means of suicide is hanging, and in women it is drug ingestion.

Depression, a risk factor for suicide, tends to run in families and the kind of depression that produces suicidal thoughts may also. The biology of depression is related to decreases in neurotransmitters in the brain, specifically serotonin and norepinephrine. New onset depression in later life may be related more to depletion of norepinephrine and may have a vascular origin. This type of depression may be an early symptom of dementia. The older antidepressants are called tricyclics and increase the availability of norepinephrine in the brain. Newer antidepressants called selective serotonin reuptake inhibitors (SSRIs) increase the amount of serotonin in the brain. There are also antidepressants that increase the levels of both norepinephrine and serotonin. A combination of antidepressants and psychotherapy is the most effective treatment for depression. However, recently there has been concern that the antidepressants that increase serotonin may increase suicidal thoughts, especially in children and adolescents. The Federal Drug Administration has recently issued warnings to this effect.

Suicide is a complicated problem with biological, psychological, and social factors contributing to its etiology. Research is currently being conducted to understand more fully the biological and genetic factors that may predispose to suicide. This knowledge will lead to improved medications. The psychological factors can often be addressed in psychotherapy. However, neither medication nor psychotherapy can be initiated until individuals at risk are identified and offered appropriate treatment. Knowing the social issues that contribute to suicide can help with evaluation and risk assessment. Substance abuse and depression can be treated simultaneously in programs called "dual diagnosis." The presence of cognitive decline in older adults can be ascertained earlier because of its probable relationship to depression. Social isolation, in part due to medical conditions, should be addressed in the older adult population and social services provided to establish good support systems. The research, treatment, and social changes required to have an impact on the suicide rate in the United States will require substantial financial investment in both the public and private sectors.

Related Topics

[▶ Depression](#), [▶ Firearms](#), [▶ Mental illness](#), [▶ Mood disorders](#), [▶ Parasuicidal behavior](#), [▶ Psychotherapy](#), [▶ Substance use](#), [▶ Violence](#)

Suggested Readings

Garlow SJ, Purselle D, Heninger M (2005) Ethnic differences in patterns of suicide across the life cycle. *Am J Psychiatry* 162:319–323

Suggested Resources

National Institute of Mental Health (NIMH) (2003) Older adults: Depression and suicide facts; <http://nimh.nih.gov/publicat/elderlydepsuicide.cfm>

National Institute of Mental Health (NIMH) (Sept. 2005) In harms way: Suicide in America; <http://www.nimh.nih.gov/publicat/harmsway.cfm>

Survivor Benefits

Janet L. Lowder · Mary B. McKee · Lisa M. Montoni

Some people provide for their loved ones by purchasing private life insurance policies and designating family members as the beneficiaries to receive the proceeds of these policies after their death. Pre-need, prepaid funeral contracts are fast replacing what used to be called "burial insurance," a small, low-premium life insurance policy designed to cover the insured person's funeral costs. Social Security only provides a \$255.00 as a one-time lump-sum benefit to the surviving spouse (not the brother or the nondisabled adult daughter or the niece) of a deceased wage earner.

Social Security, as we know it, is essentially a wage-replacement program that provides monthly cash income benefits to workers and their families. Workers who leave the work force because of disability or retirement file their own "life claim" for benefits; the families of deceased workers file a "death claim" for benefits to sustain them in the wage earner's absence. The number of years a wage earner must work and earn credits for their family to be eligible for Social Security

survivors' benefits depends on how young the worker is at death. The younger a person is, the fewer years he or she needs to work (never more than ten, sometimes as few as one and a half) to provide a survivor's benefit for a spouse or children.

Surviving spouse benefits (sometimes called a "widow's or widower's pension") are payable to a surviving spouse, but only if over 60, or at least 50 and disabled within 7 years of the spouse's death. Anyone who is not already disabled and does not work or does not remarry for more than the 7-year period and then becomes disabled cannot draw on the deceased wage-earner's work record. Such an individual may at any time qualify for Supplemental Security Income (SSI) benefits that are means-tested (low income and assets) but not tied to any worker's Federal Insurance Contributions Act (FICA) contributions. Full surviving spouse benefits are available as early as age 65 (approaching age 67 for those born after 1939), but reduced surviving spouse benefits are first available to the nondisabled survivor at age 60.

Also eligible for benefits on the earnings record of a deceased worker (subject to a family maximum on a single worker's earnings record) are minor children (under age 18, up to age 19 if they are still in school, not college). This includes children who are born after the wage earner's death, provided they are his or, conceivably, hers. Under-60, nondisabled surviving spouses only draw benefits if they have a nondisabled child under 16 in their care (parents of disabled children and the over-16 disabled children themselves continue to draw survivor's benefits until the disabled adult child (DAC) begins to draw benefits in his or her own name at age 18). Once the child turns 17, the surviving minor child still draws benefits, but the parent is expected to earn a living or remarry someone who is working and can support them. Ex-spouses may be entitled to benefits as well, depending on the length of the marriage, when they remarried, their own age and disability, and other factors, including whether they are caring for a disabled child of the deceased wage-earner. Even a parent over 62 who was dependent on the wage earner may draw benefits to replace the wages on which they had relied before they lost their adult child.

In general, healthy, working-age surviving spouses without young children in their care do not receive any automatic cash benefit (or health insurance) when the wage-earner on whom they may have grown dependent leaves the workforce due to his or her death. The wage

earner's FICA contributions are not for naught, however, since the surviving spouse will be able to draw on that deceased worker's earnings record when the survivor turns 60 (with certain exceptions among those who remarry). Generally, remarriage before age 60 will cut off your right to draw on your deceased spouse's work record. For those fortunate enough to remarry later in life, after age 60 (or 50 if disabled), they can bring their survivor's benefit with them to the marriage.

Do Social Security survivor benefits really replace the lost wages of the deceased worker? No, even considering that worker is no longer in the household eating, consuming utilities, dressing and driving to work so there are technically fewer people in the household needing support. The principal insured amount (PIA) is designed to reward those who contribute to the system, but it is never more profitable or financially better for the family for the worker to die or become disabled. Yet for many, even those who do carry some private life insurance, the Social Security survivor benefit is the greatest financial legacy they leave.

Related Topics

▶ [Social Security](#)

Suggested Resources

Cornell University Law School's Legal Information Institute Social Security Library; www.law.cornell.edu/socsec

National Senior Citizens Law Center; www.nsclc.org

Social Security Online, Widows, Widowers, & Other Survivors (18 November 2005) <http://www.ssa.gov/ww&os2.htm>

"Survivors Benefits" SSA Publication No. 05-10084 (May 2004) Social Security Administration

Systemic Lupus Erythematosus

Lori B. Siegel

Systemic lupus erythematosus (SLE) is a multisystem autoimmune disease that presents with a wide variety of clinical manifestations. The main immunologic defect is the production of antibodies to one's own self. The

immune system sees the normal human-proteins as foreign and attacks them causing inflammation and tissue destruction. The main organs involved are the joints, skin, kidneys, lungs, heart, and nervous system. SLE is primarily a condition in women during the childbearing years and is greatly influenced by estrogen and hormonal fluctuations.

Traditional SLE may be present in a variety of ways in a spectrum of severity. The clinical features often include fever, fatigue, and weight loss. The skin may have an associated rash, there may be pain in the chest as the lining of the lungs and heart become inflamed, and the joints may swell. A careful investigation may also find kidney involvement. The brain and peripheral nerves may be involved in a variety of ways as well. Laboratory investigations may reveal an immune-mediated anemia, low white-cell, and platelet counts. Special tests called antinuclear antibody titers (ANA) may also help identify that the patient has antibodies to their own proteins. Specific ANA types may be seen, which help predict organ involvement and prognosis.

The SLE in the elderly is quite rare but does exist. It may be due to a reaction to a medication, which primes the immune system to develop autoantibodies. Drug-induced SLE may be associated with any medication but is classically associated with cardiac arrhythmia medications (procainamide), anti-thyroid medications (propylthiouracil), antiseizure medications (phenytoin), and some antihypertensive medications (hydralazine). The cases of drug-induced SLE are usually milder and do not have major organ involvement and are not associated with tissue damage. These patients may experience arthritis, fatigue, and some chest pain due to inflammation of the lining of the heart and lungs. These symptoms may develop shortly after a medication has been started or it may occur months later.

A clue to determining whether the patient has developed drug-induced SLE is to check the ANA. It may be positive but in a homogeneous pattern, which shows that the cells when examined in the microscope light up completely in no specific pattern. The finding of antihistone antibodies and antibodies to single-stranded DNA is classic. The treatment is to stop the medication and treat the patient symptomatically with analgesics and nonsteroidal anti-inflammatory medications. Unfortunately, the ANA may remain positive for a long period of time. The patient should be educated that if their ANA is tested in the future, and it is likely to be positive; this finding will not be new and

will just reflect the previous drug exposure. A continuously positive ANA does not mean that the person has developed classic SLE.

There are a small percentage of people who develop SLE later in life but it is rare. Fortunately, it is mild and the diagnosis is usually based only on a positive ANA with some arthritis. Any individual, past childbearing years, who develops a positive ANA, should be evaluated for underlying infection or malignancy. The ANAs may also be positive in people who have no disease or those with TB and viral illnesses.

The treatment of SLE focuses on the symptoms. Nonsteroidal anti-inflammatory medications are used for arthritis and mild chest pain due to inflammation of the heart and lung lining. Hydroxychloroquine may be used for fatigue and skin disease. Other disease-modifying medications are used for more refractory conditions. In SLE of the elderly and drug-induced SLE, such advanced measures are usually not necessary and the side effects of these medications may have more devastating effects in this population.

Corticosteroid use should be reserved for life threatening or major organ system involvement of SLE. The side effects are significant and may seriously harm an older individual with other medical problems. Corticosteroids may exacerbate hypertension, cause glaucoma, accelerate and worsen atherosclerotic disease, alter lipids, and upset glucose control causing diabetes. They may also accelerate bone loss and increase skin fragility. They predispose people to infection and may cause psychosis, depression, and mania. All of these conditions may already be present in the older population and by adding this medication incorrectly or unnecessarily causes grave harm. It must be remembered that the SLE in the elderly population is usually mild, whether idiopathic or drug induced, and treating the symptoms is all that is usually needed. Good communication and the careful use of laboratory tests will help identify the correct diagnosis.

Related Topics

➤ [Autoimmune disease disorders](#), ➤ [Rheumatoid arthritis](#)

Testicular Cancer

Derek Raghavan

Cancer of the testis is a relatively uncommon malignancy in the general male community, but is the commonest cancer in men aged 18–30, with an annual incidence of about 5–7 new cases per 100,000 males per year. In this age group, most primary testis cancers are derived from germ cells within the testis and are known as germ cell tumors. There are two common types of germ cell tumor—seminoma and non-seminomatous germ cell tumors (NSGCT). The NSGCTs consist of three different pathological types—embryonal cancer, malignant teratoma, and choriocarcinoma. These tumors resemble aspects of the developing fetus under the microscope. Cancer occasionally occurs in the testis of men aged 60 and above, but there is less than 1 case per 100,000 males per year.

Lymphoma

In older men, testicular cancer may occur as a primary tumor or as a metastatic deposit. The most common tumor arising in the testis in elderly men is malignant lymphoma, most commonly of the non-Hodgkin's type. These tumors usually are found as part of a systemic syndrome, with lymphomatous tissue being identified in the lymph nodes elsewhere in the body and sometimes in other organs, such as lungs and brain. Testicular lymphoma is known to occur in association with lymphoma arising in the lymph nodes around the tonsils and sometimes in the central nervous system. Treatment depends on the distribution of the disease, but usually requires systemic chemotherapy with or without radiotherapy. Surgical removal of the testis may not be necessary, especially in the setting of multisite disease, although surgical removal and preventative radiotherapy to adjacent nodes may achieve cure in patients with extremely localized lymphoma in the testis.

Germ Cell Tumors: Seminoma

Seminoma is another primary testis cancer, usually found in men aged 25–35, but occasionally found in a patient aged 60 or older. This cancer, one of the germ

cell tumors, is characterized by a diffuse, large cell, symmetrical infiltration of the testis. The cells are characteristically rounded, with prominent nucleoli and are found distributed in sheets. The testis itself is usually symmetrically enlarged, with a firm to hard consistency. The tumor can present as a painless or a painful enlargement of the testis. Occasionally seminoma will spread via the lymphatic vessels to the abdominal (retroperitoneal) lymph nodes. Less commonly, patients will present with lung or bone metastases, whereas metastases at other sites are much less common. For a localized seminoma, treatment consists of surgical removal and preventative radiotherapy to the draining abdominal lymph nodes. For patients with established metastatic seminoma, chemotherapy is usually the treatment of choice. These cancers are usually cured, irrespective of the extent of disease, provided that the correct treatment is used.

Spermatocytic Seminoma

A variant of seminoma that is more commonly found in the elderly than in young patients is spermatocytic seminoma. This tumor is not thought to be derived from germ cells, although its origins remain somewhat controversial. In addition to its occurrence in an older aged population, it can be differentiated from classical seminoma by its lower tendency to metastasize and by the presence of a curious pattern of calcification within the tumor, best seen on x-ray or computerized tomographic (CT) scan. Surgical removal of the testis is usually sufficient treatment for spermatocytic seminoma, although very rarely radiotherapy or chemotherapy may be required.

Nonseminomatous Germ Cell Tumors

Rarely, nonseminomatous germ cell tumors may occur in the testis of the elderly male. In this situation, treatment will depend on the extent of the disease. The primary tumor is usually treated by surgical removal. Staging tests, including the measurement of tumor markers (proteins released into the blood by germ cell tumors) and CT scans, will determine whether the tumor is localized to the testis or has spread to the lymph nodes of the abdomen or to non-nodal sites, such as lungs, liver, bones, and brain. If the tumor is localized to the testis, treatment consists of surgical

removal and either close observation or an operation to remove the lymph nodes of the abdomen (retroperitoneal lymph node dissection). The lymph node dissection gives information about whether the tumor has spread to the nodes, and can be curative if there are only microscopic amounts of cancer in the nodes. If the tumor has spread extensively to the abdominal nodes or further, treatment usually consists of chemotherapy, and most often a combination of three anticancer drugs, cisplatin, etoposide, and bleomycin. This is quite an aggressive treatment, but usually results in cure. However, the older patient is at risk of suffering increased complications from chemotherapy.

Other Testicular Tumors

Other less common testicular tumors are occasionally found in elderly men. These include tumors that arise in the Leydig cells and Sertoli cells of the testis. Both Leydig cell tumors and Sertoli cell tumors usually tend to be localized. These tumors form a spectrum from benign to malignant, although the benign tumors tend to be more common. They usually present as a testicular swelling, and the diagnosis is usually made after a pathological analysis of the surgically removed tumorous testis. Usually these tumors are cured by orchiectomy (removal of one or both testis) alone, although occasionally a retroperitoneal lymph node dissection will be carried out in an attempt to control metastases to other areas. This will be considered particularly for tumors that have spread up the spermatic cord or with a high mitotic index (a high rate of cell division). The role for radiotherapy or chemotherapy is quite limited.

Metastases to the Testis

The testis is sometimes the site of metastatic deposits in older aged men. Tumors known to metastasize to the testis include those arising in the lung, prostate, and malignant melanoma. Occasionally leukemia, a cancer primarily of the bone marrow, will involve the testicles. In the older aged patient with these tumors, treatment is usually palliative (rather than curative) and depends on the sites of involvement and the pathology of the primary tumor. For example, metastatic small-cell lung cancer with metastases to the testis will usually be treated by systemic chemotherapy, sometimes augmented by local radiotherapy. Surgery to the testis is usually not required, other than to

achieve a tissue diagnosis. This can be done by a needle biopsy, depending on the clinical context. Metastases from prostate cancer may be treated by hormonal manipulation (castration) as prostate cancer is very sensitive to suppression of androgens.

Related Topics

▶ Cancer, ▶ Chemotherapy, ▶ Prostate cancer, ▶ Testis

Suggested Readings

- Gospodarowicz MK, Sturgeon JF, Jewett MA (1998) Early stage and advanced seminoma: Role of radiation therapy, surgery and chemotherapy. *Semin Oncol* 25:160–173
- Horwich A, Hamilton CR, Fisher C (1999) Rare tumors of the testis and para-testicular tissues. In: Raghavan D, Brecher M, Johnson D, Meropol N, Thigpen JT (eds) *Textbook of uncommon cancer*, 2nd edn. Wiley-Liss, Chichester, pp 95–113
- Raghavan D, Neville AM (2003) Biology of germ cell tumors. In: Raghavan D (ed) *American Cancer Society Atlas of clinical oncology—Germ cell tumors*, BC Decker Inc, Hamilton, London, pp 1–15

Suggested Resources

- American Society of Clinical Oncology (2002) People Living with Cancer website, pages on testicular cancer. Alexandria, VA; www.plwc.org
- American Cancer Society (2005) Learn about testicular cancer. Atlanta, GA; www.cancer.org
- National Institutes of Health. Testicular cancer page. Bethesda, MD (December 6, 2005); <http://health.nih.gov/result.asp/661>
- The Testicular Cancer Resource Center (1997–2006) Information about testicular cancer and treatment for patients, caregivers, family, friends, and physicians. Website hosted by the Association of Cancer Online Resources (ACOR), (9 February 2006); www.acor.org/diseases/TC

Testis

Derek Raghavan

The testis (testicle) is a complex, glandular structure that functions as the source of sperm production, and which is the site of testosterone production. During embryological development, two testicles are usually formed, and descend to sit in the scrotum, adjacent to the midline. Each testis consists of seminiferous

tubules and interstitium. The seminiferous tubules contain germ cells, which mature into sperm, and Sertoli cells, which support that maturation. The interstitium contains the Leydig cells, which make male hormones, predominantly testosterone, with the stimulus to production coming from the hypothalamic–pituitary axis. Luteinizing hormone releasing hormone (LHRH) stimulates production of luteinizing hormone (LH) from the pituitary, and this stimulates production of testosterone. Testosterone production has a diurnal rhythm, with the maximum production normally being in the morning.

Testosterone acts on hormonally responsive tissues, such as the prostate, via direct action or after conversion to a metabolite, such as dihydrotestosterone (DHT). It can also be converted into estrogen by the aromatase enzyme. In the situation of androgen responsive tissues, activation of androgenic function is mediated through androgen receptors, transcription factors that are activated by cellular entry of testosterone, usually in the form of DHT.

Older men have lower blood concentrations of androgens, including testosterone, and similar chemicals that arise from the adrenal glands. This decline is usually gradual, progressing through adult life. For example, the circulating level of testosterone is typically in the range of 400–700 ng/dl in men aged 40 years, and may fall to the range of 300–400 ng/dl in men aged 80 years. Around 50% of men older than 70 years have blood levels of testosterone below the normal range.

Low circulating testosterone levels can have many consequences, including reduction in muscle mass, muscle strength, bone mass, libido, and sense of well-being. Anemia may sometimes accompany this situation as erythropoiesis (the formation of red blood cells) is an androgen-dependent function. It has been suggested that reduced levels of circulating androgens may cause impairment of cognition. In some cases, testosterone replacement therapy is prescribed, although caution must be exercised since testosterone therapy may stimulate growth of an occult prostate cancer. The decision to use such treatment represents a balanced judgment that weighs the potential risks and benefits.

The aging testis is subject to atrophy and to infection. Most infections probably arise from the urinary tract, often as a secondary phenomenon in men with benign prostatic hyperplasia, a benign age-related increase in prostatic tissue. As a result of the increased size of the prostate, which surrounds the urethra as it emerges from the lower end of the bladder, there is a

tendency to urinary stasis or slowing, creating a nidus for the development of infection. Occasionally, bacteria from the urine will lodge within the testicles, creating inflammation and infection, so-called orchitis. Orchitis can arise from bacteria, or occasionally will be due to a viral infection (more common in the young). As discussed in a separate section, the testis will sometimes be the site of a primary or secondary malignancy (see “Testicular Cancer”).

Related Topics

➤ [Benign prostatic hyperplasia](#), ➤ [Testicular cancer](#)

Suggested Readings

- Bacon CG, Mittleman MA, Kawachi I, Giovannucci E, Glasser DB, Rimm EB (2003) Sexual function in men older than 50 years of age: Results from the health professionals follow-up study. *Ann Intern Med* 139:161–168
- Harman SM, Metter EJ, Tobin JD, Pearson J, Blackman MR, Baltimore Longitudinal Study of Aging (2001) Longitudinal effects of aging on serum total and free testosterone levels in healthy men. *J Clin Endocrinol Metab* 86:724–731
- Wang C, Swerdloff RS (1997) Androgen replacement therapy. *Ann Med* 29:365–370

Temporary Restraining Orders

Michael Darflinger

According to the US Census Bureau, approximately 28.9% of the American people are 50 or over. This equates to approximately 84 million men and women, many of whom will need a variety of legal services as they continue their day to day lives in an ever more complex world. This may include a need for temporary restraining orders or orders of protection.

In most states there are two options for individuals who have been or fear being abused and neglected to obtain legal protection: an Emergency Order of Protection (EOP) or a similarly named order of protection, which is based on state legislation; and the common law process for a Temporary Restraining Order (TRO), or the state’s equivalent. Each option of protection has multiple steps.

The qualifications for an EOP vary from state to state. For example, in Illinois, the person who has been abused or neglected or fears such must reside in the same household as the abuser, be in a relationship with the abuser as a partner, spouse, or dating, or be a family member of the abuser. The EOP is fairly common between individuals who are married or in a relationship; however, the legislation also covers people who are unable to protect themselves due to advanced age. If someone who is older is living with a stranger or family member, whether or not someone in that household is a primary caregiver or whether or not that person is dependent upon anyone in the household, the older person is protected by the statute and can obtain an EOP. The protection also includes individuals who live in shelters. The abused person may seek protection from family members and people with whom they are in a relationship with even if they do not reside in the same household. However, strangers, people who the victim knows but is not in a relationship with, and abusers who are employees of a resting home where the victim resides for example, do not appear to be covered by this statute.

In other states, such as California and New York, the process varies. In California, for example, anyone can obtain an Emergency Protective Order. However, in order to do so, the person abused must call the police who will then come out and take a report. At the same time, the police, if asked to do so, will submit a form requesting an EPO and fax it to an on-call judge, who will make a determination on the spot and the abuser will be served. The abuser must be served for the order to be effective. The entire process may take less than two hours. At the same time, a court date for a permanent protective order will be made.

The process in New York is slightly more complex. The District Attorney will have to either include a request for an EOP (or the equivalent) with or without any criminal charges against the alleged abuser. At the conclusion of the trial, the judge will determine whether or not to grant this and the person will not be protected until they do so. A person who is a family member of the abuser also may bring a case against the abuser in family court, but this is limited to people who are in the same family or share a child in common with the abuser. If the person who has been abused qualifies for this, they can obtain an EPO. If they do not, legal protection will take longer to obtain.

Returning to Illinois as an example, once a person believes that the situation with which they have been

presented fits within the scope of an EOP, there are a number of steps that need to be taken. Speaking with someone in an organization in your state who works with domestic abuse is a good place to start. In many states this could be someone who works with DOVE. The person may need to venture to the clerk's office at the court house and obtain the forms for an EOP. The clerks may be able to both identify which forms are necessary and help the individual complete them. An individual may also seek assistance from outside organizations in order to complete the forms or if needed, obtain emergency housing. There is generally no cost and, once submitted, the judge will make a decision and the abuser served in the same day. When the judge issues this order, the court will also schedule what is called a Plenary, that is, a court date where both parties will be present and the judge will determine whether or not to make the emergency order of protection permanent by issuing a Plenary Order of Protection. If the order is granted and the abuser violates the order, the victim can call the police who may arrest the abuser. Lastly, grandparents raising grandchildren may file an EOP on behalf of themselves or the child against one or both of the natural parents regardless of who has custody.

