

**PREVENT
AND REVERSE
HEART
DISEASE
AND CARDIO-RELATED EVENTS**



Natural News

The world's top news source on natural health

Prevent and Reverse Heart Disease and Cardio-Related Events

Written by

Vicki Batts and the editors of Natural News

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First Edition, First Printing

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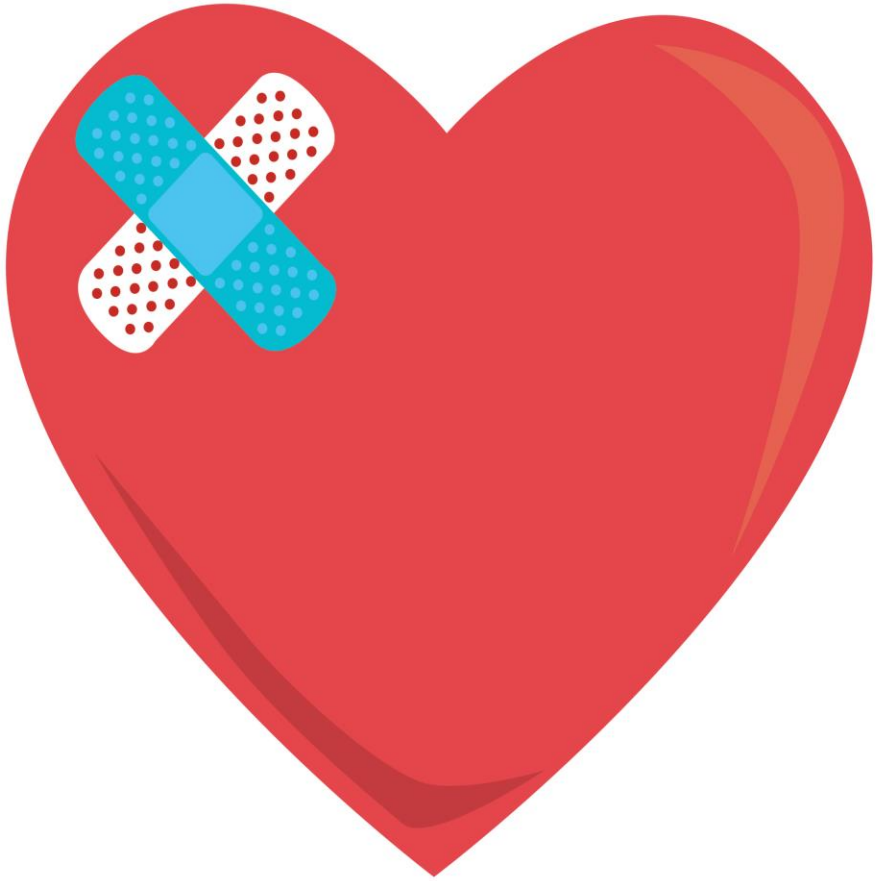
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Chapter 1

What Is Heart Disease?



Heart disease can go by many names and comes in many different forms. Heart disease isn't just one disease, but rather numerous problems and conditions related to the heart muscle. Arrhythmia, angina, coronary artery disease and genetic defects can all be considered heart diseases. The term *cardiovascular disease* may often be used interchangeably with the term *heart disease* but they are recognized as two different conditions. *Cardiovascular disease* refers to diseases and conditions of the vascular system. Most often, cardiovascular disease involves narrowed or blocked blood vessels. Cardiovascular conditions can still lead to heart attacks and strokes. Many types of heart disease and cardiovascular disease can be prevented with diet and lifestyle changes.¹

What Types of Heart and Cardiovascular Disease Are There?

Ischemic heart diseases are conditions which compromise blood flow to the heart.²

One of the most feared forms of ischemic heart disease is myocardial infarction, most commonly known as a heart attack. The heart muscle needs a constant flow of oxygen and nutrients. There are two branching arteries that deliver fresh oxygenated blood to the heart. During a sudden blockage, the heart muscle is starved of oxygen. If this starvation of the muscle goes on for too long, that part of the muscle tissue will begin to die. This tissue death is what we call a heart attack, or myocardial infarction.³ Another common type of ischemic heart disease is angina. Angina is caused by atherosclerosis. It is caused by a decrease in blood flow to the heart muscle and causes pain in the chest.