Individuals who are not in a relationship with, are not family members of, or who do not reside in the same home as the person against whom they are seeking protection (everyone else in short), will need to use the common law process for obtaining a restraining order. Each state's process for doing this will vary. Again, one of the best sources for obtaining details about a specific state's process is an organization that works with domestic violence issues. In Illinois, for example, the first step is to request a Temporary Restraining Order (TRO). Both California and New York generally use the same terms. The person making the request will hire an attorney who will draft a petition that includes a request for a TRO, preliminary injunction, and permanent injunction and file it with the court. Within a few days, the individual and their attorney will have a court date to request the TRO and preliminary injunction hearing date. This is done *ex parte*, meaning without the defendant or his or her attorney present. The judge will then make a decision on whether or not to grant the TRO and will also schedule the preliminary injunction hearing. The clerk's office will issue a summons to the alleged abuser for the second hearing date. At the second hearing, also called the preliminary injunction hearing, both parties will be present and the judge will make a

determination as to whether or not to grant the preliminary injunction. If it is granted, a third court date will be set for determining the permanent injunction. If the judge denies the preliminary injunction, the plaintiff will not be afforded legal protection until a decision is reached at the permanent injunction hearing. Unfortunately, if the abuser violates the court order the victim does not have the option of merely calling the police and having the violator arrested. Instead, the victim will have to take the violator to court each time the violator violates the court order.

In California, the intermediate or second hearing no longer exists, which means that it is really a two-step process. In New York the process is similar: the attorney will submit a petition and the judge will make an ex parte determination on the same day, order a summons to be delivered to the alleged abuser (the TRO is not effective until the summons is delivered, which may present some problems if the abuser cannot be found) and schedule a return date for a final determination.

People who are single, divorced, unmarried couples, or in same-sex relationships may not fall within the scope of protection of the statutes depending on the state they reside in. If an individual's circumstances do not fall into one of these categories then they can seek protection via the second method starting with hiring an attorney and requesting a TRO and following the procedures.

Related Topics

➤ [Elder abuse and neglect](#), ➤ [Family violence](#),
➤ [Intimate partner violence](#), ➤ [Legal services](#)

Suggested Resources

<http://www.safehorizon.org/page.php?nav=sb&page=legalassistance>

Thyroid Disease

Armand Krikorian

The thyroid gland, located below the “Adam’s apple” in the neck, is responsible for the production of thyroxine. This hormone regulates body metabolism and

affects several aspects of body function, including heat and cold regulation, and the digestive, respiratory, reproductive, and neuromuscular systems.

Disorders of the thyroid gland commonly occur in the elderly, and affect about 10% of people age 65 and over. They are more common in women, affecting 15% of women aged over 70. These disorders encompass thyroid gland underfunction (hypothyroid), overfunction (hyperthyroid), as well as benign and malignant nodules of the thyroid. Untreated, these diseases can greatly decrease a person’s quality of life and potentially be fatal.

Hypothyroidism is the most common disorder of the thyroid gland. In nearly all cases, it is due to a problem within the gland where not enough hormone is produced. This can also result from some medications, surgical removal of the thyroid gland, radioactive iodine treatment, and pituitary gland diseases. The most common cause of primary hypothyroidism is called Hashimoto’s thyroiditis, an autoimmune condition where the body produces cells called antibodies that attack its own thyroid tissue.

The classical symptoms of hypothyroidism reflect slowing in overall metabolism and include feeling of cold, constipation, fatigue, mental slowing, dry skin, coarse hair, puffiness, weight gain, slow heart rate, increased blood pressure, and menstrual irregularities. Fatigue and weakness are the most prominent symptoms in the elderly. These symptoms may develop slowly and subtly, and can easily be confused with normal aging.

The diagnosis of hypothyroidism is made by measurement of blood levels of the thyroid hormone thyroxine and a pituitary hormone that controls the thyroid called thyroid-stimulating hormone (TSH). Levels of TSH rise when blood levels of thyroid hormone are low and vice-versa. The appropriate combination of test-results establishes the diagnosis.

The treatment of hypothyroidism consists of the administration of thyroid hormone (levothyroxine) in the form of tablets of various dosages, usually taken once a day. Improvement in symptoms starts usually within 2 weeks after initiation of therapy. Monitoring of blood levels of TSH and thyroxine is done periodically to ensure adequacy of therapy. In the elderly population, thyroid hormone replacement is usually initiated at a low dose and gradually increased to target, due to concerns about stressing the heart with an abrupt full-dose therapy. Surgical removal of the thyroid is usually not performed for the treatment of hypothyroidism.

Screening for hypothyroidism in the general population in the absence of symptoms is controversial. Recent statements from the US Preventive Services Task Force as well as a clinical consensus group have advised against population-based screening.

Hyperthyroidism represents an excess of thyroid hormone, whether due to over-intake of thyroxine during treatment for hypothyroidism or due to increased production by the thyroid. The most common cause of hyperthyroidism is Grave's disease, where antibodies are produced that cause an overactivity of the thyroid gland. Other causes include independent functioning thyroid nodules and some forms of inflammation of the thyroid (thyroiditis). Iodine-induced hyperthyroidism occurs after the intake of iodine-rich substances such as the dietary supplement Kelp, drugs (amiodarone), or iodinated contrast media for radiological procedures.

Regardless of its cause, hyperthyroidism represents a state of increased metabolism, with its manifestations contrasting with hypothyroidism. These include warm skin, thinning of the hair, increased heart rate, irregular heart rate (atrial fibrillation), weight loss, increased appetite, diarrhea, menstrual abnormalities, tremors, inability to concentrate, memory loss, and muscle weakness. Elderly patients may present with more subtle symptoms, such as silent atrial fibrillation, or a state of apathy. In Grave's disease, involvement of the eyes, with outward protrusion, is typical.

The diagnosis of hyperthyroidism is also made by measuring blood levels of the thyroid hormone and TSH. TSH levels are typically low and thyroid hormone levels high. In addition, measurement of thyroid-receptor antibody levels may be a clue to the diagnosis of Grave's disease. To further establish the cause of hyperthyroidism, scanning of the thyroid using radioactive iodine may be performed.

Three different modalities are used for the treatment of hyperthyroidism: medications, radioactive iodine, and surgery. The choice depends on the cause of hyperthyroidism as well as patient's preference. Of the three, surgery is used least often. It is reserved for situations where the thyroid is so enlarged that it affects swallowing or breathing, or all other therapies fail. It is also a reasonable approach for cosmetic reasons.

Medical therapy is in the form of pills such as methimazole or propylthiouracyl (PTU). These drugs are effective in controlling hyperthyroidism, but a relapse may occur after their discontinuation. Their

side effects are mainly on bone marrow and liver, hence a complete blood count and liver function tests are obtained periodically during therapy.

Radioactive iodine is a safe and effective way of curing hyperthyroidism as it acts by destruction of the overactive thyroid gland. It is administered orally and its main side effect consists of the potential for destruction of the entire thyroid gland, resulting in hypothyroidism.

The presence of thyroid nodules increases with age and may be associated with either hyper- or hypothyroidism. Although most thyroid nodules are benign in nature, the risk for malignancy in a newly discovered thyroid nodule is higher in males. Other risk factors include a history of childhood irradiation and a rapidly expanding mass. Fine-needle aspiration, an office procedure, is the best means to evaluate a nodule for the possibility of malignancy. The prognosis of thyroid cancer depends on its type, but is overall favorable. Treatment includes a combination of surgery, radioactive iodine, and thyroid hormone replacement.

Related Topics

• [Diabetes](#)

Suggested Readings

- Habra M, Sarlis NJ (2005) Thyroid and aging. *Rev Endocr Metab Disord* 6:145–154
- Laurberg P, Andersen S, Bulow Pedersen I, Carle A (2005) Hypothyroidism in the elderly: Pathophysiology, diagnosis, and treatment. *Drugs Aging* 22:23–38
- Morley JE (2003) Hormones and the aging process. *J Am Geriatr Soc* 51:S333–S337
- Rehman SU, Cope DW, Senseney AD, Brzezinski W (2005) Thyroid disorders in elderly patients. *South Med J* 98:543–549

Transgenderism

Rashmi Gangamma

Transgenderism is an umbrella term given to individuals who do not conform to the conventional norms of gender identity and behavior, and transcend the boundaries of a rigid binary system of gender identification.

Transgendered individuals are characterized by cross-dressing, either part-time or full-time in order to obtain psychosocial benefits. They are however, distinguished from transvestites, as in the case of the latter, cross-dressing is usually considered a fetish primarily adopted for sexual gratification.

Aging among these individuals can be a challenging prospect as the transgender elders have unique needs specifically related to their age as well as gender status. The process of aging entails physical, psychological, and social changes and for those who are marginalized, it may become stressful. It is a well-documented fact that social support, financial security, and access to health care are factors that influence well-being, especially in the elderly population. Although these factors may not be guaranteed to all, there is hope that they have opportunities to attain them. However, for those already struggling with the stigma of being the “other,” the pathways to attain them lay strewn with obstacles.

Transphobia permeates most spheres of the society and the elderly population seems particularly vulnerable to its effects. Apart from hate crimes and violence that they are subject to, there are other discriminatory practices that affect their quality of life. Access to health care also depends heavily on the individuals’ perception of the health care professionals themselves. Issues of disclosure and privacy play a role in the decisions to seek health care. Crossdressers may have to choose between disclosing their status or delaying services, which increases their risks as older individuals.

According to a survey conducted in 2000, there are only five states with explicit laws against discrimination that are transgender inclusive. Sixty-two other cities and ten counties have similar antidiscriminatory practices. However, this means that a large proportion of this population is not protected by law and therefore may face greater risks of unemployment or underemployment. In fact, it is often noted that transgendered individuals are less likely to be educated or in high-paying jobs. This may indicate a further risk for the elderly population who may not have a retirement plan or compensation.

The possibility of ostracism, not just by the society at large, but also by their own families has also been well documented. In some cases they may face the possibility of being homeless or even suppress their identity in order to maintain relationships. Needless to say, this would ultimately increase their vulnerability to physical and psychological stressors. The absence

of an adequate network of friends and family could hinder the usually mundane activities of getting medicines, doctor visits, socializing, or even a sense of security in one’s home. They may also be more prone to elder abuse and neglect by their family. Older transgenders are also known to face ostracism by their younger counterparts, which could further isolate them.

Considering the widespread attention on the risks and vulnerabilities facing this population, one may be tempted to wrongly conclude that there are no positive factors associated with this population. There are instances where following support from family and community members, individuals have been able to fight discrimination and claim their rights. However these are so few and far between that instances of oppression gain more precedence.

What do the elderly transgender individuals need? Better access to care, insurance coverage for treatment, antidiscriminatory practices at work, retirement homes that are welcoming of differences, and the right to live with dignity. These needs are not vastly different from the general elderly population and yet these are needs they have to struggle to fulfill everyday.

It is widely acknowledged that the well-being of an individual depends on the existing social and political climate. In a period of time where the odds are stacked against those considered “different,” spreading awareness and increasing sensitivity among the general public has gained impetus at least in the developed nations. As a result there are numerous resources in the form of support groups, advocacy agencies, counseling, education programs, and online networks that have been fairly successful in highlighting injustice and helping those who struggle with their life as a transgendered individual. These efforts may not reach every single person, but it is the start of a movement towards the utopia of understanding and acceptance.

Related Topics

- ▶ [Access to health care](#), ▶ [Discrimination](#), ▶ [Elder abuse and neglect](#), ▶ [Social support](#), ▶ [Transsexuality](#), ▶ [Stress](#), ▶ [Violence](#)

Suggested Readings

Kessler SJ, McKenna W (1985) *Gender: An ethnomethodological approach*. University of Chicago Press, Chicago, IL

Suggested Resources

Witten TM, Eyler EA, Weigel C (2000, Winter) Transsexuals, transgenders, crossdressers: Issues for professionals in aging. Retrieved 28 November 2005; <http://www.asaging.org/networks/lgain/outword-063.html>

Witten TM (2001, October) White paper: Transgender and intersex aging issues. Retrieved 28 November 2005; <http://www.transcience.org>

Transportation Services

Mark T. Wright

The primary mode of transportation in the United States is the personal vehicle. According to the 2001 National Household Travel Survey, 92% of all households owned at least one vehicle and 87% of all daily trips were taken in a personal vehicle. Among elders, about half of the private vehicle trips taken are for shopping and health care. Since almost three-fourths of older Americans live in suburban or rural areas, where travel is necessary to access health care and other basic life necessities, elders are highly dependent upon automobile transportation.

Many older people drive less than they did when they were younger, and about 20% of the elderly do not drive (in comparison, 12% of individuals aged 15 or older do not drive). A number of factors may limit use of personal vehicles by older adults. Limited access to vehicles may play a role: in 1999, 17% of elderly households had no vehicles. It is not clear if elders who lack a vehicle do not need it, cannot use it, or cannot afford it. Retirement and other role changes associated with aging may make driving less necessary. Sensory and cognitive changes associated with normal aging may impair driving abilities and make drivers less confident in their skills. Aging-related changes in visual acuity, ability to see in dim light, and color discrimination may make driving more difficult. Aging is also associated with decreased complex attention abilities and diminished processing of visual and other information, changes that may further impede driving. These normal aging changes lead some older individuals to limit their driving to daytime, off-peak hours, and to use only familiar roads. Illnesses affecting vision and movement such as glaucoma, arthritis, and diabetes

are common in the elderly and can produce physical impairment incompatible with safe driving. Illnesses that produce serious cognitive impairment such as Alzheimer's disease and cerebrovascular disease can obviously impede safe driving as well. Many medications commonly used by the elderly can cause sedation or cognitive impairment that can make driving unsafe.

Concerns about the safety of elderly drivers have increased in recent years. Although healthy older adults drive as well as healthy younger people, and do not account for a disproportionate number of motor vehicle accidents or road deaths, the number of accidents per mile driven does increase with advancing age. Fatalities per mile driven are also higher in older adults than in younger adults; physical fragility associated with aging may increase the risk of death in an accident.

Particular concerns arise in relation to elders with dementia. Dementia may cause deficits in attention, visuospatial skills, and executive functioning (e.g., planning abilities) that can be particularly detrimental to driving. Although very mild dementia may not significantly impair driving, the ability to drive does decline significantly with increasing dementia severity. Unfortunately, individuals with dementia and their friends and relatives often do not recognize problems with driving, and a number of people with advanced illness continue to drive despite severe cognitive dysfunction.

Finding solutions to driving and other transportation problems of elders will be a difficult task. Safety concerns often lead to consideration of suspension of older adults' driving privileges. Although this seems justifiable in individuals incapacitated by dementia or physical ailments, it is not justifiable for healthy elders, who are generally safe drivers, or for dementia patients with very mild impairment. In weighing the risks and benefits of driving, it should be kept in mind that curtailment of driving privileges for elders may be associated with increased morbidity and mortality.

Many elders find loss of driving privileges extremely distressing. An inability to drive can result in decreased self-esteem, independence, and social interaction. Problems with access to transportation have been shown to correlate with decreased usage of medical services, particularly in rural areas. Caregivers who are called upon to provide transportation for elders experience significant disruptions in their lives as well.

It is commonly argued that elders should be helped to drive as long as they can safely do so, and decisions to stop driving should be based on driving competence

and not on age or medical diagnoses. Increased public education is needed on how driving is affected by normal aging and illnesses associated with aging, such as dementia. Improved physician screening of patients at-risk for driving problems could lead to better use of driver retesting (via driving simulators or on-road testing) and rehabilitation resources.

Programs like the AARP Driver Safety Program and trained driver rehabilitation specialists can help identify impediments to safe driving and offer solutions. For drivers who are neither totally safe nor unsafe, license limitations tailored to specific impairments (e.g., no night driving) can allow drivers to maintain their licenses longer while protecting both the driver and the public. Improvements in roadways such as making signs easier to read and constructing more left-turn lanes could also help elderly drivers. Older adults who cannot drive but can walk could be helped by measures that facilitate walking such as better sidewalks, places to rest, and traffic lights that allow slowly moving pedestrians to cross streets at a reasonable pace. The development of “walkable communities” could greatly decrease the need for private transportation.

Public transportation and transportation sponsored by health care providers are alternatives to the personal vehicle. The extension of public transportation to suburban and rural areas where most elders live may be limited by cost, though. Older adults may also be hesitant to use public transportation, possibly because public transportation is not ergonomically designed to accommodate them. Increasing “paratransit” services, or public transportation designed with the physical and cognitive limitations of some elderly people in mind could be helpful.

As the elderly population grows, medical and social service agencies will need to consider the location of their clients as they locate and plan their services. For elderly people with very limited or no mobility, the provision of health services via home visits, telephone calls, or the Internet could facilitate ongoing care. It remains to be seen whether savings associated with improved health and functioning can offset costs incurred in providing elders with alternatives to private transportation.

Related Topics

[▶ Accidents](#), [▶ Driving safety](#), [▶ Isolation](#), [▶ Pedestrian injuries](#), [▶ Quality of life](#), [▶ Rural health](#), [▶ Travel](#)

Suggested Readings

Brown LB, Ott BR (2004) Driving and dementia: A review of the literature. *J Geriatr Psychiatry Neurol* 17:232–240

Rosenbloom S (1993) Transportation needs of the elderly population. *Clin Geriatr Med* 9:297–310

Suggested Resources

American Association of Retired Persons (AARP), 1998–2005, Washington, D.C.; <http://www.aarp.org/research/housing-mobility/transportation/>

American Medical Association, 2003, Chicago, IL; <http://www.ama-assn.org/ama/pub/category/10791.html>

U.S. Department of Transportation Bureau of Transportation Statistics, 2001, Washington, D.C.; http://www.bts.gov/programs/national_household_travel_survey/

Transsexuality

Rashmi Gangamma

Transsexuality is the most extreme manifestation of gender dysphoria—a psychological condition in which a person’s gender identity is opposite to that of their sex at birth. In other words the individual feels “trapped” in a body that does not “fit” the perception of his or her gender. Most of them undertake measures to correct this through sex reassignment surgery (SRS) and hormone therapy. Although the medical establishment and popular media use the term *transsexual*, a growing activist movement has rejected this and recommend using *trans people* or *trans woman* or *trans man*.

The process of transition is long and can have psycho-socio-economic impact on their lives. Aging in this population brings about issues that are similar to the transgender and intersex population. In most individuals, transitioning has been known to increase feelings of well-being. After years of suppression of one’s gender identity, they experience resurgence in enthusiasm for life. The increased freedom of expression catalyses experiences of positive personal sensuality. Older trans people also have the advantage of having the natural aging process camouflage the differences due to hormone therapy. Both male and female elders

acquire softer features thus reducing the possibilities of being “outed.”

Although it has been noted that female-to-male (FTM) transitions typically occur years after identifying oneself as a lesbian, male-to-female (MTF) transitions occur later in life. Individuals opting to transition later in life face more health challenges than their younger counterparts. Several medical conditions like a history of cardiac illnesses could make them ineligible for surgery. Hormone therapy could create additional risks, for instance, androgen supplementation in FTM could increase the risk for coronary artery disease. However, it could potentially reduce the occurrence of bone diseases.

Regular and timely medical care could, however, become a problem for those who anticipate a negative reaction from health care providers. This could lead to delay in accessing facilities that in turn increases their vulnerability illnesses. The fear of losing privacy and the risk of facing ridicule or even refusal to treatment plays an important role in their decisions to visit professionals.

Underemployment and unemployment is known to be common among the trans people. This directly affects their ability to build financial security that is considered crucial during the later years. Employees undergoing gender transition can be subject to ridicule and humiliation against which there are very few laws in the country. This could affect their health care decisions as well as most insurance companies do not cover treatment expenses for transitioning.

Though not many individuals decide to undergo transition in later years, redefining one’s roles as a father or mother, grandfather or grandmother can be extremely daunting. This change involves not just the individual but also the partner involved who also understands the fact that there has been a change in the relationship but not in their orientation.

Support derived from family members is crucial in the degree of social integration of the trans person. Coming out to their families could potentially place them at risk for violence and hate crimes. Considering the absence of laws protecting this population, elder abuse and neglect could easily go unreported. The older individuals are also known to face discrimination and ridicule from their younger counterparts, thus isolating them further.

Further, seeking care in assisted living facilities may be a challenge for them given the potential for ostracism by others. This may be particularly difficult for those who have transitioned at a later stage, who may

have incongruence in their gender presentation and history of their personal relationships.

The needs of the elderly are not drastically different when compared to the non-transsexual aged population. However, the sociopolitical climate of the society, the absence of adequate laws against discrimination, and lack of social support increase the stressors faced by the older trans people.

Related Topics

- ▶ Discrimination, ▶ Intersexuality, ▶ Sexuality,
- ▶ Transgenderism

Suggested Readings

Brown ML, Rounsley CA (2003) True selves: Understanding transsexualism—For families, friends, coworkers, and helping professionals. Jossey Bass, New Jersey

Suggested Resources

Witten TM (2001, October) White paper: Transgender and intersex aging issues. Retrieved 28 November 2005; <http://www.transcience.org>

Traumatic Injury

Aaron L. Rogaczewski · Travis P. Webb

Trauma remains one of the leading causes of death and disability in the United States. When considering people of all ages, traumatic injury ranks as the fifth leading cause of death. Overall, the prevalence of injury-related death is estimated at 37 per 100,000 people. For the elderly (<65 years), traumatic injury is the ninth leading cause of death with an injury-related death rate of 95 per 100,000 people 65 years and older. Although only constituting 12% of the population, elderly trauma accounts for nearly 23% of all trauma admissions and one third of all injury-related deaths. Despite being injured less frequently than their younger counterparts, the elderly are at higher risk to suffer fatal injury or an injury requiring hospitalization. Elderly individuals who suffer nonfatal injuries are at an

increased risk for complications and permanent loss of independent function. These differences are generally attributed to the normal aging process, resulting in a progressive loss of physiologic functional reserve and a higher incidence of comorbid disease.

As the population ages, there will be an unprecedented number of elderly persons at risk of injury and death. The burden on society and the health care system will continue to increase. Currently, 28% of total trauma-related hospital charges are for the care of elderly trauma victims. Assuming injury rates remain constant, by the year 2030, elderly trauma victims will account for as much as 40% of all injury-related hospitalizations and deaths. The amount of health care spending will correspondingly increase.

Although the elderly experience similar types of injuries as younger individuals, a number of differences exist with respect to mechanisms and frequency of injury. Falls are an extremely common event in the elderly that pose serious health risk. It is estimated that roughly one of every three elderly individuals will fall each year. Despite typically occurring at home and rarely from great heights, falls represent the most frequent cause of injury-related hospitalization and death. In 2002, over 11,000 people over age 65 died due to injuries sustained during a fall. Of note, 83% of these deaths occurred in people over the age of 75. Serious injury is often related to mild to moderate head injury and bony fractures, leading to long-term disability and often death. For those surviving a fall requiring hospitalization, up to 50% will subsequently be discharged to a nursing home; moreover, up to 50% will die within the next year.

Motor vehicle crashes are the second leading cause of traumatic injury and death in the elderly, accounting for over 7,000 deaths in 2002. Motor vehicle crashes are the leading cause of trauma-related deaths for older adults between the ages of 65 and 74. Although elderly drivers log fewer miles on the road, they are involved in a disproportionately high number of crashes. Drivers over the age of 75 have a crash rate that is second only to new drivers between the ages of 16 and 25 years of age. Furthermore, they have the highest crash fatality rate of any group. In addition to motor vehicle crashes, the elderly also have the highest population-based fatality rate for pedestrians struck by vehicles. This accounts for nearly 20% of the yearly vehicle–pedestrian fatalities. In 2002, over 1,000 pedestrians over the age of 65 were struck and killed by moving vehicles in the United States.

Although violent crime is typically thought to be associated with the younger population, the geriatric population is increasingly susceptible to violence both in and out of the home. Injuries secondary to violent assaults account for 4–14% of elderly trauma admissions. Up to 4% of the elderly are also victims of elder abuse, which may be physical, psychological, sexual, or financial.

A number of factors influence the risk of injury in the elderly. A progressive diminution of cognitive and motor skills is a normal part of aging. The elderly experience changes in postural stability, balance, motor strength, and coordination that predispose them to injurious events. Changes in visual acuity and hearing may lead to an inability to recognize and avoid hazardous situations. Undiagnosed systemic disease and illness often increases injury risk in the elderly. Frequently, traumatic injuries are the initial presentation of an acute or chronic illness that has not been previously recognized. Lastly, drug interactions and medication effects have been associated with potential increased injury risk.

As stated earlier, the high mortality rates associated with trauma in the elderly population appear to be due to physiologic changes associated with aging and the overall ability to tolerate the physiologic stress of injury. The normal aging process involves an ongoing progressive decline in cardiac, pulmonary, and renal function and reserve. Thus, the elderly patient has less ability to tolerate injury-induced stress. However, it should be emphasized that chronologic age poorly correlates with physiologic age, and organ function and physiologic reserve varies greatly between individuals. Therefore, generalizations should be avoided in the elderly population.

Despite the current discouraging statistical trends associated with traumatic injury in the geriatric population, many injuries are preventable. Injury prevention is widely recognized as holding the best potential for benefit. Substantial impact can be made using preventive strategies such as home safety inspections, frequent review and modification of medication regimens, and treatment of motor and sensory changes that affect one's ability to both perceive and navigate safely through the environment. Over recent years, public safety programs and driver education courses focusing on the elderly have also become available in many communities. Overall, a heightened awareness of all aspects of geriatric trauma is needed, and implementation of

injury prevention programs and public education will be important as this segment of the population continues to grow.

Related Topics

- ▶ Driving safety, ▶ Elder abuse and neglect, ▶ Falling,
- ▶ Falls prevention, ▶ Firearms, ▶ Pedestrian injuries,
- ▶ Violence

Suggested Readings

Centers for Disease Control and Prevention (2005) Deaths, percent of total deaths, and death rates for the 15 leading causes of death in selected age groups, by race, and sex: United States, 2002 (LCWK3). Centers for Disease Control and Prevention, Atlanta, GA

Suggested Resources

American Geriatrics Society. Position paper on falls prevention; www.americangeriatrics.org/products/positionpapers/abstract.shtml

Centers for Disease Control and Prevention. National Center for Injury Prevention and Control. Pages regarding elderly drivers, (5 August 2004); www.cdc.gov/ncipc/factsheets/older.htm.

Centers for Disease Control and Prevention. National Center for Injury Prevention and Control. Pages regarding elderly fall victims, (9 September 2005); www.cdc.gov/ncipc/factsheets/falls.htm

EAST Practice Management Guidelines Work Group (2001) Practice management guidelines for geriatric trauma. Eastern Association for the Surgery of Trauma (EAST), Allentown, PA; www.east.org/tpg/geriatric.pdf

Travel

Gary W. Edmunds

With the improvement of the general conditions of life, the average life expectancy increased by about 25 years from a century ago. As a result, four distinct age segments exist: the young old (55–64), the middle old (65–74), the senior sector (75–84), and the very old (85 and over). Sometimes referred to as the maturity market, older consumers are now recognized as a

major force in the US marketplace and are growing at a rate twice that of the overall population. Preplanned leisurely travel is more popular with the older group (50 and over); travel agents are consulted by about one in four older people.

Older persons may be motivated to travel in order to increase opportunities for socializing, self-fulfillment, physical exercise, learning, rest, relaxation, contact with relatives, change of pace, escape, challenge, and excitement. In addition, older adults may be searching for a particular sense of significance, meaning, and quality of life because life must hold more meaning than just surviving. Recreational travel opportunities should add meaning and renewal to one's life, to contribute to one's personal well-being by providing the necessary mental, physical, and psychosocial stimulation. For seniors, the winter season, especially between the Christmas holiday season and spring break, is slow and travel companies often offer discounts. Older individuals are more likely to be able to avail themselves of these opportunities because they often have more time for travel and have more flexibility to travel at various times.

The Centers for Disease Control and Prevention has information about outbreaks of infectious disease around the world and recommendations for vaccinations needed for travel. Elderly individuals have had delayed development of immune responses following the administration of some vaccines, decreased peak antibody responses, more rapid waning of protective antibodies, decreased protective efficacy, and increased side effects. Many vaccines currently in use, and particularly those given prior to travel, have never been specifically studied in elderly subjects. In addition, interactions among vaccines in elderly recipients have not been adequately studied. Older people have a greater risk of complications from certain travel-related infections, including Japanese encephalitis, yellow fever, hepatitis A, and typhoid fever. Accordingly, immunization against these infections may be particularly important for older travelers. Timing of adequate immune responses is of particular relevance to travelers because slower development of immunoprotection implies that earlier administration of travel vaccines may be required.

Plane travel is more popular for the over-50 group. Limited leg room continues to be the worst feature of plane travel, according to passenger surveys. Uncomfortable and narrow seats may impede normal blood circulation and sitting still for long periods of time can increase the risk of edema (the presence of excessive fluid in tissue spaces usually causing the lower limbs to

swell), and deep venous thrombosis (the formation of a blood clot within a blood vessel). Cardiac conditions constitute the most common cause of in-flight deaths and cardiac-related problems are the highest causes of in-flight emergencies. Counseling and screening from a primary care physician is recommended to advise those against traveling if necessary for those who are at risk.

Recent studies have found that travel across time zones may act as a causal factor in affective psychoses, with most taking place within 2 weeks of travel; one-half of individuals affected have a history of prior psychiatric treatment. Once reported, recovery is usually rapid. Some experts have suggested that eastern travel may precipitate mania and western travel depression but this theory has not been substantiated. In any event, travelers should be aware of the possibility that traveling great distances may precipitate acute mental illness, particularly in those with a past psychiatric history.

The elderly traveler should take out adequate medical insurance to cover any eventuality as the costs of medical insurance for nonresidents in many countries are high. For older travelers who require oxygen, air travel is possible with advance planning. Due to federal aviation regulations travelers are not allowed to carry their own oxygen on aircraft but it can be supplied by the airline for a fee. This will have to be arranged in advance by either the traveler or travel agent and oxygen at the new destination will have to be arranged also. The airline fee for oxygen is not likely to be covered by Medicare or other insurance as it duplicates equipment that has already been paid for. These costs must be figured into a vacation budget.

Nothing could be worse than to lose money because an emergency requires the postponement of a trip. Regularly scheduled airlines usually give a refund if illness or death in the family requires that the trip be cancelled, but this requires a letter from a physician or a death certificate. In addition to possible accident and illness coverage while traveling, insurance can cover travel company default as well. Since the US government cannot pay for shipment of remains back to the United States, it is a wise and worthwhile precaution to have insurance that covers this cost, considering that 2,000 Americans die annually while visiting abroad. If not, this cost must be borne by the next of kin and can be extremely expensive. With planning and research, many seniors who presently do not travel could enjoy worry-free travel.

Suggested Resources

Government website with travel advice for seniors; <http://www.firstgov.gov/Topics/Seniors.shtml>

Travelocity site with information for seniors; <http://seniors-site.com/travel/>

Trigeminal Neuralgia

Matthew Eccher

Trigeminal neuralgia, pain, and symptoms along the trigeminal nerve that supplies areas of the face, is a clinical diagnosis defined by its symptoms: sharp, shooting, electric-shock-like pains in one side of the face, excruciating in severity, very sudden, maximal at onset, typically lasting seconds only. The excruciating severity of pain often causes sufferers to wince, hence the other common term for the condition “tic douloureux.” The pain can often be elicited by stimuli such as chewing, talking, light touch in the affected area, or cold air on the face. The sufferer typically learns to avoid these eliciting stimuli, and such avoidance behavior can have a profound impact on the individual’s life. The frequency of attacks tends to wax and wane, with some periods of remission common. The impression of most experienced clinicians, however, is that trigeminal neuralgia is a relentlessly recurring and ultimately a progressively worsening disorder, though data to support this perception are lacking. The location of the pain is typically the maxillary (cheek bone area) and mandibular (jaw area) divisions of the trigeminal nerve, but can involve any one portion of the nerve at a time or all three portions of the nerve.

The cause of trigeminal neuralgia is usually unknown. The most common cause, when one can be identified, is compression of blood vessels due to a twisting blood vessel pressing on the nerve. Other causes include multiple sclerosis and lack of vascular blood flow. The mechanism by which such lesions cause the condition is poorly understood.

Incidence rates are highly consistent between studies in different locales at different times: 3–5 per 100,000 per year in the general population. It has been estimated on this basis that there are 15,000 patients in the United States with the condition. More recent data suggests that the incidence climbs

significantly with age, to as high as 20 per 100,000 per year in those over the age of 60. Ninety percent of cases occur after the age of 40 years, with peak incidence between 40 and 60, but median age at onset of 67, reflecting the increasing cumulative prevalence in the elderly. This is unsurprising, because the condition itself has minimal effect on longevity, and most of the causes provoking the condition are increasingly more common with increasing age. Most cases are sporadic, with very few familial reports; women are somewhat more often affected than men (1.2–2:1).

The mainstay of medical treatment, since its introduction in 1962, has been carbamazepine, is an anti-seizure medication, which is 80–85% efficacious initially. Phenytoin and clonazepam are also effective, though somewhat less so; other newer antiseizure medications, in particular lamotrigine, oxcarbazepine, and topiramate, have seen increasing use, with lesser-published experience. Baclofen, used for spasms, is useful alone or in combination with an antiseizure medication. The choice of agent depends largely on the side-effect profile of each agent and interactions with the patient's other medications. Medical management, however, is efficacious in the long term in only about 50% of patients, leading many to consider surgery. Another factor favoring surgery is the sedative and cognitive adverse effects of the medications utilized, a phenomenon that has received surprisingly little attention in the literature.

When a compressive lesion is present, such as a meningioma or epidermoid tumor, surgical resection is often pursued. When the cause is vascular impingement on the nerve and the patient is a good surgical candidate, so-called “microvascular decompression” is an option. This procedure aims to place a piece of synthetic material between the vessel and the nerve, essentially cushioning the nerve from the artery's pulsatile impingement. Success rates are fairly high when vascular impingement can be identified, but carry the risk of having to open the skull, including the low but nonetheless real risk of death. Other options include getting at the base of the nerve root and the core of the problem by disrupting the trigeminal ganglion (nerve root) with stereotactic radiosurgery, thermocoagulation, glycerol injection, or inserting a balloon to make a crush-like injury, each of which aim to interrupt all trigeminal neurotransmission or function. The less invasive procedures tend to be favored for those patients who for reasons of advanced age or other medical comorbidities are

poor candidates for potential open skull surgery. The various efficacies and risks of these procedures are beyond the scope of this review and data showing. Comparatively little formal study has been done of the effect of this condition on quality of life, and less still on caretaker burden. This is likely due not only to the lower prevalence of the disease but also to its entirely subjective nature as a pain syndrome. Surgical studies can and do demonstrate cost-effectiveness of the various surgical procedures, but are not intended to provide an estimate of pre- or post-procedure disease burden. A literature search at the time of this writing revealed no attempted evaluations of nonsurgical treatments. Data are therefore essentially lacking on the impact of this potentially debilitating condition on patients' and families' lives. It is likely that the current era of cost-consciousness in medicine will create pressures, leading to the generation of more data regarding the cost-effectiveness of surgery.

Related Topics

[Epilepsy](#), [Headache](#), [Pain](#)

Suggested Readings

- Kitt CA, Gruber K, Davis M, Woolf CJ, Levine JD (2000) Trigeminal neuralgia: Opportunities for research and treatment. *Pain* 85:3–7
- Manzoni GC, Torelli P (2005) Epidemiology of typical and atypical craniofacial neuralgias. *Neurol Sci* 26(suppl 2):S65–S67
- Pollock BE, Ecker RD (2005) A prospective cost-effectiveness study of trigeminal neuralgia surgery. *Clin J Pain* 21:317–322
- Rozen TD (2004) Trigeminal neuralgia and glossopharyngeal neuralgia. *Neurol Clin N Am* 22:185–206
- Zakrzewska JM (2000) Consumer views on management of trigeminal neuralgia. *Headache* 41:369–376

Tuberculosis

Thomas W. Heinrich · Mark T. Wright

Tuberculosis is an infectious disease primarily affecting the lungs and can be characterized by fever and the production of mucus and sputum. It has plagued humankind for ages and has long been viewed as an affliction suffered by disenfranchised members of

society such as the poor and homeless. Tuberculosis is caused by *Mycobacterium tuberculosis* and remains a common infectious disease worldwide. *M. tuberculosis* infection can be dormant and fully contained by the immune system or progress to an active disease state.

Prevalence

Almost a third of the world's population is infected with *M. tuberculosis*, and more than half of these infections occur in developing countries. The highest per capita incidence of infection is in sub-Saharan Africa. The World Health Organization estimates that there are more than 8 million new cases and 2 million deaths worldwide from tuberculosis each year. The high rates of tuberculosis infection and death in developing countries are likely related to the limited medical and financial resources present in these regions, making effective prevention and treatment difficult.

In the United States, the incidence of active tuberculosis has steadily declined since 1992 after an increase in the early 1990s. The brief increase in active tuberculosis cases was likely related to multiple factors including the human immunodeficiency virus (HIV) epidemic and immigration from countries with high rates of tuberculosis infection. Tuberculosis, however, continues to represent a clinical and societal challenge in the United States.

Tuberculosis and Older Adults

The primary route of entry for tuberculosis is the respiratory system, and approximately 75% of older patients with tuberculosis present with pulmonary involvement. Tuberculosis may also infect other organ systems as diverse as the central nervous system, skeletal system, and genitourinary system. The infection may also disseminate throughout the entire body, causing an extremely dangerous form of tuberculosis known as miliary tuberculosis. Elderly individuals are at increased risk for the development of these atypical sites of disease, and this confers an increased risk of morbidity and mortality.

Elderly people with pulmonary tuberculosis often do not present with signs and symptoms classically associated with the illness such as cough, fever, night sweats, weight loss, and blood-tinged sputum. Instead,

they may present with a nonspecific fatigue, poor functional capacity, or confusion. Elderly people with active pulmonary tuberculosis may likewise fail to demonstrate the characteristic skin testing response and chest radiograph findings commonly seen in younger patients. Nonpulmonary tuberculosis may present with symptoms as diverse as a fever, joint swelling, or seizures. As a result, tuberculosis in the elderly often represents a diagnostic challenge for the health care professional.

High-Risk Populations

Despite the decline in cases in the United States, tuberculosis remains an important health concern associated with significant morbidity and mortality. This is especially true for high-risk populations such as the elderly and the immunocompromised. Although a majority of cases of tuberculosis in the elderly occur in individuals who live in the general community, there appears to be a relative increase in the incidence of tuberculosis infection among nursing-home residents. An increased rate of positive tuberculin skin testing, a screening test for tuberculosis infection, has been observed in individuals who have resided in nursing homes for a prolonged period of time.

Tuberculosis and HIV coinfection form a particularly dangerous combination of illnesses. Because of the impaired immune status of the HIV-infected patient, concurrent tuberculosis infection is more likely to progress to an active disease state and become dangerously contagious. It has been estimated that the current HIV epidemic contributes over 1 million additional cases of active tuberculosis infection annually.

M. tuberculosis may simply lie dormant in an individual or progress to a more dangerous active disease state. The risk of dormant infection progressing to active tuberculosis varies with the carrier's immune status. Individuals with normal immunity progress from infection to active disease at a rate of 5–10% over their entire life span, with half of this risk occurring within the first 2 years of infection. However, individuals suffering from a tuberculosis coinfection with HIV have a 5–10% annual risk of developing active disease. It also appears that impaired immune function plays a role in the increased rate of active disease in the elderly. Approximately 90% of active tuberculosis in the elderly is secondary to reactivation of previously dormant infectious foci.

Treatment

The treatment of tuberculosis has undergone significant advances over the years. Before the advent of antimicrobial treatment, therapy included relaxation for the patient, often in sanatoriums, and attempts to rest the affected lung. Rest of the lung was accomplished through surgical procedures to collapse the afflicted lung. Prior to effective antimicrobial pharmacotherapy, pulmonary tuberculosis had an estimated 50% mortality and miliary tuberculosis was almost uniformly fatal. Current pharmacotherapy includes the use of the antimicrobial agents for the treatment of active disease and prevention of progression from dormant infection to active disease. Treatment is often prolonged, complicated by drug resistance, and may involve multiple medications and directly observed therapy (DOTS; i.e., by a health care worker) to ensure compliance. Drug treatment of tuberculosis in the elderly patient is often complicated by hepatotoxicity and other adverse drug reactions. Patients suspected to have active disease need to be kept in respiratory isolation to prevent spread of the infection to others.

Tuberculosis remains an important medical condition for older adults. Elderly individuals at risk for infection and active disease include those exposed to

M. tuberculosis for the first time, those reexposed after effective treatment, and those at risk for reactivation of dormant untreated infections.

Related Topics

▶ Acquired immunodeficiency syndrome, ▶ Homelessness, ▶ Immigrant health, ▶ Institutionalization, ▶ Pneumonia

Suggested Readings

- Packham S (2001) Tuberculosis in the elderly. *Gerontology* 47:175–179
- Rajagopalan S (2001) Tuberculosis and aging: A global health problem. *Clin Infect Dis* 33:1034–1039
- Zevallos M, Justman JE (2003) Tuberculosis in the elderly. *Clin Geriatr Med* 19:121–138

Suggested Resources

- American Lung Association, 2005, New York; <http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=35778>
- World Health Organization, 2006, Geneva; <http://www.who.int/tb/en/>

Ultrasound

Karen Ashby

Ultrasound or sonography utilizes sound waves to obtain images of internal organs. Unlike x-ray, there is no radiation involved, which is particularly important for obstetric care. Solid organs such as the uterus and ovaries appear different on ultrasound scan than fluid-filled organs such as the bladder and seminal vesicles. Solid organs appear “white or opaque” and fluid-filled organs appear black. These differences make ultrasound a useful test for looking at pelvic organs. In general, bones and intestines are not well visualized with ultrasound.

A transducer is a hand-held device or probe that emits and receives sound waves, creating a visual image. Probes can be placed on the abdomen, in the rectum, or in the vagina, depending on which organ needs to be visualized. Ultrasound can evaluate a variety of conditions in both men and women. In women, a combination of abdominal and vaginal ultrasound can aid in the diagnosis of many gynecological conditions. In women, ultrasound can evaluate

1. site and location of fibroids or polyps,
2. vaginal bleeding,
3. viability of pregnancy,
4. fetal and placental anatomy,
5. ovarian cyst,
6. location of intrauterine device, and
7. some bladder conditions.

In men the ultrasound may be used to assess seminal vesicles and the prostate gland. In men and women, ultrasound can evaluate rectal problems. Ultrasound is a safe and well-tolerated procedure. However, with transvaginal and transrectal ultrasounds there is a small risk of infection. Ultrasound is also less expensive than a computed tomography (CT) scan or magnetic resonance imaging (MRI).

Related Topics

▶ [Bladder](#), ▶ [Endometrial polyps](#), ▶ [Fibroids](#), ▶ [Pelvic examination](#), ▶ [Prostate](#), ▶ [Vaginal bleeding](#)

Suggested Resources

American College of Radiology and the Radiological Society of North America (2006) Information on radiological procedures and therapies. Oak Brook, IL; www.radiologyinfo.org

Web MD (2006) Health information for consumers, physicians, employers and health plan members. New York, NY; www.webmd.com

Uniform Probate Code

Janet L. Lowder · Sandra J. Buzney · Lisa M. Montori

The Uniform Probate Code (UPC) is a set of model laws drafted and regularly reviewed by the National Conference of Commissioners on Uniform State Laws (NCCUSL). The NCCUSL was created in 1892 to promote uniformity in state law on all subjects where uniformity is desirable and practical. The UPC was first drafted in 1969 to provide a common set of rules state legislatures may adopt to govern how probate courts decide issues involving inheritances, guardianship of minors or incompetent persons, durable powers of attorney, and trust administration. Revisions to the UPC were adopted by the NCCUSL in 1989–1990; some states have not adopted the revisions at all and some have adopted it only in part. Therefore, although the UPC has been adopted, at least in part, by 18 states, there still may be a great deal of variation between the statutes of those states.

One section of the UPC contains a set of rules for determining who is entitled to receive a deceased individual's “probate” property (his or her “estate”) if the individual dies without a will or “intestate.” The surviving spouse has priority over other relatives of the deceased, especially if the deceased individual had children with the surviving spouse and those children also survived the deceased. If the deceased is survived by children from a prior marriage or relationship, those children may also receive a portion of the estate if it is large enough. Depending on the size of the estate, the deceased's parents may receive a portion of the estate if the deceased is not survived by any children or other

lineal descendants. The siblings of the deceased, and their descendants, will inherit the estate if the deceased has no surviving spouse, descendants, or parents. If the deceased leaves no relatives, either descending from his or her parents or grandparents (e.g., aunts, uncles or cousins), the deceased's estate will "escheat" to the state. These "intestate succession" rules may vary from state to state depending on to what degree that state has adopted the UPC language in its entirety. Intestate succession is complicated and individuals should contact a probate attorney to discuss their specific concerns before making any assumptions or important decisions about whether an estate plan is necessary.

The UPC also addresses the writing and administration of wills. A person who is 18 years or older and of sound mind may execute a will. Each state has specific requirements for a written document to constitute a valid will, including criteria for witnessing the document. Wills may be changed once originally executed if the individual, the "testator," is competent and the changes comply with the legal requirements of a valid will. The UPC also contains provisions about the interpretation of language in a will.

The creation and management of guardianships for minors and incapacitated adults is also provided for in the UPC. Parents may nominate an individual in their will to act as guardian over minor children. The parent of an unmarried incapacitated adult or the spouse of an incapacitated adult may also nominate a guardian for that person in their will, or may petition the court to establish guardianship over such persons. The court has final approval over who is appointed and will conduct the necessary evaluations to assure that guardianship is appropriate in each circumstance. The UPC contains language describing the duties of guardians and how they may manage a ward's assets. The court is accountable for supervising the guardian's activities and ensuring that the ward and his or her property is not subject to abuse or mismanagement.

The UPC includes provisions about durable powers of attorney. An individual may execute a document naming someone to manage his or her personal and financial affairs in case the individual later becomes disabled or incapacitated. The UPC describes the language that must be used in order to grant such significant powers to another person.

Assets that are transferred upon death to beneficiaries outside of probate court, or "nonprobate" assets, are also addressed by the UPC. Nonprobate assets

include trusts, insurance policy proceeds if the beneficiary survives the deceased person, bank accounts, and investment accounts that are jointly owned or titled to transfer on the owner's death (TOD) or to be payable on the owner's death (POD), agreements, pension or retirement plan benefits with a surviving beneficiary, deeds of gift, and mortgage agreements. The UPC describes when and how these nonprobate assets should pass to named beneficiaries, and what rights creditors of the deceased might have to reach those assets.

The UPC lends consistency and stability to probate law across the United States and facilitates commerce and reliable resolutions to the issues it covers. (NCCUSL, Update). The NCCUSL reviews the UPC to ensure its relevancy, and revises or meets the code to reflect changes in the American society. The language of the UPC was recently modified to reflect the ability of adopted children and children born outside of marriage to inherit from a deceased parent and also reflect the changes in the economics of the marriage relationship in the United States. State legislatures rely on uniform laws like the UPC to provide the basis for drafting statutes on particular matters that address the needs of their citizens while also promoting consistency in matters of state law across the country.

Related Topics

➤ [Financial planning](#), ➤ [Guardianship](#), ➤ [Probate](#)

Suggested Resources

Cornell University Law School, Legal Information Institute: Uniform Probate Code Locator, 2003, Ithaca, NY (March 2003); <http://www.law.cornell.edu/uniform/probate.html>

Cornell University Law School, Legal Information Institute: Uniform Laws, 2003, Ithaca, NY (March 2003); <http://www.law.cornell.edu/uniform/probate.html>; <http://www.law.cornell.edu/uniform/uniform.html>

National Conference of Commissioners on Uniform State Laws (NCCUSL), 2005, Chicago, IL (December 2, 2005); <http://www.nccusl.org/Update/>

National Conference of Commissioners on Uniform State Laws, Uniform Probate Code: Final Act as Revised in 2004, 2005, Chicago, IL (November 9, 2005); http://www.law.upenn.edu/bll/ulc/ulc_frame.htm

National Conference of Commissioners on Uniform State Laws, University of Pennsylvania Law School NCCUSL Archive, 2000, Philadelphia, PA (January 3, 2006); http://www.law.upenn.edu/bll/ulc/ulc_frame.htm

Urinary Incontinence

Karen Ashby

Urinary incontinence is the involuntary or uncontrollable leakage of urine. This condition is twice as common in women as in men, and because of the associated embarrassment, many patients do not report symptoms to their health care provider. Urinary incontinence can drastically affect quality of life of the affected individual. The need for pads or diapers in addition to frequent trips to the bathroom can limit one's ability to travel long distances or engage in leisure activities. Incontinence may affect individuals of all ages, although the condition usually worsens with age.