The clots associated with heart disease are most often formed by dislodged arterial plaque. Plaque buildup in the arteries is a cardiovascular condition known as atherosclerosis.⁴ These plaques are made up of fat, cholesterol, calcium and other substances in the blood that stick to and collect along the arterial walls. Over time, the plaques thicken and narrow the blood vessels considerably. Atherosclerosis can lead to strokes as well as heart attacks

and death. The condition can affect any blood vessel in the body. A number of diseases can develop throughout the body as a result of atherosclerosis, such as peripheral artery disease, carotid artery disease and chronic kidney disease. Many other serious conditions and diseases are related to atherosclerosis.⁴

Atherosclerosis is also the cause of coronary artery disease, another ischemic heart disease. Coronary artery disease is the most common form of heart disease and the leading cause of heart attacks and angina. Coronary heart disease refers to diseases of the arteries that supply the heart with blood. In coronary heart disease, the coronary arteries become constricted or blocked by plaques lining the arterial walls, restricting the blood flow to the heart. Sometimes simply called ischemic heart disease, coronary artery disease is the most common form of heart disease. It is also one of the more common causes of heart attacks and angina.²

Cerebrovascular diseases refer to diseases and conditions caused by a reduction or cessation of blood flow to the brain. Strokes are an example of cerebrovascular disease.² There are two types of stroke that people typically suffer from. Ischemic strokes are the most common form of stroke and occur when a blood vessel that feeds the brain is blocked – usually by a blood clot. When blood flow to the brain is cut off, brain cells die. This often leaves the person unable to function as they once did. Some may lose the ability to walk or talk or use a part of their body. Sometimes, the effects of a stroke may be permanent if grievous damage and cell death was incurred. However, this is not always the case, and functionality can generally be improved over time and with rehabilitation.

The second type of stroke is a hemorrhagic stroke. This occurs when a blood vessel in the brain bursts, often due to uncontrolled hypertension, or high blood pressure.¹ Transient ischemic attacks are very similar to a stroke, in that the blood flow to the brain is briefly blocked. This may result in a sudden change in brain function, but the changes do not last long. Transient ischemic attacks can be a warning sign that you may be at risk for having a future stroke. Cerebral vascular disease is caused by atherosclerosis, and

refers to the narrowing of blood vessels to the brain. Cerebral vascular disease can lead to transient ischemic attacks and strokes.²

Hypertensive heart diseases are diseases related to high blood pressure. High blood pressure can damage the heart and blood vessels, leading to any number of complications. *Hypertension* is the medical term for high blood pressure, or the excessive force of blood pumping through your blood vessels. This excessive force can damage your kidneys and increase your risk of having a stroke or heart attack. High blood pressure also increases your risk of developing an aneurysm – or a weak spot in the wall of a blood vessel. Aneurysms can enlarge over time, and can be life-threatening if they rupture. The most common locations for aneurysms are the arteries at the base of the brain and the abdominal aorta.²

Inflammatory heart disease refers to inflammation in or around the heart muscle. Toxins, infectious agents and other factors can cause the inflammation. *Pericardial disease* refers to diseases of the pericardium – the sac that encompasses the heart muscle. Pericarditis is inflammation of the sac, while *pericardial effusion* refers to fluid buildup within the sac. Valvular heart diseases are diseases that affect the valves of the heart. Stenosis is when the heart valves don't open wide enough to allow blood to flow through freely. There are other conditions where the valves may not close properly, bulge or prolapse into the upper chambers of the heart.³ Valvular diseases can be genetic, or they can be caused by external factors such as rheumatic fever or other infections and certain medications or radiation therapies in the treatment of cancer. There are other heart conditions, such as congenital heart defects, that are influenced by genetics as well.²

What Causes Heart and Cardiovascular Disease?