There are several types of urinary incontinence and the symptoms may vary greatly. A person may also have what is known as "mixed incontinence" and have symptoms of more than one type of incontinence. Before the cause of urinary incontinence can be established, medical problems such as diabetes and urinary tract infections need to be ruled out. Certain medications can also worsen incontinence. The female anatomy makes stress incontinence a problem that affects women. Other types of incontinence may affect either sex.

- *Stress incontinence* is the most common type of incontinence. The symptoms of stress incontinence are more pronounced when someone does anything to increase intraabdominal pressure, such as sneezing, coughing, or laughing. Stress incontinence is caused by weakening of the muscles around the bladder, often resulting from childbirth. In stress incontinence, the sphincter or opening to the bladder does not stay closed, causing leaking.
- *Urge incontinence* is characterized by frequent urination and the strong, often uncontrollable need to urinate followed by leaking of urine. This type of incontinence will often limit a person's activity and travel because of the need to be close to a bathroom at all times. Urge incontinence results from the involuntary contraction of the bladder muscles.
- *Overflow incontinence* occurs when a very full bladder is unable to empty. This can occur from obstruction of the opening of the bladder or from weak bladder muscles. This is usually caused by medications, neurological problems, or injury.

An individual may have a combination of these symptoms. History alone cannot determine the cause of urinary incontinence. Successful treatment depends on the proper diagnosis. A thorough history includes a complete medical history, medication list, voiding patterns, and physical examination. Urodynamic studies (tests that measure bladder filling and emptying) can help to assess the type of incontinence. Assessment of bladder and pelvic floor nerve function are often recommended to make a correct diagnosis.

Treatment should begin with lifestyle changes. Decreasing alcohol, caffeine, and carbonated beverages can improve symptoms. There are several options available for the treatment of urinary incontinence. They can be grouped in the following categories:

Behavioral Therapy or Behavioral Modification

- Timed voiding or bladder retraining
- Kegels or pelvic muscle exercises

These therapies have minimal risks and can be used in addition to other treatment. These techniques or practices alone can improve incontinence, or they may be used in combination with other treatment. An example of behavior modification therapy is timed voiding. This involves emptying the bladder at scheduled times during the day. The goal is to gradually increase the bladder volume and the time between voiding. Another example of behavioral treatment is "Kegel" exercises. "Kegels" involve tightening and relaxing the muscles that surround the bladder. The goal of Kegel exercises is to strengthen the pelvic floor muscles and improve incontinence. Kegel exercises must be done frequently and properly to be effective.

Medications

Medications can decrease the symptoms of urge incontinence. Most of these medicines have side effects, including dry eyes and dry mouth, which limit their tolerability. They also interact with many other medications, and can cause complications in patients with the eye disease narrow angle glaucoma, so older patients have to be particularly cautious.

Noninvasive Devices

Electrical stimulation devices are used to help strengthen pelvic floor muscles and improve symptoms. Other noninvasive techniques include pessaries or urinary plugs. These help support the pelvic floor and can reduce leakage. Urinary tract infections are common with these devices.

Surgery

Surgical procedures are often suggested when patients have severe symptoms of stress incontinence or when other therapies have failed. The goal of surgical procedures for incontinence is to restore the bladder and urethra to a normal position. The most common procedures are retropubic suspensions and sling procedures. Surgical procedures may be used in combination with other treatment modalities.

Men also suffer from incontinence. Incontinence in men is often related to prostatic enlargement or prostate cancer. Prostate cancer surgery can increase the risk of incontinence in men. Treatments can help decrease urinary incontinence after prostate surgery. As for women, there are a variety of treatment options, including medications, biofeedback, and in severe cases, implantable devices.

Incontinence is a common problem that affects both men and women as they age. Urinary incontinence can greatly affect the quality of life of the affected individual. In women, pregnancy, childbirth, menopause, and some medical conditions are potential causes of incontinence. In men, prostate problems and prostate surgery can also contribute to incontinence. For both men and women a variety of treatments are available, but symptoms should be discussed with your health care provider so a proper diagnosis can be made. A family doctor, internist, gynecologist, urologist, or urogynecologist can recommend a treatment plan that will minimize symptoms and improve quality of life.

Related Topics

▶ Bladder, ▶ Prostate, ▶ Prostate cancer

Suggested Resources

American Academy of Family Physicians. Family Doctor. Leawood KS (2005); <http://familydoctor.org>
 National Institute on Aging. Pages on urinary incontinence. Bethesda MD (August 2005); www.niapublications.org
 UptoDate/Patient information. Waltham MA (2005); www.utdol.com

Urinary Tract Infections

Timothy E. Klatt

According to the National Institutes of Health (2004), 53.5% of women and 13.9% of men in the United States, aged 20 or older, have experienced a urinary tract infection. In 2000, 7.9 million women and 1.3 million men visited their doctors for this condition. Every year approximately 10% of women in the United States experience a bladder infection, resulting in direct costs of \$1.6 billion in the United States alone.

Urinary tract infections can be separated into two categories: lower urinary tract infections (urethritis and cystitis) and upper urinary tract infections (pyelonephritis and prostatitis). Cystitis is the medical term for a “bladder infection.” Pyelonephritis is more commonly known as a “kidney infection.”

Strains of *Escherichia coli* are by far the most likely cause of a urinary tract infection, accounting for approximately 75%–95% of all infections. Many other types of bacteria also cause urinary tract infections. Most of these bacteria are normally found in the rectum. These bacteria can spread to the area around the urethra and then ascend into the bladder. Upper urinary tract infection usually results from bacteria ascending from the bladder into the kidney and, in men, the prostate.

Female Urinary Tract Infections

The female urethra is short, making it relatively easy for bacteria to gain access to the bladder. This area is also close to the anus and moist, favoring the spread of bacteria from the rectum.

The majority of urinary tract infections occur in sexually active women. During sexual intercourse bacteria can be massaged into the bladder. Diaphragm and/or spermicide use increases the risk that a woman may develop an infection.

Other risk factors include recent catheterization of the bladder, obesity, and illnesses that compromise the immune system, such as diabetes. Some medications, such as prednisone, also limit the effectiveness of a person's immune system. Some women appear to have a genetic predisposition to urinary tract infection.

Far fewer cases occur in older women. Urinary incontinence is associated with an increased risk of infection. Older women are also more likely to have a cystocele, meaning that the bladder bulges into the vagina. This sometimes leads to difficulty emptying the bladder completely, increasing the likelihood of infection.

Male Urinary Tract Infections

Urinary tract infections are less common in men for a number of reasons. The male urethra is much longer than the female urethra. The urethral environment is also much drier than that in women, making it more difficult for bacteria to grow here. Finally, the prostate secretes antibacterial substances. Most urinary tract infections that develop in boys and older men are associated with urologic abnormalities.

Only a small number of younger adult men will experience a urinary tract infection. Insertive rectal intercourse, either with a male or female partner, recent bladder catheterization, and lack of circumcision make a man more likely to develop an infection. If an infection occurs in the absence of these risk factors, then evaluation for obstruction of the urinary tract and other abnormalities should be considered.

Diagnosis

Evaluation for the presence of a urinary tract infection is indicated when a patient reports painful urination, more frequent urination than usual, a persistent urge to urinate, and/or pain in the midline of the lowermost abdomen. An office-based test can be rapidly performed on a urine sample to evaluate for infection.

Microscopic evaluation of the urine, usually done in a laboratory, may also be helpful. The definitive test is a urine culture. The results of this test are usually not available for 48 h. The urine culture indicates whether a urinary tract infection is present and, if it is, provides a list of antibiotics likely to cure the infection.

It is essential that the patient provide a urine sample free of contamination with bacteria from other places, such as the skin and, in women, the opening of the vagina. Such a sample is called a clean catch. A woman is usually instructed to separate the labia and clean the area by wiping from front to back with an antimicrobial wipe. With the labia still separated, she should then begin to void and let the first few drops fall into the toilet. The rest of the urine sample is then collected in a sterile container. A man is usually instructed to wipe the tip of the penis with an antibacterial wipe, let the first drops of urine pass into the toilet and then collect the rest in a sterile container.

Pyelonephritis and upper urinary tract infection is suspected if fever, nausea, vomiting, or costovertebral tenderness accompanies a urinary tract infection. Costovertebral angle tenderness is pain located at the side of the back near the lowermost extent of the rib cage. Pyelonephritis can vary widely from a mild illness to a life-threatening infection. Abnormalities of the urinary tract and kidney stones are commonly associated with upper urinary tract infection. Pyelonephritis is common during pregnancy because of the changes that pregnancy produces in the urinary system.

Therapy

Antibiotics are usually prescribed at the time of diagnosis. If a urine culture is sent, the therapy may be adjusted once the results become available.

A lower urinary tract infection that meets the following criteria is sometimes treated with a 3-day course of antibiotics:

- The patient is female and not pregnant.
- There is no reason to suspect that her urinary tract is abnormal.
- Her symptoms have been present for 6 days or less.
- She does not take any medicines or have any medical condition that would compromise her body's ability to fight infection.

- She does not use a spermicide and/or a diaphragm for contraception.
- She has not yet reached menopause.
- She has not been treated for a urinary tract infection in the preceding 6 weeks.
- Her bladder has not been recently catheterized.
- There is no evidence to suggest that she has pyelonephritis or an upper urinary tract infection.

Treatment with a minimum of a 7-day course of antibiotics should be considered for all lower urinary tract infections not meeting these criteria. Some of the more common antibiotics used include Ciprofloxacin, trimethoprim–sulfamethoxazole, Gatifloxacin, Fosfomycin, and Nitrofurantoin. Nitrofurantoin is not usually prescribed for men because it is less likely to cure their infections. The physician may prescribe a medication, such as phenazopyridine, to provide relief from painful urination. Most patients will show clear signs of improvement within 48 h of beginning their antibiotics. If significant improvement does not occur, further evaluation should be considered.

There is not enough evidence to recommend the drinking of cranberry juice as an effective treatment of urinary tract infections. There is also no scientific evidence that increasing fluid intake in order to “wash out” the infection is an effective therapy. Increased fluid intake may actually render antibiotics less effective by decreasing their concentration in the urine.

When upper urinary tract infection is diagnosed, hospitalization may be necessary. If the patient is only mildly ill, in generally good health, able to rapidly return for further evaluation if he/she worsens or fails to improve, and able to take medications and drink fluids without difficulty, then outpatient treatment may be an option. If a kidney stone or other abnormality is suspected, then inpatient treatment is usually required. Pregnant women are usually admitted to the hospital. The physician will start the patient on an antibiotic likely to help and order a urine culture. In most cases, the patient will improve markedly over the next 48 to 72 h. If the expected improvement does not occur, further evaluation is indicated.

Related Topics

➤ [Bladder](#), ➤ [Kidney](#), ➤ [Kidney disease](#), ➤ [Urinary incontinence](#)

Suggested Readings

- Foxman B, Bralow R, D'Arcy H, Gillespie B, Sobel JD (2000) Urinary tract infection: Self-reported incidence and associated costs. *Ann Epidemiol* 10:509–515
- Mehnert-Kay SA (2005) Diagnosis and management of uncomplicated urinary tract infections. *Am Family Physician* 72:451–456
- Sheffield JS, Cunningham FG (2005) Urinary tract infection in women. *Obstet Gynecol* 106:1085–1092

Suggested Resources

- American Family Physician Online; <http://aafp.org/afp>
- Hooton TM, Stamm WE (2005) Acute cystitis and asymptomatic bacteruria in men (July 6, 2005); www.uptodate.com
- National Kidney and Urologic Diseases Information Clearing House. Urinary tract infections in adults; <http://kidney.niddk.nih.gov/kudiseases/pubs/utiadult/>
- NIH Publication No. 04-3895 (2004) Kidney and urologic diseases statistics for the United States; <http://kidney.niddk.nih.gov/kudiseases/pubs/kustats/>
- Patient information on female urinary tract infection from the Mayo Clinic website; <http://www.mayoclinic.com/health/urinary-tract-infection/DS00286>

Uterine Fibroids

Linda D. Bradley

Uterine fibroids are the most common benign tumor of the uterus. The medical term that is synonymous with uterine fibroids is *leiomyoma*. The etiology (cause) of fibroids is unknown. However, estrogen plays a dominant role in the etiology, since fibroids and associated symptoms are prevalent during the reproductive years and decline during the menopausal years. The mean age when fibroid-related symptoms occur is between thirties and forties. Fibroid-related symptoms resolve during the menopause. Fibroids rarely occur during puberty or adolescence. The incidence of uterine fibroids ranges from 10% to 50%. Many factors influence the incidence including age, race, genetics, and family history. Luckily most women with uterine fibroids are asymptomatic. Malignant transformation of uterine fibroids is infrequent. In fact, leiomyosarcoma is detected in only 0.1% of women with fibroids.

The uterus is normally about 8 cm long and 5 cm wide. It approximates the size of a small lemon. Fibroids are defined as an increase in the smooth muscle component of the uterus. There are three regions within the uterus: the endometrium, myometrium, and serosal layers. Fibroids can originate in any or all regions. Generally fibroids originating in the endometrium (submucosal fibroids) or myometrium (intramural) fibroids are associated with changes with the menstrual cycle. Subserosal and intramural fibroids can also be associated with pressure symptoms. The size of fibroids can range from the size of a lentil pea to the size of a watermelon. Likewise the weight may range from a few ounces to several pounds.

Symptoms from uterine fibroids include changes in menstruation, pressure symptoms, pain, infertility, urinary pressure or urinary retention, constipation, back ache, leg pain or swelling, dyspareunia, pregnancy-related complications, infertility, and increased abdominal girth. Patients can experience one or more fibroid-related symptoms. In the past, patients were often advised to undergo myomectomy (removal of fibroids) or hysterectomy (the removal of the entire uterus and cervix) if the size of the uterus was greater than 12 weeks size. This is no longer true. Today, the caveat is “if your fibroids don’t bother you, we don’t bother them.”

Symptomatic patients can experience a myriad of menstrual complaints including heavier cycles, blood clots, longer duration of menses, and irregular menstruation, constant vaginal discharge, or episodic watery and slightly bloody discharge. Severely affected patients may decrease physical activities and miss work due to incessant need to change sanitary pads and tampons. Patients who chronically suffer from heavier menstrual cycles may develop anemia and fatigue. Additionally, anemic patients may also have unusual cravings (pica) for ice, dirt, or starch.

The most common pelvic viscera consisting of fibroids is the bladder. Symptomatic women often complain of urinary frequency and urgency. Urination during the night is also common. Less frequent are complaints of stress urinary incontinence, acute urinary retention, urinary tract infections, and dysuria. When fibroids enlarge to 16 to 20 cm, they may put pressure on the ureters, leading to pressure on the tubes that drain into the bladder. Hydronephrosis and resulting kidney damage rarely occurs. The least common structure associated with fibroids is the bowel. However, patients with bowel-related complaints

include severe constipation and painful bowel movements.

Collectively, “bulk” symptoms include pelvic heaviness, feeling full, abdominal pressure, and backache. Some patients will also complain of heaviness or a sense that “something is falling out” of the vagina. These symptoms may increase in intensity 1–2 weeks before the menstrual cycle and resolve after menstruation. Likewise patients may complain of discomfort with intercourse.

Finally, patients with fibroids may note increasing menstrual cramps and pain. Menstrual cramps may escalate 1–2 weeks before menses and be further exacerbated with the menses. Generally, nonsteroidal medications can alleviate and minimize pain.

The impact of fibroids on pregnancy and infertility are debatable. Luckily, most women with fibroids do not have reproductive problems. However, fibroids have been associated with premature labor and delivery, malpresentation of the fetus, post partum uterine bleeding, more complicated cesarean sections, and early pregnancy-related bleeding. The location of uterine fibroids plays an important role in patients with infertility. Large submucosal fibroids obstructing the endometrial cavity can be associated with poor placentation, poor sperm migration, and blockage of the fallopian tubes. Likewise, fibroids that develop in the muscular layer of the uterus may impinge on the fallopian tubes or distort the endometrial cavity, making pregnancy more difficult. It is important that women experiencing recurrent miscarriages or infertility undergo a thorough evaluation.

The diagnosis of uterine fibroids is often suspected by clinical history and the pelvic examination. Confirmation can be made with pelvic or transvaginal ultrasound. Adenomyosis, a condition when the blood of menstruation grows in the muscle of the uterus, is another uterine condition that mimics fibroid symptoms (heavier menses, dysmenorrhea, and increased uterine size). Occasionally, magnetic resonance imaging (MRI) of the pelvis is required to differentiate these conditions. Patients with a normal uterine size, but heavy menses may undergo office hysteroscopy (telescope that looks inside the uterus) or saline infusion sonography (a newer transvaginal ultrasound imaging) to determine the presence of uterine fibroids.

Luckily, there are many conventional surgical procedures as well as minimally invasive techniques to treat uterine fibroids. Many factors must be considered

when advising a patient with fibroids. Choice of therapy depends upon reproductive desires of the patient, age, size and number of fibroids, and desire for maintaining the uterus. Sometimes, expectant management is indicated in women who are perimenopausal. Patients with minimal complaints nearing the menopause may be reassured about resolution of fibroid symptoms once menopause occurs. Some fibroid-related complaints might be simply treated with non-steroidal medication, low-dose oral contraceptive pills, or GnRH therapy (a medication which temporarily stops menstruation and shrinks fibroids). Hysterectomy always solves fibroid-related bleeding and bulk symptoms. However, hysterectomy should rarely be advised in women wanting children. Myomectomy, which involves just the removal of uterine fibroids, should be considered in women wishing to preserve their fertility or to women opposing hysterectomy.

Currently there are several methods available to perform myomectomy including hysteroscopic (a telescope inserted into the uterus via the vagina), laparoscopic (a telescope inserted thru the belly button to look inside the abdomen), vaginal, or by conventional exploratory laparotomy (regular surgery with large abdominal incision). The surgical choice depends upon the size, number, and location of the fibroids. Finally, uterine fibroid embolization (UFE), a procedure performed by a radiologist that blocks blood flow

to the fibroids without surgical incisions, is a minimally invasive technique performed by an interventional radiologist that selectively blocks the flow of blood to the fibroid.

Patients now have a vast array of options to treat uterine fibroids. Fortunately, most fibroids are benign. For this reason, patients should never feel rushed into making a clinical or surgical decision. Patients with symptomatic uterine fibroids should seek a compassionate and well-trained gynecologist that is knowledgeable about all fibroid options. The decision to proceed with surgery or other minimally invasive options should be made rationally.

Related Topics

[▶ Abdominal Pain](#), [▶ Bladder](#), [▶ Cancer](#), [▶ Cancer screening](#), [▶ Hysterectomy](#), [▶ Vaginal Bleeding](#)

Suggested Readings

- Bradley LD, Falcone T, Magen AB (2000) Radiographic imaging techniques for the diagnosis of abnormal uterine bleeding. *Obstet Gynecol Clinics North Am* 27(2):245–276
- Clark A, Black N, Rowe P, Mott S, Howle K (1995) Indications for and outcome of total abdominal hysterectomy for benign disease: A prospective cohort study. *Br J Obstet Gynecol* 102(8):611–620

Vaginal Bleeding

Linda D. Bradley

Abnormal uterine bleeding is a common and significant problem during puberty, adolescence, reproductive, and postmenopausal years. Approximately 10 million women annually suffer from abnormal bleeding—many suffer in silence. Menstrual-related complaints account for almost one-third of all visits to gynecologists. Among postmenopausal women, the new onset of bleeding will require an urgent visit to the gynecologist to exclude malignancy, while heavy and prolonged bleeding in the adolescent will lead to an emergency room visit. During the reproductive years, pregnancy-related concerns and uterine pathology must be addressed.

The impact of abnormal uterine bleeding and subsequent treatment can be profound. In the most extreme circumstances, heavy bleeding can be associated with low blood pressure, anemia, fast heart rate, blood transfusions, and inability to enjoy work, hobbies, or sexual intercourse. Women who experience unpredictable and heavy menses often complain of a poor quality of life, with restrictions in work, travel, or sports. Often they have decreased psychological well-being. They feel confined and afraid to leave their homes or need quick access to bathrooms, because of their fear of social embarrassment from soiling through clothing and furniture due to unpredictable and uncontrolled bleeding.

Normal menstruation begins between ages 10 and 17 years. Menopause occurs between ages 45 and 55 years of age. By age 51 years, 80% of women cease having menstrual cycles and by age 58 years, 95% of women stop menstruation. Less than 10% of women stop menstruation before 45 years. Once ovulatory cycles ensue, women will have regular and predictable bleeding every 24–35 days, lasting 3–7 days with a predictable amount of flow. Most women lose 2–4 tablespoons of blood with each menses (30–40 ml). The majority of blood loss occurs over 1–2 days, and scantier amounts of bleeding will occur during the remainder of the cycle. Some women may have 1–2 days during the course of menstruation, when menstruation stops and then resumes. Subjectively, each woman serves as her own control—experiencing menstruation individually and uniquely. Slight variations in pattern, duration, and amount will be alarming and lead a patient to seek an evaluation. Most problems

with abnormal uterine bleeding will occur within the first 5–10 years after menarche or prior to menopause.

Sanitary pad requirements are usually minimal, and for most patients do not seem oppressively burdensome. Most women change a pad or tampon every 3–4 h on their heaviest days of flow. Subsequent days of bleeding will be noticeably less heavy. However, hygienic concerns (odors and moisture) may make sanitary protection changes more frequent.

Recently, the American College of Obstetrics and Gynecology (ACOG) recommended the more descriptive terminology of anovulatory uterine bleeding (AUB) to refer to bleeding not caused by anatomic, organic, or systemic pathological conditions. The spectrum of menstrual aberrations associated with AUB is generally related to hormonal imbalance associated with the loss of regulatory control between the brain and female organs. Symptomatically, the menstrual change can include a reduced frequency or amount of blood or erratic excessive bleeding.

Many factors can be associated with vaginal bleeding including pregnancy-related complications, cancer, systemic diseases, infection, trauma, and drugs. The most common pregnancy-related complications include miscarriage, incomplete abortion, implantation bleeding, and ectopic pregnancy. Vaginal bleeding can also be caused by anatomic abnormalities within the reproductive tract: vaginal polyps, vaginal infections and lacerations, foreign bodies, or vaginal cancer may be the culprit in some cases of abnormal bleeding. Cervical bleeding may be due to cervical polyps, thin tissue on the surface of the cervix, cervical cancer, and infectious causes. Uterine abnormalities can include thin and fragile uterine tissue or polyps, fibroids, adenomyosis, a condition caused by blood growing in the muscle of the uterus, endometrial hyperplasia, a pre-cancerous condition, endometrial cancer, and infections. Rarely does fallopian tube cancer or ovarian cancer present as abnormal vaginal bleeding.

It is important that the individual advise their health care provider about their reproductive life cycle. A detailed history and physical examination must be obtained in any woman presenting with abnormal bleeding. Systemic diseases must be excluded by a detailed history. The examination should include physical inspection of the vulva, vagina, and cervix. A thorough bimanual exam and rectal examination is important.

Once a thorough physical examination has been performed, laboratory and imaging testing becomes

imperative. Generally, initial laboratory studies will include a complete blood count (CBC) with platelets and thyroid hormone levels. Other laboratories including coagulation studies, liver function tests, and hormonal panels may be selected based on the history or physical examination.

Several diagnostic techniques are available including endometrial biopsy (a tissue biopsy), transvaginal ultrasound (a probe that measures the size of the uterus), hysteroscopy (a telescope that views the inside layer of the uterus, saline infusion sonography (a specialized type of ultrasound that obtains excellent pictures of the uterus), and magnetic resonance imaging (a highly specialized type of x-ray). The clinical history and physical examination will dictate which modalities are chosen.

The therapy chosen for patients with abnormal uterine bleeding may include medical, surgical, or a combination of both. For women with anovulatory menstrual cycles, many effective medical therapies are available, including oral contraceptive pills, progestin therapy, intrauterine progesterone devices, nonsteroidal therapies, or GnRH analogues (medication that stops menstrual cycles). For instance, anovulation due to hypothyroidism would be treated with thyroid medication, whereas patients with anovulatory cycles who also need contraception would be offered low-dose oral contraceptive pills. The choice of medical therapies will be determined by the desire for future childbearing, lack of contraindications for therapy, cost, the ability of the individual to adhere to a prescribed medication regimen, and the absence of other organic, anatomic, or systemic disease.

Surgical therapies may utilize minimally invasive therapy with removal of polyps or fibroids with operative hysteroscopy. In cases where no anatomic pathology is found, and the individual would like to preserve the uterus, but is not considering childbearing, endometrial ablation (surgical procedure that destroys the cells of menstruation) may be an option. Hysterectomy may be the ultimate procedure when other therapies have failed, or when women expect 100% relief from abnormal bleeding.

Finally, abnormal uterine bleeding affects many patients and spans the reproductive life cycle. The etiology of abnormal vaginal bleeding spans the gamut from reproductive tract abnormalities or systemic disease. In some cases, the bleeding can be debilitating, in others it is just a minor nuisance. However, a thorough history, physical examination, and carefully chosen

imaging test and laboratories will quickly delineate the etiology—pointing the way to appropriate medical or surgical therapy.

Related Topics

[Cancer](#), [Cancer screening](#), [Fibroids](#), [Hysterectomy](#), [Menopause](#)

Suggested Readings

- Jones K, Bourne T (2001) The feasibility of a 'one stop' ultrasound-based clinic for the diagnosis and management of abnormal uterine bleeding. *Ultrasound Obstet Gynecol* 17:517–521
- Munro MG (2000) Abnormal uterine bleeding in the reproductive years. Part I—pathogenesis and clinical investigation. *J Am Assoc Gynecol Laparosc* 6(4):393–416

Vaginismus

Gray B. Clarke

Definition and Significance

Vaginismus is defined as the involuntary spasm of the pelvic muscles surrounding the outer third of the vagina. Such spasm is typically triggered by anticipation of or actual attempts at vaginal penetration, and may interfere with or totally prevent sexual intercourse and, in some cases, may prevent insertion of almost anything into the vagina, including tampons, fingers, or speculums used in gynecologic examinations.

The psychiatric diagnosis of vaginismus is delineated in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV), which underscores that vaginismus is psychological in nature, and specifies that the condition may not be due exclusively to the physical effects of a medical condition. While the DSM-IV does not specify pain as a criterion for the disorder, many if not most women with vaginismus either experience or fear pain with vaginal penetration. It is thus generally recommended that the diagnosis be confirmed by careful pelvic examination by a physician well versed in care of women with sexual dysfunction.

Limited data concerning the prevalence of vaginismus, especially in older women, exists. While there are no population-based studies to provide estimates of the rate of the disorder in older women, a very gross estimate of prevalence of the disorder may be inferred from studies reporting on rates of pain during sex in older women. Such studies generally reveal that between 8% and 13% of women aged 50 and older experience pain during sexual intercourse. It does appear that such rates are significantly lower than in younger women.

While vaginismus is a significant problem for the women who experience it and for their partners, in addition to the serious personal consequences it causes (childlessness, marital strife, and feelings such as frustration, humiliation, and inadequacy), there may be public health consequences as well. Failed marriage resulting from untreated vaginismus and its attendant relational strife could lead to financial burden, effects on the emotional well-being of children, and, for older women, increased disability and higher mortality rates, as evidenced by recent population surveys reporting on these factors as related to relationship/marital status. Lack of adequate gynecologic care may put women at higher risk of illness and/or death due to late or non-detection of a variety of gynecologic malignancies (ovarian, uterine, cervical, vaginal, and vulvar) and the like. Even poor sexual satisfaction may put some older women at increased risk of serious physical disability, as suggested by one recent study.

Etiology

A large number of etiologic theories for vaginismus have been proposed. Despite speculation that alterations in the sex steroid hormones estrogen or testosterone may cause vaginal dryness or lack of vaginal smooth muscle relaxation, leading to a condition such as vaginismus, studies have generally failed to find an association between vaginismus and sex hormone levels.

Currently, the most widely accepted view is that vaginismus results from a conditioned response to any adverse stimulus affecting the pelvic or genital region or sexual functioning of a woman. That is, the spasm characteristic of vaginismus may have at one time been a voluntary or desired reaction on the part of a woman when encountering an adverse event or stimulus (pain, surgery, forceful intercourse) affecting the pelvic region.

Later, when faced with an event that the woman perceives as similar in nature to the original adverse event (imagined or actual vaginal penetration or manipulation), the spasm becomes “conditioned” or automatic and occurs involuntarily. Phobic avoidance (fear) of vaginal penetration and beliefs that such penetration is harmful or painful then reinforce the conditioned response of spasm. It should be noted that not all women can identify an inciting event that directly leads to the conditioned response as described. For these women, intense fear of sex/penetration and phobic avoidance of the same appear to lead to the disorder.

Treatment

Treatment of vaginismus is usually two-pronged, and aimed at (1) eliminating erroneous beliefs or thoughts, which reinforce the conditioned response of involuntary muscle spasm and (2) desensitization exercises to reduce anxiety about vaginal penetration, and terminate the fear response of muscle spasm. The first treatment aim is managed by way of education (about the size of the vagina and likelihood of pain, for example) and challenging of erroneous beliefs and thoughts. The second aim is undertaken through relaxation exercises and graded exposure to vaginal penetration. The woman is taught to gradually begin exploring her genital region, both visually and manually, and then to begin insertion of her fingers or graduated dilators into the vaginal area, proceeding from smallest to largest. The patient is generally allowed a great deal of control over this process and how rapidly it progresses.

Problems such as impotence and premature ejaculation are common amongst partners of women with vaginismus, and these problems should be managed concurrently, although many such problems will resolve with treatment of the woman’s vaginismic response. Organic problems that act to reinforce or maintain the vaginismic response should be treated as well.

Prognosis

Originally, sex therapists such as Masters and Johnson reported cure rates of virtually 100% for vaginismus. Currently reported cure and improvement rates are less dramatic, but most therapists report good success rates. Although outcome of treatment may vary somewhat between gaining simple tolerance of vaginal

penetration to experiencing of great pleasure during coitus, most women find that treatment leads to a richer, more satisfying sexual life thereafter.

Related Topics

[Cognitive behavioral therapy](#),
 [Dyspareunia](#),
 [Hormone therapy in menopause](#),
 [Marital satisfaction](#),
 [Pain](#)

Suggested Readings

- Clarke GB (2004) Vaginismus. In: Loue SR and Sajatovic M (eds) *Encyclopedia of women's health*. Kluwer Academic/Plenum Publishers, New York, pp 673–675
- Kaplan HS (1974) *The new sex therapy: Active treatment of sexual dysfunctions*. Brunner/Mazel, New York
- Katz D, Tabisel RL (2002) *Private pain: It's about life, not just sex...Understanding Vaginismus and Dyspareunia*. Women's Therapy Center, New York
- Lamont JA (1978) Vaginismus. *Am J Obstet Gynecol* 131:632–636
- Leiblum SR, Rosen RC (2000) *Principles and practice of sex therapy*, 3rd edn. The Guilford Press, New York

Varicose Veins

Janet Blanchard

Varicose veins are a very common condition that affects both men and women. It affects approximately 1% to 73% of women, and 2% to 56% of men. These appear as large, ropey, tortuous strands usually on the legs. Some of the risk factors for developing varicose veins include female gender, pregnancy, family history of venous disease, obesity, and occupations associated with increased standing or sitting. The cause is believed to be the inability, or incompetence, of the valves in the veins to adequately pump the venous blood back to the heart. Incompetent veins or valves or impaired muscle function may lead to abnormal calf muscle pump function that can then elevate the pressure in the veins (venous hypertension). This can then lead to a vicious cycle of dilatation of the veins, pooling of the blood and eventually, a condition called thrombophlebitis (blood

clots) may develop. This can also become potentially harmful or fatal if the blood clots travel to the lung, also known as a pulmonary embolism. If the thrombophlebitis becomes chronic enough, it can lead to a manifestation of chronic venous insufficiency (CVI). Varicose veins can not only be unsightly, but also extremely painful and can lead to CVI. In addition, CVI can lead to skin changes in the legs, which can lead to an open wound, which we call a leg ulcer.

CVI and venous ulcers can affect the productivity and well-being of millions of people worldwide, and is the most common cause of leg ulcers. It is estimated that varicose veins may affect up to 3.5% of the general population and cause 54,000 hospital admissions per year. Although this condition/disease can be potentially dangerous, recognition and prevention can help minimize the progression. Compression of the legs will help the pumping mechanism. This can range from over-the-counter support stockings to compression stockings prescribed by a physician. Elevation of the legs, weight loss, and exercise are some of the non-surgical interventions that can help prevent complications. In addition, when prolonged sitting is necessary, flexing the leg muscles and even massaging the legs can really help. Sometimes, a physician will prescribe an aspirin for prevention in these circumstances. For some, it is necessary to be on long-term blood thinners.

There are many instances when surgical intervention is necessary. If the varicose veins are not severe, sclerotherapy can be used. This is usually an in-office procedure where a solution is injected into the veins, which causes an inflammatory reaction and eventually the veins close down. This may take several months to even a year. Until recently, surgical intervention has been quite invasive. Vein stripping was the standard for treating severe varicose veins. This was fraught with many possible complications such as wound breakdown, chronic swelling, and scarring. In recent years, new minimally invasive techniques have been devised. These include radio-frequency ablation (RFA), endovenous laser therapy (EVLT), and trans-illuminated power phlebectomy (TIPP). These have offered superior alternatives to the traditional vein stripping. While it is beyond the scope of this entry to describe these procedures in detail, essentially they are an in-office procedure usually performed by a vascular surgeon or peripheral vascular physician. The procedure takes approximately 1 h and the postoperative course involves a minimal amount of recuperation. In addition, there is minimal scarring and discomfort involved.

In summary, varicose veins will continue to be a common problem, however, with the newer, less-invasive techniques, hopefully people will seek attention earlier to help prevent the potentially serious complications associated with this condition.

Related Topics

► [Obesity](#), ► [Venous thromboembolism](#), ► [Weight maintenance](#)

Suggested Readings

- Bartholmew JR, King T, Sahgal A, Vidios AT (2005) Varicose veins: New, better treatments available. *Cleve Clin J Med* 72(4):312–314, 319–321, 325–328
- Beebe-Dimmer JL, Pfedifer JR, Engle JS, Schootenfeld D (2005) The epidemiology of chronic venous insufficiency and varicose veins. *Ann Epidemiol* 15(3):175–184
- Kerstein MD (2003) Economics of quality ulcer care. *Dermatol Nurs* 15(1):59–61
- Teruya TH, Ballard JL (2004) New approaches for the treatment of varicose veins. *Surg Clin North Am* 84(5):1397–1417
- Trent JT, Falabella A, Eaglstein WH, Kirsner RS (2005) Venous ulcers: Pathophysiology and treatment options. *Ostomy Wound Manage* 51(5):38–54

Venous Thromboembolism

Markus Porkert · Nanette K. Wenger

Venous thrombosis is the presence of a blood clot in a vein that either partially or completely blocks the flow of blood in that vein. If it is located in a deep vein of the body, it is called a deep venous thrombosis (DVT). These typically form in the legs and pelvis but can also be located in the arms. A segment of the clot in the deep veins can detach and travel through the heart and lodge in the arteries of the lungs, causing a pulmonary embolism (PE).

Venous thrombosis typically occurs due to (a) local trauma to the vessel wall, (b) blood stasis (pooling or nonmovement of the blood), or (c) hypercoagulability (increased predisposition for clotting of the blood). Predisposition to hypercoagulable states can

be inherited or acquired. Inherited conditions include those that result from deficiencies in blood factors that prevent clotting such as protein C and S and anti-thrombin III. The most common inherited hypercoagulable (increased clotting) state is the presence of a genetic mutation factor, V Leiden. Genetic mutations are genes that differ in some individuals from those typically seen in the “normal” population. These inherited conditions usually present with thrombosis at a young age, and often with recurrent thromboses. Acquired conditions that increase the tendency to form blood clots are frequent in the elderly. These include prolonged bed rest or inactivity, prolonged car or airplane rides, recent surgery, cancer, use of hormone replacement therapy, obesity, heart failure, cigarette smoking, and lower extremity trauma. The incidence of venous thromboembolism increases with older age.

Signs and Symptoms

Typical symptoms of DVT include pain, swelling, tenderness, or discoloration of the affected limb. On examination, a palpable cord (a hardened vessel that is easily felt) may be present, the limb may be warm and red, and superficial venous dilation (vein swelling) may be seen. However, a DVT often is asymptomatic, and the clinical diagnosis of DVT is not adequately accurate as the signs and symptoms are often nonspecific. Thus, further testing is necessary to confirm or exclude the diagnosis.

The most common symptom of a pulmonary embolism is sudden onset of shortness of breath. Other symptoms include chest pain, cough, hemoptysis (cough productive of blood), and associated leg swelling and pain due to a DVT. Findings on physical examination include tachypnea (rapid breathing), tachycardia (rapid heart rate), diaphoresis (sweating), and findings of a DVT. However, many patients can be asymptomatic; in fact, up to 50% of patients with a DVT have had an asymptomatic PE at the time of diagnosis. Also, these signs and symptoms are nonspecific and can be seen with many other disorders. Thus, again, further testing is needed to establish a diagnosis.

Diagnosis

Lower extremity venous compression Doppler ultrasound is a safe and noninvasive test that can reliably be

used to diagnose or exclude a DVT. Patients are asked to lie still while their leg veins are visualized with an ultrasound probe and assessed for compressibility and flow through the vein. If an initial study is negative but the suspicion for DVT is high, a repeat study should be obtained in 5 to 7 days. If a DVT is suspected in the pelvic or intra-abdominal veins, a computed tomography (CT) scan is indicated. If results of noninvasive tests are equivocal, an invasive test, contrast venography (direct injection of radiocontrast dye into the veins to visualize the interior of the vessel under x-ray), can be performed. However, in most situations, noninvasive testing can provide a diagnosis.

An initial screening test to assess for a PE or DVT is a D-dimer level that is obtained from a venous blood draw. D-dimer is a breakdown product of fibrin, a major component of blood clots, and is invariably elevated when a PE or DVT is present. A negative D-dimer level is highly predictive of a PE or DVT not being present. Alternatively, a positive D-dimer level does not necessarily mean that a patient has a PE or DVT. Patients who do not have a very high suspicion of a PE or DVT do not need further testing if they have a negative D-dimer. Patients with a very high clinical suspicion or a positive D-dimer need further testing to establish a diagnosis. A pulmonary embolism can generally be diagnosed using either a CT scan of the lungs to visualize the clot in the pulmonary artery or a ventilation/perfusion (V/Q) scan to assess a mismatch between parts of the lungs that are ventilated but not receiving blood flow. The V/Q scan is currently rarely used owing to the superior diagnostic accuracy of the CT scan. If these tests are equivocal or negative, but a strong clinical suspicion of a PE remains, pulmonary angiography, where radiocontrast dye is injected into the pulmonary arteries after catheterization of a vein, is performed to establish or exclude the diagnosis. This test is usually not needed if third generation/more sophisticated CT scanning is available.

Treatment

The main objectives for therapy of a venous thrombosis are to prevent extension of the clot, recurrence of thrombosis, and late complications (such as a PE with an isolated DVT). Anticoagulation (clot prevention) is the cornerstone of treatment for both DVT and PE. Anticoagulation is achieved initially with the anti-clotting

medication heparin for a period of at least 5 days. Unfractionated or standard heparin can be given continuously via intravenous route or low molecular weight heparin can be administered via subcutaneous injections. Standard heparin needs close monitoring and is therefore administered on an inpatient basis. The advantage of low molecular weight heparin is that it can be given once or twice daily and requires no monitoring of therapy. Thus, it can be administered at home in low risk patients, avoiding a hospitalization.

Oral warfarin, another anti-clotting medication, is usually started at the same time as heparin. The anticoagulant effect of warfarin does not occur for several days and is the reason that heparin is also given initially. Warfarin's effects can be variable and the adequacy of anticoagulation has to be monitored frequently, especially during initiation of therapy, to avoid under- or overdosing. Warfarin is generally continued for 3–6 months for a first event that occurred with a reversible risk factor (such as immobilization after surgery), for 6 months or more with a first event with no known risk factors, or for one year to lifelong with an irreversible risk factor such as an inherited condition.

The major risk with both heparin and warfarin is bleeding. Elderly patients are at increased risk for bleeding with both therapies. Close monitoring of both unfractionated heparin and warfarin is needed to avoid overanticoagulation, which significantly increases the bleeding risk. Multiple medications can interact with the absorption and metabolism of warfarin, including over-the-counter nonsteroidal anti-inflammatory drugs; the prescribing physician has to be aware of any changes in the medical regimen. Due to the risk of bleeding, duration and length of therapy with these agents has to be individualized. This is especially true for elderly patients who may be at increased risk of falling with the potential for severe intracranial bleeding (bleeding into the head), associated with head trauma from falls.

Patients who have a massive, life threatening, pulmonary embolus may be treated with thrombolytic therapy, which causes thrombi to dissolve rapidly. Patients who have contraindications to anticoagulation or have recurrent DVT/PE on warfarin therapy may be candidates for the placement of a filter into the inferior vena cava (a large vein that returns blood from the legs to the heart), which would entrap any clot released from the legs prior to it reaching the lungs.

Prevention

Patients, who are hospitalized at bed rest for several days, either after surgery or for medical illnesses, are at increased risk of developing venous thrombosis. This is especially true for elderly patients and causes significant morbidity and mortality. Both the prolonged immobility and concurrent medical conditions, such as cancer or heart failure, predispose to thrombosis. Prevention of clot formation is essential in these patients. Nonpharmacological strategies for prevention include elastic compression stockings, intermittent pneumatic compression (which intermittently squeezes the legs to keep blood flowing in the veins), leg elevation, and early mobilization. Several clinical trials have now shown that pharmacological agents are useful in the prevention of thrombosis in these patients. Both low molecular weight heparin given once or twice daily and subcutaneous unfractionated heparin given up to three times daily have been shown to be efficacious without increasing the major bleeding complication rate.

Post-phlebitis Syndrome

Approximately 30% of patients will develop post-phlebitis syndrome due to venous insufficiency (inadequate blood flow) following DVT. Patients may have leg pain and edema. Overlying skin may become erythematous (reddened) and hyperpigmented, and eventually skin ulceration may occur. Cellulitis (an infection of the skin) can become a recurrent problem. Compression stockings are the mainstay of therapy and may decrease symptoms by 50%.

Related Topics

➤ [Cardiovascular disease](#)

Suggested Readings

- Aronow WS (2004) The prevention of venous thromboembolism in older adults: Guidelines. *J Gerontol* 59A:42–47
- Creager MA, Dzau VJ (2001) Vascular diseases of the extremities. In: Braunwald E (ed) *Principles of internal medicine*. McGraw-Hill, New York, pp 1434–1442
- Goldhaber SZ, Elliott CG (2003) Acute pulmonary embolism: Part I. Epidemiology, pathophysiology, and diagnosis. *Circulation* 108:2726–2729

Jacobs LG (2003) Prophylactic anticoagulation for venous thromboembolic disease in geriatric patients. *J Am Geriatr Soc* 51:1472–1478

Rich MW (2004) The management of venous thromboembolic disease in older adults. *J Gerontol* 59A:34–41

Veterans

Amy Kilbourne

There are over 24 million veterans in the United States (13% of the US population over the age of 18 years). According to the US census, a veteran is someone 18 years or older, not on active duty, but who once served in the US armed forces (Army, Navy, Air Force, Coast Guard, Marine Corps, or the Merchant Marines). In 1980, there were over 27 million US veterans, and the number decreased to 26 million in 1990. The veteran population has been declining, primarily because of deaths of older veterans from the World War II and Korean War eras.

Based on a 2000 survey of veterans, the average age of the veteran population was 58 years, with the largest group of veterans between the ages of 45 and 64 years. About 9% of veterans in 2000 were black, 85% white, 4% Latino, and 2% of other race/ethnicity. Women veterans (6% overall) tend to be younger on average, and an increasing proportion of younger compared to older veterans are women and/or minority, reflecting the trends in the growing enrollment of women and minorities in the US armed forces. Most veterans reported having greater than a high school education, and about half were currently employed based on this 2000 survey.

The US census recently included questions on veteran status as well, in order to obtain a more complete picture of US veterans. Based on the 2000 census, additional information can be obtained on this group. Specifically, about 6% were below the federal poverty level, and almost 30% reported being disabled. The largest percentage of veterans reported serving in the Vietnam era, followed by the post-Vietnam era (e.g., Desert Storm, Operation Iraqi Freedom/Operation Enduring Freedom), and World War II. Most veterans lived in the south or the Midwest, and California, the most populous state, has the highest number of veterans. Veterans are most likely to reside in rural or non-metropolitan counties.

Most public health- and disease-related information on veterans is available from the Veterans Health Administration, which provides care for veterans who have been honorably discharged. Approximately 5 million veterans received care in the Veterans Health Administration. Over 35 million visits were made in 2000, and over 500,000 hospitalization discharges were recorded from Veterans Administration (VA) medical facilities. The number of patients treated increased by 22% from 4.1 million in 2001 to more than 5 million in 2004.

In a representative survey of veterans, the majority self-reported using the VA health care system as their regular source of care, including outpatient and inpatient services. In addition, the VA healthcare system is seen as providing care to a disproportionate number of older Americans, many of whom experiencing poor health status. Of the 5 million receiving care, the most common medical conditions that are diagnosed in inpatient and outpatient visits in VA facilities include psychiatric disorders, notably depression (23%), diabetes (19%), ischemic heart disease (18%), stroke (18%), substance use disorder (13%), and congestive heart failure (5%). For these conditions, the prevalence was higher among veterans 55 years or older compared to those less than 55 years old. Moreover, older veterans experience the worst health status, often having health-related quality of life scores that are up to 1 standard deviation below averages for Medicare enrollees. Up to 50% of elderly veterans report difficulty in functioning, and rated their health status as fair or poor, and those with combat exposure or posttraumatic stress disorder (PTSD) have reported the worst overall health. Additionally, elderly African American and Hispanic veterans reported worse health than non-Hispanic white veterans across the majority of health indicators. As a result, the VA healthcare system has recently invested in chronic disease management programs and increasing long-term care services for veteran enrollees.

Overall, veterans receiving care in VA facilities are on average older, sicker, and lower income than veterans who do not receive care in VA facilities and in the US population in general. Many indigent veterans receive VA because of its generous benefits, notably nominal copays for medications. In many respects, the VA is the United States' health plan for indigent individuals. Evidence suggests that many of the health disparities seen in non-VA settings such as mortality

differences between blacks and whites are not present in the VA because of its apparent equal access to care.

Related Topics

• [Veterans Administration](#)

Suggested Readings

- Payne SM, Lee A, Clark JA, Rogers WH, Miller DR, Skinner KM, Ren XS, Kazis LE (2005) Utilization of medical services by Veterans Health Study (VHS) respondents. *J Ambul Care Manage* 28:125–140
- Selim AJ, Berlowitz DR, Fincke G, Cong Z, Rogers W, Haffer SC, Ren XS, Lee A, Qian SX, Miller DR, Spiro A 3rd, Selim BJ, Kazis LE (2004) The health status of elderly veteran enrollees in the Veterans Health Administration. *J Am Geriatr Soc* 52:1271–1276
- Villa VM, Harada ND, Washington D, Damron-Rodriguez J (2003) The health and functional status of US veterans aged 65+: Implications for VA health programs serving an elderly, diverse veteran population. *Am J Med Qual* 18:108–116

Suggested Resources

- National Survey of Veterans 2000. (2005); http://www.va.gov/vetdata/Census2000/CenData/US_Regional_vets.xls
- U.S. Department of Commerce. Census 2000 Brief on Veterans (2003) Report # C2KBR-22; <http://www.va.gov/vetdata/Census2000/c2kbr-22.pdf>
- VA Health Care Atlas-FY 2000. (2005); <http://www1.va.gov/rorc/products.cfm>

Veterans Administration

Amy Kilbourne

The Department of Veterans Affairs (VA) has the largest centrally directed health care system in the United States. It is the second largest of the 15 Cabinet departments, and operates nationwide programs for health care, financial assistance, and burial benefits. In 2000, the VA spent \$63.5 billion total, in which \$29 billion was spent for health care, \$34 billion for benefits, and \$155 million for the national cemetery system.