Atherosclerosis is the most common cause of heart and cardiovascular diseases. The buildup of plaque along arterial walls causes the blood vessels to become stiff and narrow. This constricts blood flow and can be quite damaging to blood vessels themselves and the organs they carry blood to. A number of conditions can be caused by atherosclerosis, such as coronary

artery disease. Fragments of the plaques caused by atherosclerosis that have broken away from the arterial wall and blocked the blood stream can indirectly cause strokes and heart attacks. Atherosclerosis can be brought about by a variety of preventable causes. Poor eating habits, lack of exercise, smoking and being overweight are all potential causes of atherosclerosis.⁵

Other conditions, like arrhythmias, can be caused by a wide variety of behaviors and conditions. Arrhythmias occur when your heart beats to an abnormal rhythm, often because the heart's electrical impulses are not traveling correctly across the heart tissue. Diabetes, smoking, drinking and high blood pressure are just a few potential causes of arrhythmia that can be controlled. Some arrhythmias may also be due to heart defects. There are other causes of heart disease that may be out of a person's control, such as birth defects or rheumatic fever. Heart defects are most often present at birth but may also develop as a person ages. As you grow into an adult, your heart grows too, and this can also be when a heart defect occurs or worsens. There are several types of heart disease, such as cardiomyopathy, that may be inherited from a parent.⁵

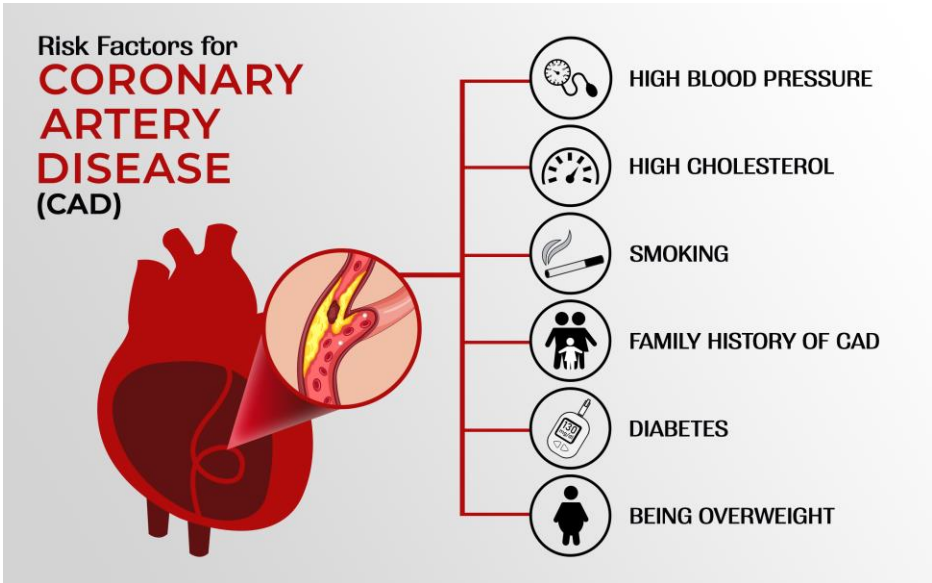
What Puts You at Risk?

There are a number of modifiable risk factors for the onset of heart and cardiovascular disease. Even if you have already been diagnosed with heart or cardiovascular disease, reducing your risk factors is still important for treating the condition and preventing it from getting worse. While risk factors are not exact guarantees that you will develop heart or cardiovascular disease, every risk factor you associate with will increase your chances of compromised health.

The single greatest risk factor for having a stroke is high blood pressure, and it also plays a big role in heart attacks as well. Hypertension can be treated and reversed, but only through proper management. Hypertension also increases your risks of developing an aneurysm, and having an aneurysm rupture. Abnormal blood lipid profiles are another contributing factor to the

onset of heart and cardiovascular disease. High total cholesterol, high low-density lipid (LDL) cholesterol and high triglycerides are all part of the blood lipid profile that is often used as a biomarker for cardiovascular disease risk.⁶ Abnormally high blood lipid profiles also increase your risk of developing atherosclerosis – which causes many heart and cardiovascular conditions.⁷

Tobacco use, regardless of what form you are using, increases your risk for cardiovascular disease. Whether you are smoking or using a smokeless tobacco product makes no difference, as they are both harmful.⁶ Smoking is greatly associated with the development of atherosclerosis, due to the fact that smoking can damage your blood vessels, raise your cholesterol levels and cause your blood pressure to skyrocket.⁷ Physical inactivity is also a major risk factor in the development of heart and cardiovascular diseases. In fact, being physically inactive boosts your risk for heart disease and stroke by a staggering 50%. Being overweight or obese also greatly increases your chances of developing heart disease.⁶ Being overweight and inactive also increases the likelihood that you will develop other risk factors for heart disease such as diabetes.