The VA also offers disability compensation, a monetary benefit paid to veterans who are disabled by injury or disease incurred or aggravated during active military service.

One of the largest facets of the VA benefits system is its health care system. The VA health care system includes over 157 medical centers, 862 ambulatory care and community-based outpatient clinics, 134 nursing homes, 42 residential rehabilitation treatment programs, 207 Veterans Centers, and 88 comprehensive home-care programs. These services are managed by 21 regional networks (IVA Integrated Services Networks, or VISNs). VA health care facilities provide a broad spectrum of medical, surgical, and rehabilitative care for eligible veterans. Over 70% of disabled and low-income veterans are enrolled with VA for health care. The VA health care system uses a comprehensive electronic medical record system, and recently enacted a consumer-driven health management system for patients (MyHealthVet).

The VA also oversees the largest medical education and health care training program in the United States. VA facilities are affiliated with over 100 medical schools and over 1200 allied health professional schools in the United States. Each year, about 83,000 health professionals are trained in VA medical centers. Hence, more than half of the physicians practicing in the United States had some of their professional education in the VA health care system.

The VA's medical system also serves as a backup to the Defense Department during national emergencies and as a federal support organization during major disasters. The VA also provides health care and benefits to more than 100,000 homeless veterans each year. While the proportion of veterans among the homeless is declining, VA actively engages veterans in outreach, medical care, benefits assistance, and transitional housing.

The VA also supports an array of research in diverse areas such as aging, women's health, AIDS, posttraumatic stress disorder, and other mental health issues. Over \$400 million has been spent on VA research. VA researchers have played key roles in developing the cardiac pacemaker, the CT scan, and improvements in artificial limbs. The VA has also been able to support large multicenter clinical trials program through its Cooperative Studies Programs. The VA also sponsors "centers of excellence" throughout the nation that conduct research in rehabilitation and health services.

Related Topics

▶ [Disability](#), ▶ [Health insurance](#), ▶ [Veterans](#)

Suggested Resources

Department of Veterans Affairs Fact Sheet. <http://www1.va.gov/opa/fact/vafacts.html>

VA Health Care Atlas FY 2000; <http://www1.va.gov/rorc/products.cfm>

VA's 85th anniversary. 2005; <http://www.75anniversary.va.gov/>

Violence

Corinne Peek-Asa

Each year in the United States, approximately 2.3 per 100,000 individuals over the age of 65 are victims of homicide, and an additional 4 per 1,000 are victims of violent crimes including rape, assault, and robbery. Violent crimes perpetrated against the elderly can include interpersonal violence as well as stranger violence. While many crimes against the elderly fall within the definition of elder maltreatment, the definition of elder maltreatment requires that the perpetrator be a caregiver of the elderly victim, and that a trust relationship be established. Thus, elder maltreatment does not include violent crimes perpetrated by strangers.

The number of elders who are victims of abuse each year ranges from 1 to 2.5 million per year. However, events of violence against the elderly are likely to be under-reported in most available sources of criminal and health statistics, and are especially likely to underestimate elder maltreatment by a caregiver. Elderly victims are often hesitant to identify themselves as victims, and could risk losing the care they receive should they report the perpetrator. Thus, information about the frequency and risk factors for violence against the elderly is woefully lacking.

One source of information about crimes against the elderly is the National Crime Victimization Survey (NCVS), conducted annually by the Bureau of Justice Statistics. This phone survey asks respondents to describe criminal violent victimizations over the past

year. The NCVS is a household-based phone survey, and thus represents violent victimizations only among independent elderly. Elderly who live in institutional care facilities are not included.

According to the NCVS, the elderly report much lower rates of criminal violent victimization than younger age groups. While the elderly report a violent victimization rate of 4 per 1,000, those aged 12–24 report violent victimization rates of 82 per 1,000. However, the elderly have equal rates of personal larceny, which includes crimes such as purse snatching and pocket-picking. In fact, personal property crimes accounted for 92% of the criminal violent victimizations reported by persons aged 65 and over. Compared with victims of younger ages, elderly victims of violent crime were just as likely to confront an assailant with a weapon, and to be seriously injured in the crime.

Based on data from the National Center for Injury Prevention and Control and the Consumer Produce Safety Commission, each year over 20,500 individuals age 65 and older are treated in emergency departments for assault-related injuries. This translates to a rate of 58 assaults per 100,000 elderly in the population, which is far below the peak rate of 1,480 assaults per 100,000 population aged 20–24.

Violence is preventable. Although many believe violent acts to be random events, they actually occur in predictable patterns. Identification of these patterns has led to an understanding that violence is predicated by a complicated interplay between individual, family, community, and societal characteristics. Violence can be prevented or reduced through actions that modify the characteristics that predicate violence.

At the individual level, elderly who require care from others for their activities of daily living are at greatest risk for maltreatment. Elderly who are isolated, and who have chronic medical conditions, especially those that cause dementia, are also at high risk. Elderly, who are independent, are the most likely victims of crimes such as robbery and assault.

Poor communication skills, past violent victimization or witnessing violent acts, and low levels of education can increase the risk for violent victimization. Violence perpetration is consistently linked with a lifestyle that includes alcohol and drug use, guns, and nonviolent criminal behavior. Perpetrator risk factors that are of particular importance for violence against the elderly include caregiver stress, caregiver mental illness, and motivations of monetary fraud. Families that have a history of violence, and in which

there is a shared living situation, are vulnerable to violence against elderly family members.

Community factors include poverty, high unemployment, poor development of the built environment (for example, dilapidated neighborhoods), and lack of community cohesion. Isolation or segregation of some subpopulations such as the elderly, and tolerance for violence are examples of societal factors. Societal attitudes that value and respect the elderly could be protective against violence against the elderly.

Interventions that focus on changing these environmental components can be highly effective because they have the potential to reach a larger number of people. These programs, however, should be implemented in conjunction with programs that address high-risk populations of individuals.

Knowledge about the prevention of violence is rich but fragmented across a number of professional disciplines. A sufficient body of research has not yet been developed that can determine which of the many components of violence are most successfully modifiable, and most programs have not been adequately evaluated. However, most programs that have been highly effective combine interventions that address both individual and multiple components of the environment.

Many professional agencies can play an influential role in protecting the elderly from violent victimization. The first step in providing intervention services is the identification of elderly who have been victims of violence or who are at high risk for violence. Health care professionals, social workers, law enforcement officials, and agencies that provide services to the elderly are examples of professionals who should be involved in screening and identifying at-risk elderly. Several short instruments that screen for violence risks have been developed, and these can be applied in many settings. Many states have enacted legislation that requires at least some of these professionals to report elder abuse when it is identified.

Adult protective service agencies are the primary response mechanism for elderly victims of violence. Adult protective service providers investigate allegations of abuse, and substantiate whether or not abuse or neglect has occurred. Emergency and long-term services can then be provided at the victims request based on the specific needs of each case. There have been few evaluations of adult protective service approaches, and there is a great need to better understand the most efficient delivery of victim-friendly interventions.

Knowledge about the causal pathway of violent behavior, and how to intervene and prevent such behavior, is growing and improving, but there is great need to better understand the frequency and circumstances of violence against the elderly. An evidence-based approach to prevention that encourages collaboration between different agencies and professional backgrounds will contribute to ongoing efforts to reduce violence against the elderly.

Related Topics

[Adult Protective Services](#), [Crime](#), [Homicide](#),
[Intimate partner violence](#), [Traumatic injury](#)

Suggested Readings

Bonnie R and Wallace R (eds) (2003) *Elder mistreatment: Abuse, neglect, and exploitation in an aging America*. National Research Council, Washington, D.C.

World Health Organization (2002) *World report on violence and health*. Geneva, Switzerland

Suggested Resources

Center for Substance Abuse Prevention. Substance Abuse and Mental Health Services Administration (2000) *Violence against the elderly, a resource guide*. Center for Substance Abuse Prevention, Washington, D.C.; <http://ncadi.samhsa.gov/referrals/resguides.aspx?InvNum=MS719>

Klaus P (2005) *Crimes against persons age 65 or older, 1993–2002*. U.S. Department of Justice, Bureau of Justice Statistics. Washington, D.C.; <http://www.ojp.usdoj.gov/bjs/pub/ascii/cpa6502.txt>

Vision

Monique A. Anawis

The eye converts light and images from the environment into electrical signals that ultimately travel to brain and allow us to see. Along its route, the eye depends upon healthy tissues to transmit information. With age, certain changes in the eye occur, which can alter and diminish vision. Some of these are simply a

part of aging, such as cataracts, while others are due to diseases of the entire body, such as diabetes, or diseases specific to the eye such as glaucoma.

- The first surface of the eye that light contacts and is altered by is the cornea. If light is focused too early in the eye then one is near-sighted (myopic). Eyeglasses or contact lenses to correct myopia cause the light to travel farther back in the eye to focus. Myopic glasses make images appear smaller. The stronger the myopic correction the smaller the eye appears behind the glasses. By contrast, far-sighted (hyperopic) individuals focus images too far back in the eye. Far-sighted eyeglasses magnify images making the eye appear larger behind the glasses. Prior to the use of lens implants, high hyperopic lenses were used to restore vision after cataract surgery.
- Astigmatism, a condition of blurry vision due to light rays bending at different angles when they go through the abnormal surface or shape of the lens or cornea. Eyeglass or rigid contact lenses can correct astigmatism. Changes in the lens with formation of cataracts may account for new astigmatism with age. Numerous laser and incisional surgical techniques exist, and are being further developed to correct astigmatism, near-sightedness, and far-sightedness.
- The cornea ideally is a clear surface like that of the windshield on a car. Any imperfections such as scars or drying may distort the images we see. With age, the eye typically makes fewer tears, which can cause dryness and eyelid inflammation. The lack of adequate tears may be worsened by a dry environment or medications such as antihistamines used for allergies. Dry eyes may cause irritation, a gritty sensation, and decreased vision particularly at times in which we blink less frequently such as reading a book or using a computer. Blinking allows the eye to be periodically moistened. Modifications of the environment with humidification and alterations of medications may be required in addition to supplemental artificial teardrops or other treatments for dry eyes.
- The second major surface that bends light in the eye is the lens. Once the lens becomes cloudy with age, following injury or from medical conditions including diabetes, it is called a cataract. A cataract may blur, distort, or cause doubling of images. In addition, cataracts may cause symptoms of glare such as sensitivity to the light from oncoming headlights at nighttime. Certain cataracts may act as a filter and alter or dull our sense of color. Some

cataracts are able to provide better focusing of images at near distances so that reading glasses are no longer necessary providing a “second sight” in later years.

In addition to cataract formation, with age, the lens loses the ability to alter focus at distance, near, and locations in between through a process called accommodation. As the eye ages, it loses the ability to create sharp images at near. This condition is called presbyopia. Reading glasses are required for presbyopia sometime after the age of 40 or 50 years to make up for this loss of near focus.

- After light passes through the lens, it travels to the inside of the eyeball or the vitreous gel. The vitreous gel is in contact with the retina (membrane lining the inside of the eye) and nerve of the eye (optic nerve). Floaters are substances that move through the vitreous gel and cast a shadow that looks like dark spots, threads, or spider webs. Floaters are seen with aging, and following eye injuries or operations. Seeing flashes or streaks of light may indicate that the vitreous gel is pulling on or detaching from the retina. Retinal detachment typically causes a blind-spot or sensation of a curtain coming down in front of the vision. By contrast, vitreous detachments generally result in mobile spots in the vision. Floaters and visual flashes that are new, suddenly increase in number, or change in character require immediate ophthalmologic evaluation.

Having passed through the vitreous gel, light travels to the retina. The retina is a complex tissue that acts similar to the film in a camera. If a piece of photographic film is folded, bent or otherwise marred, then the picture seen is also distorted. Likewise, scarring, fluid buildup, or other retinal changes such as age-related macular degeneration may change or blur the image seen. High blood pressure or diabetes may damage blood vessels in the eye, and the ophthalmologist in examining the retina may be able to directly see the effects of these and other conditions on the eye.

- The retina derives its nutrition from blood vessels. Without proper circulation of blood to the retina and optic nerve, a stroke (interruption of blood flow) to large or small segments of the retina or optic occurs. Poor blood circulation to the eye may be from narrowing of blood vessels throughout the body (arteriosclerosis) or those in the neck

(carotids) supplying blood to the eye. Additionally, blood circulation can be interrupted by particles or plaques of cholesterol or other materials in the body that plug up blood vessels. Strokes in the eye generally cause painless visual loss to large or small areas of sight or “blindspots.” If a sudden painless loss of vision occurs then immediate care should be sought. With a delay of treatment of only 90 min from the onset of visual symptoms, the chance of regaining sight diminishes precipitously.

- The optic nerve brings visual information from the retina to the brain. The brain is the final location for processing visual information. Damage to the optic nerve caused by glaucoma causes losses of visual field. In early glaucoma, peripheral visual field is typically lost. In later stages or particularly aggressive forms of glaucoma, more central vision is lost.
- Damage to the brain caused by strokes, tumors, bleeding, and other conditions can affect vision. Strokes in visual areas of the brain can cause loss of sight, characteristic visual field loss, color perception defects, and may be accompanied by the inability to read and or write depending on the location of damage. Lesions of the brain may result in the inability to recognize objects by sight while still being able to recognize objects by touching them (agnosia). Visual hallucinations or seeing things that are not really there, may occur due to abnormalities in the brain.
- The nature and duration of visual changes can provide diagnostic clues. A sudden onset of flashes and floaters may indicate a detachment of the vitreous gel from the back of the eye. Movement of vitreous occurs with aging as the components of the gel change. A few seconds of darkening or graying out of vision in one or both eyes (transient visual obscurations or TVOs) occurs with optic nerve swelling and is often precipitated by postural changes. TVOs may also occur before certain strokes to the optic nerve, seen in older patients with inflammation to the medium and larger blood vessels in the body (giant cell arteritis). Twenty to thirty minutes of zigzag, shimmering, or tunnel vision may occur and be followed by a headache in certain types of migraine. Migraines generally have their onset in the teens or during the twenties. If migraine-like symptoms are first experienced in middle age or later years then it is imperative to exclude pathology in the brain.

- The visual pathway is complex. Vision includes the clarity of images, color vision, peripheral vision, location of images in space, perception of contrast of light and dark, and comprehending what has been seen. Distinguishing predictable changes that occur with age such as cataracts from more emergent conditions such as retinal detachment is vital to maintaining vision throughout life. Once light enters the eye to be bent by the cornea and lens, and travels through the vitreous to the retina, then the health of the blood vessels supplying the retina, optic nerve, and its pathways to the brain are critical to the final formation of images that allow us to see our world.

Related Topics

🔗 [Blindness](#), 🔗 [Cataract](#), 🔗 [Eye care](#), 🔗 [Glaucoma](#)

Suggested Resources

American Academy of Ophthalmology; www.aao.org
Association for Macular Diseases, 201 E. 64th St., New York, NY
10021, (212) 605-3719
National Diabetes Education Program; www.ndep.nih.gov
National Eye Institute and National Eye Health Education Program;
www.nei.nih.gov

Vitamins

Rajkumari Richmonds

Vitamins are essential components of good nutrition. Vitamin supplementation on a daily basis for a healthy elderly individual is controversial because a daily intake of five to six servings of fruits and vegetables should sufficiently provide the needed vitamins and minerals for good health. However, supplementation of vitamins may be required if the diet of the elderly individual is unbalanced or if the individual is malnourished. Self-medication by the elderly with over-the-counter vitamins generally should be discouraged because of adverse side effects.

Vitamin A

Vitamin A is essential for growth, vision, and maintenance of the immune function. Vitamin A is stored in the liver, and deficiency occurs only after a prolonged period of poor dietary intake of vitamin A. Dietary sources of vitamin A include fish, fish oil, liver, milk, and eggs. Dark-colored leafy vegetables, and yellow- or orange-colored fruits, are packed with beta-carotene, a pre-vitamin A. Elderly people who have adequate liver stores of vitamin A will have normal plasma levels of vitamin A. However, this does not necessarily reflect an adequate vitamin A intake because liver stores of vitamin A are not affected by age. Recommended Dietary Allowance (RDA) for males is 5,000 IU or 1,000 µg per day, and 4,000 IU or 800 µg per day for females. Toxicity may occur with intake that exceeds the RDA. There are two types of hypervitaminosis A: acute and chronic. Acute hypervitaminosis A is rare among elderly, but chronic toxicity is usually due to overdose of vitamin A supplements, but not from consumption of vitamin A rich foods.

Healthy elderly individuals do not need extra attention regarding vitamin A nutrition. RDA recommendations for vitamin A are adequate to the geriatric population but some individuals, who have problems with alcoholism and protein calorie malnutrition, may need supplementation.

Vitamin D

Vitamin D is also known as the “sunshine vitamin.” Vitamin D can be obtained either from dietary sources or by synthesis in the skin on exposure to sunlight. Dietary sources of vitamin D include fortified dairy products. Vitamin D plays an important role in the regulation of calcium and phosphorus metabolism, and influences the process of bone mineralization. A deficiency may cause poor mineralization of bone, which leads to osteoporosis in the elderly. Daily recommended intake (DRI) is 1,000 IU or 25 µg daily for both males and females. This recommendation is adequate to strengthen bones. Increased intake is not recommended because high doses of vitamin D leads to hypercalcemia and results in toxicity.

Vitamin E

No major disease state due to vitamin E deficiency is found among Americans. The major symptom of vitamin E deficiency in humans is an increase in red blood cell fragility. Since vitamin E is absorbed from the intestines in chylomicrons (the largest lipid particle), any fat malabsorption disease can lead to vitamin E deficiency. Vitamin E content of the diet varies with the amount and type of dietary fat consumed. The requirement for vitamin E increases with the intake of polyunsaturated fatty acids. In the United States, this does not cause any problems since the main dietary sources of polyunsaturated fatty acids are also the best source of vitamin E (vegetable oils, cottonseed, corn, soybean, safflower, wheat germ). RDA is 10 mg/d for males, and 8mg/d for females. The present RDA seems to be adequate for elderly adults.

Vitamin K

Vitamin K is necessary for synthesis of prothrombin and other blood clotting factors by the liver. A deficiency of vitamin K causes defective blood coagulation. A prolonged prothrombin time reflects vitamin K deficiency. This vitamin can be synthesized by the intestinal flora or provided through the diet. Dietary sources of vitamin K include spinach, cauliflower, liver, and kidney. High intakes of vitamin E and vitamin A have the potential to increase the risk of bleeding among people treated with anticoagulants. Present studies do not indicate whether the RDA is sufficient for the elderly. It is also unknown at present whether older healthy people have altered vitamin K requirements. RDA is 80 μ g/d for males, and 65 μ g/d for females.

Vitamin C

The vitamin C present in one orange, about 60 mg, is the RDA for nonsmoking adults (100 mg for smokers). RDA of 60 mg is adequate for the elderly as there are no known age-related changes in vitamin C metabolism. Vitamin supplementation doses of greater than 1,000 mg are not recommended. Vitamin C increases iron absorption: high levels of iron may be associated with an increased risk of cardiac disease. Vitamin C is an antioxidant; consuming high amounts of any

antioxidant can become pro-oxidant and perhaps damage cells and DNA.

Thiamine

The RDA for thiamine is 1.2 mg/d for men, and 1 mg/d for women. Deficiency is rare in developed countries. If deficiency does occur, it is the result of low caloric intake or disease or both. Even with the decreased caloric intake of the elderly, the calorie-corrected thiamine is adequate for the nonalcoholic elderly.

Riboflavin

Riboflavin, like other vitamins, functions as a coenzyme for the electron transfer reactions. Riboflavin deficiencies are rare in United States due to the availability of riboflavin in eggs, milk, meat, and cereals. People who have hypothyroidism, diabetes mellitus, or are going through chronic stress situations may have riboflavin deficiency. Riboflavin deficiency may also be a problem for people who consume a limited amount of milk. Among the elderly population, this may be due to lactose intolerance. Aging does not seem to affect riboflavin metabolism. Deficiency of riboflavin among healthy elderly is due to low intake, and can be easily corrected. RDA is 1.4 mg/d for males, and 1.2 mg/d for females.

Niacin

Niacin helps to maintain healthy skin and nerves. The classic niacin deficiency is pellagra, which is characterized by symptoms like diarrhea, depression, and dermatitis. Pellagra is uncommon in Western societies. Drugs such as isoniazid can cause niacin deficiency. The RDA is 15 mg/d for males, and 13 mg/d for females. Intake of niacin is highly variable; several population studies indicated that intake of niacin was related to socioeconomic status. Hence, there is no altered recommendation for the elderly.

Folic Acid

Folic acid is found in a variety of foods. The richest sources are liver, asparagus, spinach, wheat, bran,

yeast, and dry beans. Evidence suggests that there are no specific age-related changes in folate metabolism, and that elderly people are capable of maintaining an adequate folate status, despite low intake. Alcohol and certain medications such as antimalarials, and anti-convulsants, can cause folic acid deficiency. The RDA is 400 mg/d for adults, and can be regarded as adequate for the elderly. Intake of more than 1000 mg/d can mask hemotologic signs of vitamin B12 deficiency, and possibly delay its diagnosis.

Vitamin B₁₂ (Cyanocobalamin)

The primary dietary source of vitamin B₁₂ is animal products. Nutritional deficiency of vitamin B₁₂ from inadequate dietary intake is rare, but can occur among strict vegans. Most elderly individuals maintain normal vitamin B₁₂ levels despite low intake. With increasing age, there is also an increased occurrence of gastritis. Atrophic gastritis decreases the bioavailability of vitamin B₁₂. Overgrowth of bacteria in the upper gastrointestinal tract may also make vitamin B₁₂ unavailable. Vitamin B₁₂ deficiency may be an undetectable problem even among healthy elderly and therefore, periodic assessment for vitamin B₁₂ status should be done. There is no altered vitamin B₁₂ requirement. RDA is 2.0 µg /d for both males and females.

Pyridoxine (B₆)

Low dietary intakes are the main cause for vitamin B₆ deficiency. Age-related changes in vitamin B₆ have also led to increased requirements of pyridoxine in older adults. Daily requirements of pyridoxine are directly related to protein intake. With a low protein diet, less vitamin is needed. The RDA for vitamin B₆ for males 51 years and over is 2 mg/d, and 1.6 mg/d for females 51 years and older. High intake of pyridoxine above 100 mg/d may increase toxicity or decrease

efficacy of many drugs that are used to treat Parkinson's disease and seizures, and can cause sensory neuropathy in lower extremities.

Multivitamins

When dietary selection is limited, nutrient supplementation with a low dose of multivitamins can be useful in recommended intake levels. The potential intake of food and supplementation can improve the cognitive and physical functions in old age.

Nutritional recommendations for the elderly are based on the assumption that the deficiencies are detrimental. Thus, recommendations have been designed, in general, to reverse the changes and restore the body composition to a healthy state.

Related Topics

▶ Diet, ▶ Nutrition, ▶ Obesity

Suggested Readings

- Boisvert W, Mendoza I, Castaneda C et al (1991) Dietary intake requirements for riboflavin in healthy elderly do not differ from those recommended for adults. *FASEB J* 5(4):A558
- Hartz SC, Russell RM, Rosenberg IH (eds) (1992) *Nutrition in the elderly*. Smith-Gordon, London
- National Research Council (1989) *Recommended dietary allowances*, 10th edn. National Academy Press, Washington, D.C.
- Ribaya-Mercado JD, Russell RM, Samloff IM et al (1991) Vitamin B6 requirement of elderly men and women. *J Nutr* 121:1062–1074
- Russell RM, Suter PM (1993) Vitamin requirements of the elderly: An update. *Am J Clin Nutr* 58:4–14

Suggested Resources

- Food and Nutrition Board, National Academy of Sciences (1989) *Recommended dietary allowances*, Revised; <http://www.Geocities.com/nutriflip/4rdas.htm>

Wandering Behavior

Lakyntiew S. Aulakh

Wandering is a characteristic behavior of people with dementia. A significant problem for caregivers, it is often the underlying reason for placement in a nursing home dementia unit. Research shows that a majority of older adults with dementia, and who are ambulatory will wander at some time. It is a frequently cited major problem for most dementia care facilities. Wandering may reflect different types of deficits such as global cognitive decline, visual spatial deficits (deficits in vision with respect to understanding of depth or space perception), or perseveration (repetitive speech and behavior). Experts argue that wandering is a beneficial form of exercise that in itself is harmless, even good and should be permitted in secure environments. Others recognize that unchecked wandering can hinder care routines such as eating or interfere with the privacy of others. Perhaps, the greatest concern with wandering behavior is the potential for injury, for example, falls, and the potential for wandering into situations that are physically dangerous such as busy traffic areas.

Wandering is most common among individuals with dementia, a syndrome characterized by impairment of memory and cognitive functions. These cognitive disorders are the most prevalent psychiatric disorders of later life. These diseases cause neuronal loss or other structural brain damage (e.g., Alzheimer's disease, cerebrovascular diseases or strokes, Pick's disease) The prevalence and burden of the cognitive disorders of later life is anticipated to increase as the proportion of elderly persons in the United States population increases over the next 50 years. Alzheimer's disease is estimated to affect 5% of the US population between the ages of 65 and 74, 20% of the population between 75 and 84 years of age, and 47% of the population over 85 years of age. It is projected that there will be 13 million Americans with Alzheimer's disease by 2040. Many of these individuals will need care in a structured setting outside the home.

Reasons for wandering could be a change of environment that may make a patient disoriented. It may be due to a loss of short-term memory; individuals may forget where they were going and why, or they may walk past and beyond an intended destination. It may be a way of burning up excess energy, an indication that they need exercise. It may also be an expression of boredom.

Patients with dementia find it hard to focus and concentrate and, therefore, wandering may be a way of keeping occupied. They may be feeling restless and anxious, and pace or wander off for no apparent reason. Wandering may ease discomfort or pain. Lastly, tight clothing, excessive heat, or the need for a toilet could cause wandering.

Interventions that could reduce or eliminate the hazards of wandering include, first and foremost, identification of risk factors for wandering, such as dementia, acute confusion causing disorientation, and a history of wandering from caregivers. This should be followed with the conduct of an assessment. Assessment will often include the Folstein Mental Status Examination (Mini Mental State Examination [MMSE]). Specific interventions include

1. the provision of appropriate supervision, using volunteers, or paid sitters,
2. the use of alarm sensors with radio frequency transmissions to monitor patient movements,
3. a reduction of environmental triggers, such as noise and light,
4. the provision of easy accessibility to the bathroom and orienting symbols to identify the bathroom,
5. the provision of a sense of belonging and personal security,
6. the encouragement of movement and exercise as appropriate, in a wandering garden if possible,
7. the avoidance of physical restraints as they cause agitation and injury,
8. the assessment and treatment of pain that may cause restlessness, and
9. the conduct of a secure medical evaluation to identify and treat reversible causes of acute confusion.

Hospital administrators can also develop protocols for interventions and training of staff about wandering behavior, and search and rescue procedures for missing patients with dementia.

One of the newer adjunctive dementia structural modalities is the wander garden. This structural addition to the health care unit allows institutionalized patients with dementia to enjoy the pleasures and benefits of leaving the residential structure. In the early stages of dementia, the wander garden environment is designed to stimulate the patient's physical and mental function by promoting sensory activity. In the later stages of the disease, the garden can promote awareness outside of self and create a sense of immediate pleasure. The wander garden is also intended

to reduce the negative behavioral aspects associated with wandering. In general, the wander garden allows patients to retreat to a safe, controlled, noninstitutional outdoor setting for sensory stimulation, socialization, and exercise. Wandering can be a beneficial form of exercise with cardiovascular benefits. It may improve circadian sleep rhythm, which is frequently a problem with patients with dementia who are confined. Finally, exposure to bright sunlight and cycling of the days will promote a better sense of time and orientation.

Related Topics

- ▶ Alzheimer's disease, ▶ Dementia, ▶ Long-term care,
- ▶ Mini Mental State Examination

Suggested Readings

- Algase DL, Beel-Bates C, Beattie RAE (2003) Wandering in long-term care. *Annals of Long-Term Care* 11(1):33–39
- Detweiler MB, Trinkle DB, Anderson MS (2002) Wander gardens: Expanding the dementia treatment environment. *Annals of Long-Term Care* 10(3):68–74
- Silverstein NM, Flaherty G (2004) Wandering in the hospitalized older adult, try this: Best practices in nursing care for hospitalized older adults with dementia. *Geriatr Nurs* 1(6):196–199

Weight Maintenance

Kathleen Franco · John Franco · Mohammed Alishahie

Older persons are at risk for both extremes, weight loss secondary to chronic illness and weight gain from lack of physical activity. Although individuals who are very ill or quite old may have difficulty maintaining their weight, more are likely to be heavier than they and their doctor would like them to be. Individuals over the age of 65, like the other age groups in the United States, are battling obesity. In 1990, 12% of adults over 65 had a body mass index over 30 kg/m² compared to 19% in 2002. The public health epidemic of obesity has resulted from more sedentary lifestyles and easy access to processed and fast foods. As one ages, it may be harder to exercise and easier to microwave a “T.V. dinner” than prepare fresh fruits, vegetables, and meats. The “cost” of

the extra weight increases the risk for cardiac disease, diabetes, some cancer, vascular disorders, osteoarthritis, and depression among others. These in turn reduce the likelihood of adequate exercise and often limit other aspects of good self-care such as social interaction and even diet.

An ounce of prevention is truly important, but no matter when one starts, it is better to begin than never try to reach a healthier state. Weight and body mass index are very crude indicators, and most physicians will rely as much or more on waist circumference that indicates intra-abdominal fat, and muscle mass and strength. A good physical examination and dietary history can allow health care providers to work with the older patient who is trying to make a positive lifestyle change.

Without exercise, even the benefits of a healthy diet are limited. There are many true barriers and excuses for avoiding exercise: pain when performing, lack of access to a safe place for exercise, inadequate information on what to do, underestimating the worth of exercise, or simply not making it a priority. It is estimated that sedentary behavior doubles the risk of cardiac disease. Exercise not only allows an individual to lose weight, but it reduces lipid levels, blood pressure, and chronic inflammatory markers that are associated with heart disease, and promotes normal insulin levels. When men and women over the age of 65 exercise even twice weekly, there are tremendous savings to their health and cost per year of life. There is new evidence that even the risk of depression and of Alzheimer's disease is reduced in elderly who exercise regularly.

Before starting the exercise program, one should consult their physician for the safest, most effective activity. For most persons, this should be built into their daily living habits for the greatest likelihood of continuation. For example, taking the stairs in an office building, walking from the far end of the parking lot, making it a routine to take a walk at the same time everyday or joining a community exercise or walking group can be beneficial. The US Centers for Disease Control recommends 30 min or more of brisk walking or similar exercise daily. The American Heart Association suggests 10,000 steps daily, generally between 3 and 4 miles. Using a pedometer can allow easy monitoring over the day and reinforcement to make the goal.

An exercise warm-up of a few minutes will allow the muscles the opportunity to stretch and avoid injury. Endurance, flexibility, and resistance training are

optimal. An exercise program must take into consideration an individual's existing conditions and needs. Weight training and progressive resistance with repeating sets of exercise 2 to 3 days per week can help maintain or improve muscle mass as intra-abdominal fat and weight improve.

When diet is the only approach, precious muscle can be lost. The combination of improved diet and exercise helps achieve a healthier body and mind. Good cognitive function and memory are promoted by a healthy diet paired with regular daily exercise.

In 2005, the US Dietary guidelines changed from the goal of altering weight and body mass index to calories taken in equaling those expended. The guidelines moved from set weight ranges for all adults to healthier bodies based on age and physical activity. Nutrient dense foods are encouraged as opposed to the traditional food pyramid. Five servings of fruits and vegetables each day, and 3 oz or more of whole grains are recommended. Low fat or fat-free dairy products, particularly milk, can add needed protein and calcium.

The federal government has set a goal that at least 50% of the general population will meet the five servings a day fruit and vegetable recommendation. Currently, 32.2% of elders meet this recommendation, the highest of all the age groups in the United States. With respect to physical activity in elders in the United States, Hawaii was rated the best, and Tennessee the worst. Again, with respect to excessive weight, Hawaii had the lowest rates while Michigan had the highest percentage. Elders in Virginia were most likely and those from Louisiana least likely to eat five servings of fruits or vegetables each day.

Foods high in added sugar and saturated fat content should be avoided. Eliminating or reducing red meat, even lean meat, to less than 6 oz can help control unhealthy lipids. If one can refrain from high fat dairy products, fried foods, processed foods high in fat and sugar and excessive alcohol, they will have a far better chance to manage their weight.

Besides being more active and making healthier food selections, reducing calorie intake as one ages is the third component to consider in evaluating weight maintenance. Calorie intake should not exceed calorie expenditure unless a person needs to gain weight. Total fat should be between a fifth and a third of the total calories ingested. In general, persons over 50 should eat about 2000 calories if they are sedentary, and between 2400 and 2800 calories if they are active.

Increasing portion size has been a major setback for Americans. Plate size in restaurants has doubled or tripled in some cases over the past few decades. If guidelines indicate a half-cup of pasta is one serving and we frequently see two cups presented to an individual in restaurants, it is easy to understand how the calories mount and the weight increases. Supersizing has taken over in fast food restaurants, but it also sneaks into the home with individualized packaging. A 6-oz soda was the norm in the 1960s, but it has since jumped to 12, then 16, and now a 20-oz serving. Nutrition fact panels that list calories, fat content, and number of packaged portions are frequently ignored. Discussing healthy eating with a physician and nutritionist is highly recommended.

Related Topics

▶ [Body image](#), ▶ [Body mass index](#), ▶ [Diet](#), ▶ [Exercise](#),
▶ [Nutrition](#), ▶ [Obesity](#), ▶ [Vitamins](#)

Suggested Readings

Horani MH, Mooradian AD (2002) Management of obesity in the elderly: special considerations. *Treat Endocrinol* 1(6):387-398

Suggested Resources

www.nal.usda.gov/fnic/etext/000002.html; Lists many Federal and National organizations providing food and nutrition information
The State of Aging and Health in America 2004; www.cdc.gov/aging, www.miohonline.org

Widowhood

Jody de la Pena Murphy

The death of a spouse is a loss, which encompasses emotional, psychological, and social aspects. Tremendous lifestyle changes are often necessitated due to the multiple roles of marriage. Widowhood often includes the loss of a sexual companion, a partner in financial and household decision-making, and for many, it is the loss of one's best friend. The death of a spouse is considered to be one of the most stressful life

experiences, albeit a common event for individuals over 65 years of age. According to the 2000 US Census figures,

- there were 11.3 million widows and 2.6 million widowers,
- over 45% of females over 65 are widowed, and
- over 780,000 women and 350,000 men annually experience the death of a spouse in the United States, and as baby boomers age (currently there are 43 million people nationwide ages 55 to 74) the rate will increase significantly.

Widowhood is a complex process that involves the grieving period after the death of one's spouse. It is characterized by a sense of loss, sorrow, anxiety, loneliness, and social withdrawal. It may also include physiological responses represented by intensified somatic concerns. Accordingly, elderly widows and widowers have been shown to have an increased use of medical services, as compared to their married counterparts. Use of adult day health programs and in-home and community-based health services are also utilized at a higher rate after the death of a spouse. Increased reliance on alcohol, tobacco, and other substances has been seen in widows and widowers for whom substance abuse was a preexisting condition. Risk factors for increased drinking in widowhood included excessive alcohol usage prior to bereavement, being male, having a history of depression, being dissatisfied with social and emotional supports, and experiencing a depressive episode soon after the death of their spouse.

The grieving process may vary considerably across individuals, depending on a number of factors. An individual's cultural background and religion may play a role in his or her emotional reaction to widowhood. There are varying nuances in coping and social support, depending upon ethnicity. For example, the Caucasian population differs from minority groups with respect to living arrangements in widowhood; unmarried whites, both men and women, are far less likely to live with family members than are those in other ethnic groups. An individual's religious beliefs may dictate some traditions, but in the United States, this factor has not proven to be a reliable predictor of behavior in survivors. There are communities where members more closely monitor and are involved with others' grieving process through widowhood, but for the most part, mourning has evolved toward a more individualized and relatively unstructured experience. Research shows that there are gender differences in

widowhood, suggesting that women recover from the loss within 1 year, while men may take longer to recover. Additionally, widowed men are more likely to remarry than their female counterparts. Finally, self-esteem has been found to be a critical factor in recovery from grief. Therapy or support groups may be necessary in some cases to facilitate growth and to help the bereaved person achieve an integrated healthy self-concept, along with a stable worldview. There are several on-line support groups for individuals who may benefit from additional outside support, as the website listed below.

Widowhood is a lengthy and painful process that involves changes in one's emotional, psychological, and social functioning. The elderly population may have more difficulty with this transition due to poor health, lack of social support and/or decreased economic status. Nonetheless, human beings are resilient. The majority of widows and widowers are able to transition through the grieving process and emerge with a higher level of personal development.

- ▶ "My experience in losing my precious husband has made me more aware of the beauty in everyday life, the need to share the hurts and joys of others... It sustains me and I look forward to the challenge of each day with an appreciation much keener than before."

Anonymous.

Related Topics

- ▶ [Depression](#), ▶ [Grief and Grieving](#), ▶ [Substance use and chemical dependence](#)

Suggested Readings

- Blankenfield A (1983) Grief and alcohol. *Am J Drug Alcohol Abuse* 9:435-446
- Lee S, Shaw L (2003) Gender and economic security in retirement. Institute for Women's Policy Research, Washington, D.C.
- Schuchter SR, Zisook S (1993) The course of normal grief. In: Stroebe MS, Stroebe W, Hansson RO (eds) *Handbook of bereavement*. Cambridge University Press, Cambridge, pp 23-43
- Zisook S (1987) Unresolved grief. In: Zisook S (ed) *Biopsychosocial aspects of bereavement*. American Psychiatric Association, Washington, D.C., pp 23-34

Suggested Resources

- A widow's source for strength and renewal; www.widowsource.com

Wisdom

Kathryn Krieg

Wisdom can be defined as the ability to discern or judge what is true, right, or lasting. Wisdom is insight, common sense, and good judgment. It is knowledge: a sum of learning throughout a life span. This treasured quality has been defined in multiple ways throughout history. Socrates was felt to be wise by his colleagues in saying, “I know that I don’t know.” This parallels another description of a wise person as one who understands the limits of human knowledge. A wise individual can also be described as one who is able to see beneath the superficial to find the deeper meaning.

A group of older adults, interviewed about wisdom, identified guidance, experience, moral principles, the perspective of time, and compassionate relationships as the essential components of wisdom. In addition, most noted the association between wisdom and close relationships with others, and the ability of wise persons to confront error.

Most descriptions of wisdom include a balance of skills that are cognitive, affective, and reflective; these skills are then used to successfully negotiate life’s challenges. Of these, the ability to be reflective is felt to be the most important. All of these descriptions of wisdom imply that there is a difference between wisdom-related knowledge and intellectual knowledge. Although there are shared characteristics in both types of knowledge, they differ in their goals, approach, range and acquisition, and effects.

The goal of wisdom-related knowledge is a rediscovery of known truths, rather than a discovery of new information. This approach to knowledge is more spiritual than scientific. Wisdom-related knowledge is timeless and exists independently of historical events and scientific discoveries. It permeates all aspects of one’s life and cannot become outdated. Wisdom-related knowledge is not taught directly, but is acquired through a combination of cognition and self-reflection. Wisdom-related knowledge may continue to grow throughout life, depending on the capacity for self-reflection, self-awareness, and openness to all types of experiences.

Wisdom and Aging

How does the powerful quality of wisdom facilitate aging well? Wisdom is recognized as a developmental

task of aging and as key to successful resolution of the Eriksonian late-life crisis of integrity versus despair. In this context, wisdom occurs in reviewing one’s life, actions, relationships, and in accepting responsibility for these things. Thus, the wise individual achieves a sense of satisfaction with one’s place and meaning in the world.

Studies show that wise elderly individuals are more satisfied with their lives no matter what their objective circumstances may be. Wisdom has a more powerful impact on their lives than the challenges of various medical conditions, financial stressors, physical environment, socioeconomic status, and social relationships. Wise individuals are not self-centered, and have a strong capacity to feel compassion and sympathy for others. They have positive connections with family members and with their communities. They are helpful in providing wise advice and guidance, and are seen as treasures in their communities.

How then, do we best prepare for a satisfying old age experience and facilitate the development of wisdom? Educational programs for older adults have been successful in helping the elderly keep up with advances in technology and in improving coping skills with medical concerns and financial planning. In addition, such programs could promote the development of wisdom-related knowledge through autobiography review and writing workshops. Narrative gerontology provides an opportunity for older students to review the stories of their lives, to explore alternative interpretations, and to learn from the stories of others. Students are noted to become more reflective and more compassionate toward others.

Specific tools and programs may be especially helpful in promoting and preserving wisdom among the elderly. The Internet has been identified as a powerful communication medium for the elderly. In this approach, wisdom and technology are combined to allow the elderly to reach out to others and to reflect on life experiences. The Elderhostel program and various educational programs through the National Council on Aging have been identified as rich resources for older adult students. Participants gain new information about history and other cultures, but are also able to reflect on their own lives in a larger perspective.

A recent National Council on Aging program provides grant funding for teams of older individuals to identify and address community concerns. Projects already funded include a school suspension reduction program, a middle school reading program, a

protection against investment fraud program, and a support program for family caregivers. It is appropriately entitled “Wisdom Works: Building Better Communities Initiative” and is a wonderful and creative way to use the treasure house of wisdom that we have in our older adult citizens.

Related Topics

[▶ Adult education](#), [▶ Coping](#), [▶ Education](#), [▶ Elder hostel](#), [▶ Gerontology](#), [▶ Internet](#), [▶ National Council on Aging](#)

Suggested Readings

- Ardelt M (2000) Antecedents and effects of wisdom in old age: A longitudinal perspective on aging well. *Res Aging* 22(4):360–394
- Ardelt M (2000) Intellectual versus wisdom-related knowledge: The case for a different kind of learning in the later years of life. *Educ Gerontol* 26(8):771–789
- Bluck S, Gluck J (2004) Making things better and learning a lesson: Experiencing wisdom across the lifespan. *J Pers* 72(3):543–572
- Erikson EH (1959) Growth and crises of the healthy personality. *Psychol Issues* 1:50–100
- Lin MC, Hummert ML, Harwood J (2004) Representation of age identities in on-line discourse. *J Aging Stud* 18(3):261–274
- Montgomery A, Clifton B, McKee P (2002) A phenomenological study of wisdom in later life. *Int J Aging Hum Dev* 54(2):139–157
- Randall WL, Kenyon GM (2004) Time, story, and wisdom: Emerging themes in narrative gerontology. *Can J Aging* 23(4):333–346

Suggested Resources

- The President’s Council on Bioethics, 2005, Taking care: ethical caregiving in our aging society; http://www.bioethics.gov/reports/taking_care/
- Elder hostel online; <http://www.elderhostel.org>
- National Council on the Aging; <http://www.ncoa.org>

Women

Mitzi J. Dearborn

Older women comprise a majority of the aging population in North America, and they are the fastest growing section of the population. Historically, information about aging women has been limited and

oversimplified without regard to complexity and diversity in the aging female population. Recent changes in health paradigm, health research, and health policy have had a large impact on older women, and will continue to be important in the future. Since the majority of older adults are women, it is especially important to highlight concepts that are particularly salient to older women: gaps in longevity and economic status, being single and living alone, caregiving responsibilities, stereotypes, health factors, grieving.

Longevity Gap

On average, women live longer than men; there is a clear gender gap in longevity. In the United States, the female average life span is 79, whereas the male average life span is 74 years. Life expectancy in African American women is shorter than that in white women. In the 65 to 74 year old age group, there are approximately 80 men for every 100 women. There are 65 men for every 100 women in the 75 to 84 years group and 40 men for every 100 women in the 85 and older age group. The number of aging women is increasing worldwide. Although life expectancy is shorter for women in developing countries as compared to the developed world, rapid and continuous increases are occurring in adult older women. Over two thirds of the net annual increase in number of older women in the world is found in less developed countries. For women in developing countries who survive the early life stages to reach middle age, life expectancy approaches that of women in developed countries.

Economic Gap

Economic disadvantage is common in older women. Despite recent declines in poverty in the overall US elderly population, the poverty rate for elderly women remains almost twice as high as that for men. The majority of older women have had fewer years of education and less involvement in the formal work force. Poverty rates are among the highest for women aged 65 to 75 years old who are widowed, separated, or divorced. Older women in minority groups have highest risk for poverty.

There is also a clear gender gap in retirement income. Retirement income is tied to labor market experience and wages. Women’s retirement usually generates less retirement income as compared to men. Factors leading

to this gender gap may include women accumulating less work experience due to childrearing and family caregiving, lower wage earnings, and less frequent pension plan coverage. Women who were single mothers are likely to experience significant economic difficulties in old age.

Over the past 50 years, there have been broad changes in the labor market. The number of highly educated women in the labor force continues to increase, as does their rate of compensation. However, US women still earn about 75% of men's median annual earnings, adjusted for education. The gap in earnings increases as women age. The median income for older women (65+ years) is approximately 60% of median income for older men. Benefits for retired married women are projected to increase from one fifth that of the amount granted to men in 1980 to two fifths in the year 2010. Marked disadvantages in economic status are also found globally in older women.

Single Status and Living Alone

As women age, many women face living alone and/or remaining single. This is due to earlier mortality of men, high divorce rates, and a rising proportion of women who choose not to marry. There is a higher rate of widowhood among women compared to men in developing and in developed countries. In the US 2005 Census, 29% of women aged 65 to 74 were widowed, and 59% of women aged 75+ years were widowed. In the US 2005 Census, 11% of women aged 65–74 years were divorced, and 6% of women aged 75+ were divorced. It is likely that divorce rates will be higher in upcoming cohorts of older women. Number of single parent heads of household has risen in the overall population, and these will impact the rise of singlehood in upcoming older women cohorts. With significantly more single parent households in black families in the US, singlehood in older black women is likely to increase. In developed countries, single older women are more likely to be living alone. With increased urbanization, the proportion of older women living alone is expected to increase globally in the developing countries as well.

Role of Caregiver

The role of caregiver is common for women, and these responsibilities continue with age. Older women often provide caregiving for a sick or disabled spouse,

grandchildren, minor aged children, adult disabled children, or aging parents. Women who are simultaneously caregiving for their parents and their minor children have been referred to as the “sandwich generation.” The “club sandwich” refers to simultaneous caregiving for aging parents, minor children, grandparents, and grandchildren. Various studies have shown that caregiving increases risks for physical and emotional distress. In recent studies, findings indicate that women over age 40 experience higher levels of marital strain as compared to men, and the level of strain for women continues to increase with age. Effects of frequent caregiving for a spouse were believed to contribute to marital strain and illness in older married women.

Older women are often primary caregivers for children who have chronic developmental or severe mental health disorders. This cohort of aging women is beginning to experience long-term stressors associated with caregiving for a child with a lifetime disability. Grandparents are parenting grandchildren with increasing frequency in recent years, especially in African American and Hispanic grandparents. The caregiving grandparents are at higher risk for poorer physical and emotional health over time as compared to noncaregivers. In spite of these increased health risks, older women who are caregivers show remarkable resilience in balancing these caregiving roles. Further resilience and health in older women are expected as public health programming addresses needs for caregiving support groups, skills training, and respite options.

Stereotypes

Negative stereotypes can be particularly challenging for older women. Stereotypes often depict the elderly as obsolete, frail, and burdensome. Historically, women have experienced patterns of sexual discrimination across the life cycle. In cultures that value women primarily for reproduction, menopause implies worthlessness. Often, more negative stereotypes have been used to characterize older women than older men, reflecting a combination of ageist and sexist assumptions. And frequently, negative descriptions have been used to describe the menopausal life phase in women. However, with increasing centenarian status in women, views of survivorship in older women are beginning to develop. Some of the positive aspects of aging in women are being considered, and an increased recognition of the value of full life experience has emerged.

Health Conditions

The leading causes of mortality in older women are heart disease, cancer, and stroke, with ranks paralleling the general population. Among older women, African American women exhibit the highest mortality rates for heart disease, cancer, and stroke. Cardiovascular disease is the leading cause of death for older women; women's risk for cardiovascular disease and myocardial infarction increases with hormonal changes at menopause. Cancer is the second leading cause of death and the risk of developing breast cancer increases with age. Leading sites of new invasive cancers for older women are breast, lung/bronchus, and colon/rectal. Half of all breast cancers are diagnosed in women who are older than 61 years. At younger ages, men are more likely to have stroke than women, but this gender gap closes around 55 years of age. Women who have strokes are at higher risk for dying from the stroke, as compared to men. African American women have a higher death rate from stroke than white women.

Health problems in older women are impacted by a combination of gender, ethnicity, and age cohort. Some gender differences in health problems emerge or change with aging, and others sustain across the adult life span. Hypertension, arthritis, osteoporosis, and heart disease are common health problems in older women. The marked risk for osteoporosis does not appear until after menopause when women have faster bone loss than men as a result of menopausal changes. Osteoporosis in older women is associated with increased risk of fracture as the women's age increases. At ages 50 and older, one of every two women and one of every four men will have a fracture related to osteoporosis in their lifetime.

Self-reported psychological distress, depression, and intimate partner violence are more common in women throughout the life span. For depression, the gender gap narrows in older adults. Women as victims of intimate partner violence persists in older adulthood. Abuse negatively affects the health of women but older women are less likely to disclose abuse and underutilize women's abuse resources in the community. Awareness of intimate partner violence in older women is increasing. Changes in outreach and research are being developed to better assess the specific health effects of intimate partner violence in older women and to improve the timely utilization of health services.

In previous years, there has been a pattern of overlooking the extent and significance of heart disease and stroke in the health of aging women. In recent years, changes in female cardiovascular health associated with aging are being addressed more often, and possible differences in cardiac symptom presentation between men and women are being considered. Ethnic differences in hypertension are seen between African American women and non-Hispanic white women. Hypertension in the elderly had the highest prevalence for African American women. African American older women were most likely to report poorer health, as compared to white or Asian American women. Further research is needed about patterns of gender and ethnic differences that vary with particular disease and phase of life cycle.

Although the majority of women and men have overall good health during ages 60 to 74, women do suffer more disabling conditions than men. With longer life span, women have more years of disability and illness in the years prior to death as compared to older men. The prevalence of disability is most notable in the 75+ age group. With increasing age, older women are more likely to be institutionalized in a nursing home; more than two thirds of nursing home residents are women. Socioeconomic status impacts older women's health and wellness, and higher income is associated with better health status. Recent studies of older women in the United States indicate that older women with lower educational level and lower household income were more likely to report poorer health, have frequent sadness, and have greater chronic illness.

Grieving

Decline in health and economic wellbeing following death of spouse occurs frequently, but resilience is seen in older women. Death of a spouse is one of the most stressful life events that human beings experience. In recent longitudinal studies with additional follow-up in the years following husband's death, findings suggest more resilience in women following widowhood. After the initial period of traumatic grief, women showed more resilience in making social connections and had fewer negative physical and mental health outcomes at one year post widowhood, as compared to men.

Future Directions in Women's Health Care

Women's health care and health policy had been reproduction-centered with a focus on women's reproductive and childbirth health needs. The range of women's health issues across the life span has been consistently overlooked. Until recent years, most medical research has focused on men and has excluded women from participation in studies. Although women were excluded from disease studies and clinical drug trials frequently, it was assumed that the nonreproductive diseases would manifest similarly in women and would respond to drug treatments the same as men.

Prior to the Women's Health Movement in the 1970s, the amount of specific health care information routinely provided to women was limited due to concerns about harmful side effects that information would cause for women's symptom development. In the context of the larger women movement of the 1970s, discussions among women about health and medicine resulted in the pooling and sharing of information among women. The Boston Women Health Course Collective collaborated to develop women's health related literature, including "Women: Our Bodies Ourselves" in 1973, and then in 1987 "Ourselves, Growing Older" for women over 40 years of age. The Office of Research on Women was developed at NIH in 1993. There are several evolving studies, such as the Women's Health Initiative, that will provide further information to women and their health care providers regarding health needs in aging women.

The health care needs and expectations of the Baby Boomer (born 1946 to 1964) cohort of women revolve around participation, health promotion, choice, accountability, and continuity of health care. This large cohort of Baby Boomer women will begin turning 65 in the year 2011. With growth in this population, women's health programming will need to increase emphasis on postmenopausal women and comprehensive women's care across the life span.

In the past fifteen years, significantly more women have been involved in health research, policy, and practice. Women are attending medical school and practicing medicine at dramatically higher rates, and gender differences in health and health intervention are being considered. Cultural effects and age differences are being studied more often. Different age cohorts are

impacted by variations in political and social events during that time period. National and international programming, such as the WHO Aging and Health Programme, will have an important impact in understanding social, economic, and political factors that affect health and quality of life in aging women globally.

Conclusion

Older women experience higher frequencies of longevity, widowhood, living alone, poverty, nursing home residence, and disability over time, as compared to older men. Historically, older women have been viewed as a homogenous group in the context of policy and health. There is a need to consider complexity and diversity in the population of older women and to recognize differences that may occur as a result of culture, age, experience, and socioeconomic factors across the life span. The female population in the United States has become more ethnically diverse over time, and cultural diversity is increasing in older women as well. These changes have important implications for future policy planning. With increasing numbers of older women, it is important that public and health policies incorporate the needs of this important population.

Related Topics

[▶ Ageism](#), [▶ Caregiving and caregiver burden](#), [▶ Disability](#), [▶ Discrimination](#), [▶ Gender](#), [▶ Marriage](#), [▶ Menopause](#), [▶ Older Women's League](#)

Suggested Readings

Bierman AS, Haffer SC, Hwang Y (2001) Health disparities among older women enrolled in Medicare managed care. *Health Care Financ Rev* 22(4):187-198

Bonita R, Howe AL (1996) Older women in an aging world: Achieving health across the life course. *World Health Stat Q* 48:134-141

Brown WJ, Dobson AJ, Bryson L, Byles JE (1999) Women's health Australia: On the progress of the main cohort studies. *J Womens Health Gend Based Med* 8(5):681-688

Coyle JM (2001) *Handbook on women and aging*. Praeger Publishers, Westport, CT

Doress-Worters PB, Siegal DL (1994) *The new ourselves, growing older*. Touchstone, New York

- Evan WE (2004) When will the gender gap in retirement income narrow? *South Econ J* 71(1):182–200
- Strobino DM, Grason H, Minkovitz C (2002) Charting a course for the future of women's health in the United States: Concepts, findings and recommendations. *Soc Sci Med* 54:839–848
- Wilcox S, Evenson KR, Aragaki A, Wassertheil-Smoller S, Mouton CP, Loevinger BL (2003) The effects of widowhood on physical and mental health, health behaviors, and health outcomes: The Women's Health Initiative. *Health Psychol* 22(5):513–522

Suggested Resources

- Brandeis University, National Center on Women and Aging, 2005, Waltham MA (February 28, 2006); www.heller.brandeis.edu/national/
- Centers for Disease Control and Prevention, National Center for Health Statistics, 2006, Hyattsville MD (February 28, 2006); www.cdc.gov/nchs
- National Clearinghouse on Abuse in Later Life, 2006, Dover DE (February 28, 2006); www.ncall.org
- National Family Caregivers Association, 2005, Kensington MD (February 28, 2006); www.nfcacares.org
- National Institutes of Health (National Heart, Lung, and Blood Institute), Women's Health Initiative, 2006, Bethesda MD (February 28, 2006); www.nhlbi.nih.gov/whi
- Older Women's League 2006, Washington, D.C., (February 28, 2006); www.owl-national.org. United States Census Bureau, American Fact Finder 2006, Washington, D.C., (February 28, 2006); www.factfinder.census.gov
- World Health Organization, Fact Sheet on Women, Aging and Health, 2006, Seoul, Korea (February 28, 2006); www.who.org

Wrinkles

Paradi Mirmirani

Human skin, like all other organs of the body undergoes changes with aging. In addition to intrinsic or chronologic changes, environmental exposure can be a major cause of skin damage and wrinkling. Over time, the skin's network of elastin and collagen fibers, which provide elasticity to the skin, is altered. The thickness of the skin (the layers of the skin called the epidermis and dermis) and the underlying layer of fat decrease. There is a decrease in the number of pigment-forming cells, immune cells, and blood vessels. Superficial skin lines form due to repetitive contractions of the small muscles of the face. These universal and presumably

inevitable changes in the skin along with the exacerbating factor of gravity lead to wrinkling and sagging of the skin.

Ultraviolet light emanating from sunlight also plays a major role in causing wrinkles in exposed skin. Unlike intrinsic aging, which depends on the passage of time, damage due to ultraviolet light, or photoaging, depends primarily on the degree of lifetime sun exposure and skin pigment. Individuals who have outdoor lifestyles, live in sunny climates, and are lightly pigmented will experience the greatest degree of photoaging. In photodamaged skin, there is an abundance of deranged elastic tissue and disorganized collagen; blood vessels are dilated and immune cells are decreased. Research has shown that the overproduction of oxidants or free radicals is a crucial factor in causing such changes. These unstable molecules are normally produced by chemical metabolism in the body, however with environmental assaults, they are produced in excessive amounts that can damage cellular and even genetic elements. Cigarette smoke and air pollutants such as ozone are other environmental factors that may promote wrinkles by increasing production of free radicals.

An abundance of anti-aging therapies is available to women today. The most widely available of these are anti-aging or anti-wrinkle creams. The choice of creams depends on many factors, but the consumer is cautioned to consider whether the efficacy of the cream has been proven and documented in scientific, peer-reviewed journals. Many creams are not classified as drugs and are therefore not upheld to the rigorous standards of documenting efficacy. Currently, retinoic acid, a natural form of Vitamin A, is the only cream approved by the FDA as safe and effective for treating some signs of photoaging. Alpha hydroxy acids have also shown considerable evidence in laboratory studies in reversing effects of the sun.

Professional treatments for wrinkles include chemical peels, implants, dermabrasion, laser resurfacing, botulinum toxin injections, and plastic surgery. The choice of treatment is highly individualized, and is dependent on the person's age, degree of photoaging, and chronologic aging among other factors. For example, fine wrinkling and textural changes commonly seen with photoaging may be best treated with chemical peels or laser resurfacing. In contrast, lines caused by facial expression and movement of the muscles of

the face (frown lines) may be best treated with botulinum toxin injections or implants. In addition to the above treatments, prevention remains the easiest means of decreasing wrinkles. Recommendations include smoking cessation, sunscreen use, and avoidance of excessive sun exposure.

Related Topics

▶ Body image, ▶ Liver spots, ▶ Skin care, ▶ Skin, hair, and nail changes

Suggested Readings

Pinnell SR (2003) Cutaneous photodamage, oxidative stress, and topical antioxidant protection. *J Am Acad Dermatol* 48(1):1–19
Yaar M, Gilchrist BA (1999) Aging of skin. In: Freedberg IM, Eisen A, Wolff K et al (eds) *Dermatology in general medicine*, 5th edn. McGraw-Hill, New York, N.Y., pp 1697–1706

Suggested Resources

American Academy of Dermatology; www.aad.org

Yeast Infections

Simran K. Singh

Candida albicans are yeast organisms that have been recovered from soil, animals, hospital environments, inanimate objects, and food. *Candida* can be found normally on the skin, gastrointestinal tract, sputum, and female genital tract in humans. However, for this parasite organism to transform and produce disease, interruption of a person's normal body defense mechanisms is required. This disruption can either occur as a natural illness in a patient with diabetes mellitus or from medical therapies such as using antibiotics, indwelling intravenous or foley catheters, or prosthetic devices.

The clinical manifestations of Candidal infection range from local mucous membrane infections to widespread dissemination with multisystem organ failure. We will focus on the more common local infections instead of the more deeply invasive candidiasis.

Oropharyngeal candidiasis, or thrush, is seen in infants, adults with dentures, and in those treated with antibiotics, chemotherapy, or radiation therapy to the head and neck. It can also be present in those with immune deficiency states such as AIDS, diabetes mellitus, or those on inhaled steroids. Usual symptoms of thrush are a cottony feeling in the mouth, loss of taste, and sometimes pain while swallowing. However, many patients have no symptoms. The diagnosis is usually suspected from the presence of creamy white, curdlike plaques in the mouth which when scraped leave a raw, bleeding, and painful surface. A microscopic examination of the material using a gram stain or potassium hydroxide will demonstrate clusters of fungal cells called pseudohyphae and confirm the diagnosis. Treatment of patients without AIDS can be accomplished with antifungal lozenges or solutions such as Nystatin swish and swallow or clotrimazole troches. If patients do not respond, the preferred therapy is an oral called fluconazole. For older adults wearing dentures, it is important to treat the device by soaking the dentures in a solution of chlorhexidine gluconate or a product such as Polident or Efferdent. Preventive therapy with fluconazole daily may be required in those with recurrent thrush.

Esophageal candidiasis rarely occurs in patients with no underlying illness. It is most commonly seen in HIV-infected patients and those with blood and lymphatic cancers. The hallmark symptom is pain on

swallowing, but patients may also complain of a feeling of obstruction when swallowing or substernal chest pain. Diagnosis is made by looking through a specialized scope (endoscopy) where white mucosal plaque-like lesions are noted, and confirmation is made through biopsy and culture. Treatment for esophageal candidiasis always requires systemic antifungal therapy. Fluconazole is most commonly used.

Vulvovaginal candidiasis is the most common form of mucosal candidiasis and accounts for one-third of all types of vaginitis. Estimates are that 75% of women have an episode of candidal vaginitis during their lifetime. This is not traditionally considered a sexually transmitted disease since candida is considered part of the normal vaginal flora and occurs in celibate women. This is not to suggest, however, that sexual transmission of candida cannot result. Vulvovaginal candidiasis most often occurs in situations associated with increased estrogen levels, such as oral contraceptive use, pregnancy, or estrogen therapy. However, antibiotics, corticosteroids, diabetes mellitus, HIV infection, intrauterine devices, or use of a diaphragm are also risk factors. Patients usually complain of vaginal itching and discharge, however, pain with intercourse, pain with urination, and vaginal irritation may also be present. Physical examination shows vulvar redness and swelling with vaginal redness and classically a thick, adherent, white, curd-like ("cottage cheese") discharge, which may be watery. While diagnosis is typically made clinically, confirmation is obtained microscopically on a wet mount or potassium hydroxide preparation of vaginal secretions.

Treatment for candidal infections is indicated for relief of symptoms. For uncomplicated infections, either oral or vaginal antifungal preparations can be used. Fluconazole can be given conveniently as a one time oral dose with minimal side effects. Complicated infections can be treated with one or two weeks of topical antifungals or two doses of oral therapy three days apart. Five to eight percent of healthy women have recurrent vulvovaginal candidiasis, defined as four or more episodes of infection per year. There is no evidence that lactobacillus ingestion or vaginal administration decreases the number of infections. Women with recurrent infections should receive longer initial therapy for infections and maintenance suppressive therapy for 6 months.

While *Candida* species are considered normal flora of humans, they can cause a wide range of disease in various organ systems. Prompt diagnosis and treatment

remains the mainstay for combating this organism and its ill effects.

Related Topics

• Sexually transmitted diseases

Suggested Readings

- Edwards J (2005) *Candida species*. In: Mandell GL, Douglas JE, Bennett R (eds) *Mandell, Douglas, and Bennett's principles and practice of infectious diseases*, 6th edn. Elsevier Inc., Philadelphia, PA, pp 2938–2953
- Pappas P et al (2004) Guidelines for treatment of Candidiasis. *Clin Infect Dis* 38:161–189
- Sobel J (1997) Vaginitis. *New Eng J Med* 337:1896–1903
- Vazquez J et al (2002) Mucosal candidiasis. *Infect Dis Clin N Am* 16:793–820

Yoga

LaGenia Bailey

What does it mean to stay fit as we age? Is it the physical body, the mental processes, or the spiritual connection with which we are most concerned? What is the secret to a full and productive life during our fifties, sixties, seventies, eighties, and nineties? What can you expect from yoga? The answers to these questions vary depending upon the person. Yoga is a system for continued health throughout life. It can be practiced at any age with appropriate adaptations for each person's level of health and vitality.

The word yoga conjures up many images in people's minds. Some imagine skinny supple-bodied people folding themselves up in postures that look next to impossible for the common stiff folk among us. Others may think it some quirky religion or new age fad. Yoga is an ancient system for healing. The meaning of the word yoga may be defined as yoking or bringing together. Yoga, in its essence, is a union of the mind, body, and spirit.

The classic text and instructions regarding yoga come from the ancient writings of an Indian sage or wise man named Patanjali. These writings are 200

short verses or sutras and date from an estimated time between 5000 B.C. and 300 A.D. They were passed down to students by song and are still taught this way in classic yoga schools. They have no religious binding and are nondenominational in nature. The sutras are a collection of guidelines and practices on which various types of meditation and yoga are based.

Each person is different and may have different results, however most people who practice yoga have three common experiences over time. They are as follows:

1. An increase in a sense of well being and calmness
2. Less reactivity to stress and change
3. An increase in overall health, flexibility, and strength

Any person of any age, and ability and any level of health or fitness can do yoga. First, please note that this statement comes with the necessity of an awareness of what your body can and cannot do safely when doing yoga. Secondly, the key to doing yoga is to find a teacher with the knowledge and desire to help you adapt the various practices to fit your specific needs. A qualified instructor will assist you in identifying goals for practice and will provide adjustments for your individual needs and past injuries. They will help you define proper expectations as a beginning student. Always remember that yoga is a practice and a process not a goal. Be gentle with yourself and allow time for observation and learning as you progress through your practice. Small advances achieved in yoga practice over time result in real progress from where one begins. As a last precaution, please consult with your health care provider before you start any new physical activity.

Yoga is a physical, mental, and spiritual practice. The three most commonly discussed practices of yoga are postures (*Asana*) to exercise and move the body, breath work (*Pranayama*), which focuses on the energy of the body, and meditation, which allows connection with one's spiritual nature. If you would like to know more about the practices of yoga, please refer to the general texts that appear in the reference section.

The focus and relative balance of yoga practice rests in the needs of the yoga practitioner. Gary Kraftsow, director of the American Viniyoga Institute, recommends adapting the focus of practice depending on one's age, and physical and genetic characteristics. Yoga postures help the body to develop correctly and focus the mind. For people under 30 years of age,

postures would be most beneficial and should formulate the bulk of the practice. Between the ages of 30 and 70, a more balanced approach is the goal; therefore, the time is more evenly divided between *asana*, *pranayama*, and meditation. Meditation should predominate for people over 70 years of age with some gentle stretching and breath work as well.

In medical terms, no one has discovered exactly why yoga works. Yoga has long been known to help induce a sense of relaxation and peacefulness. By stretching and strengthening the body in a structured manner with the support of specific patterns of breath, we infuse the muscles, organs, and tissues with oxygen carrying blood. This gentle contraction and relaxation assists the body in cleansing the tissues of toxins, and reducing the stress on the body. By focusing inwardly during movement, breath work, and meditation, there is a sense of peace. It makes sense that a practice that helps to induce relaxation would be beneficial.

We know medically that the hormone cortisol is increased in the body during periods of stress. More and more research is pointing to cortisol as an important factor in acceleration of aging, worsening of depression and anxiety, disturbances in sleep, effects on the cardiovascular system as well as feelings of well being. If yoga helps induce relaxation, perhaps one of the mechanisms of its benefit may be an effect on cortisol and other stress-related changes in neurotransmitters, hormones, and neuropeptides. More research needs to be done in this area to help delineate the effects of the practice of yoga in the physiologically measurable way.

A literature search was conducted utilizing the National Institute of Medicines publication database, and resulted in a number of articles regarding the use of yoga in older adults. Most of these studies did not compare yoga to known treatments for the condition and utilized small numbers of patients. Many of the articles did not use statistical analysis to prove that the yoga treatment was effective. Western scientific methods require large numbers of patients in controlled environments, and are analyzed by rigorous statistical methods. Because of the limitations of study design, definite conclusions cannot be made as to yoga's effectiveness as a treatment for the reported conditions. The disease states that were mentioned in these studies included the following: gait disturbances, cardiovascular fitness and disease, preventative health care, chronic insomnia, depression, anxiety, asthma, diabetes, dementia caregiver stress, poststroke

hemiparesis (one-sided weakness) coronary artery disease, disease prevention/health promotion, chronic obstructive pulmonary disease, and migraine headaches. More and more people are turning to yoga as a complimentary treatment in combination with standard treatments to improve overall quality of life.

As the time-tested saying goes, you are only as old as you feel. Your decision about where to start in yoga and what type to do is very much dependent on your current level of fitness, history of injury, and/or medical concerns.

There are many types of yoga practiced in the United States. The different types taught are generally named for the teacher who developed the type of yoga or the area of India from which the particular practice originated. If you have physical issues of concern to you or your doctor, consider working with a teacher privately until you establish a comfort level with yoga and your abilities. The teacher can then refer you to a class that would be at your level of practice.

Many community centers and seniors' centers have yoga classes that are adapted for people who need some tender loving care for their bodies. Types of yoga that are known for their ability to adapt to the needs of special populations include Viniyoga, Phoenix Rising Yoga Therapy, Hatha Yoga, and Iyenger Yoga. Find an instructor with whom you can talk with about your concerns, special issues, and goals for your yoga practice. The best teacher is one who teaches in a way that you understand, and who works with the individual to achieve optimum health through a comprehensive, safe, and consistent practice. It is critical that the instructor and the student co-create an environment which is safe and conducive to learning.

There are many places in which to learn more about yoga. The American Viniyoga Institute and the Yoga Alliance both maintain Web sites that list teachers who have met certification requirements as teachers of yoga. Teachers are listed by the area of the country in which they live, with their contact information, and type of yoga they teach. Always remember, yoga is a practice and not a perfect. May your practice bring you joy and health as it unfolds for you in the quest for improving your quality of life.

Related Topics

- ▶ [Complementary and alternative health practices](#),
- ▶ [Exercise](#), ▶ [Stress](#)

Suggested Readings

- Bijlami RL, Vempati RP, Yadav RK et al (2005) A brief but comprehensive lifestyle education program based on yoga reduces risk factors of cardiovascular disease and diabetes mellitus. *J Altern Complement Med* 11(2):267–274
- Desikachar TKV (1995, 1999) *The heart of yoga: Developing a personal practice*. Inner Traditions International, Vermont
- DiBenedetto M, Innes K, Taylor A et al (2005) Effect of a gentle Iyengar yoga program on gait in the elderly: An exploratory study. *Arch Phys Med Rehabil* 87(9):1830–1837
- Fraser T (2001) *A step-by step guide to yoga at home for everybody*. Thorsons, London
- Luskin FM, Newell KA, Griffith M et al (1998) A review of mind-body therapies in the treatment of cardiovascular disease. Part 1: Implications for the elderly. *Altern Ther Health Med* 4(3):43–61

- Luskin FM, Newell KA, Griffith M et al (2000) A review of mind/body therapies in the treatment of musculoskeletal disorders with implications for the elderly. *Altern Ther Health Med* 6(2):46–56
- Sengupta R (2001) *B.K.S. Iyengar yoga: The path to holistic health*. Dorling Kindersley Limited, London
- Waelde LC, Thompson L, Gallagher-Thompson D (2004) A pilot study of a yoga and meditation intervention for dementia caregiver stress. *J Clin Psychol* 60(6):677–687

Suggested Resources

- Certified yoga teachers of all types: <http://www.yogaalliance.org>
Registered Viniyoga teachers: <http://www.viniyoga.com/>

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