Type 2 diabetes is a major risk factor in heart disease and stroke incidence. Having type 2 diabetes makes you twice as likely to develop heart disease as someone who does not have it. Uncontrolled or otherwise poorly managed diabetes will increase your risk of developing cardiovascular disease at an early age, and it will likely become more severe and debilitating.⁶

A diet high in saturated fats, trans fats, sodium and sugar can worsen risk factors for the onset of atherosclerosis.⁷ Poor diet is a risk factor for heart and cardiovascular diseases as well. Many of these risk factors tend to occur together. When a person is obese and has high cholesterol and high blood sugar, it is called metabolic syndrome. Having metabolic syndrome makes a person twice as likely to develop heart disease and five times more likely to develop diabetes, than a person who does not have metabolic syndrome.⁸

There are, of course, risk factors that you cannot control. For example, heart disease risk increases for men after age 45, while for women it increases after age 55 or after menopause. Family history is also an important factor in heart disease risk as well. If your father or brother was diagnosed before

age 55, your risk goes up significantly. Your risk also increases if your mother or sister was diagnosed with heart or cardiovascular disease before age 65.⁸ Your gender can also influence your risk factor. Men are more likely to develop heart disease than pre-menopausal women. Post-menopausal women and men have relatively similar risks. Stroke risk is equal among men and women. People of African or Asian descent are also more likely to develop heart and cardiovascular diseases.⁶

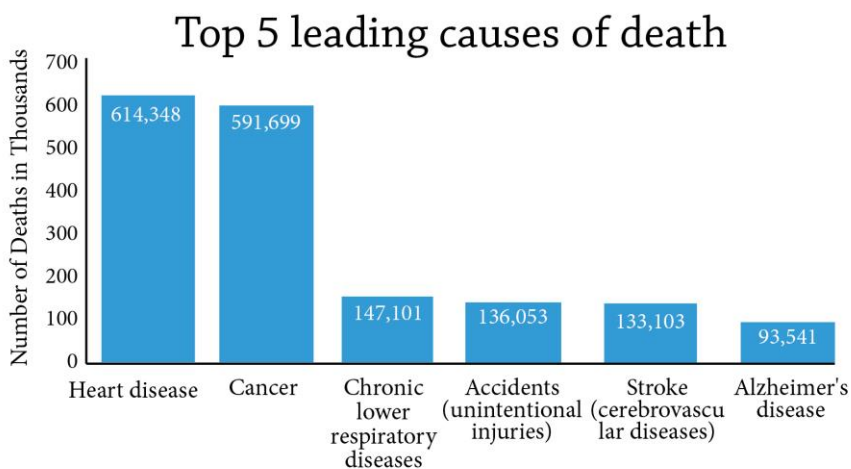
Risk factors for heart and cardiovascular disease:

- Tobacco use
- Physical Inactivity
- Obesity
- Diabetes
- Poor Dieting
- High blood pressure
- Abnormal blood lipid profiles
- High Cholesterol
- High triglycerides
- High low-density lipid (LDL) cholesterol
- Metabolic syndrome

Statistics of Heart and Cardiovascular Disease

What does it really mean to be diagnosed with a form of heart disease? Many people are diagnosed with these life-threatening conditions and fail to understand the gravity of what is going on inside their own bodies. They continue to eat poorly and lead inactive lives. It is important to talk about the severity of these conditions and the consequences they lead to when left untreated.

Heart disease is the leading cause of death across the globe. Worldwide, there are over 17.3 million deaths due to heart and cardiovascular diseases each year. The American Heart Association expects this number to reach 23.6 million or more by the year 2030. In 2013, 31% of deaths around the world were attributed to heart and cardiovascular disease alone.⁹ Heart disease is also the leading cause of death for men and women in the United States.¹⁰ In the U.S., cardiovascular diseases account for more deaths per year than all cancers combined. Over 800,000 people in the United States died from heart and cardiovascular diseases and strokes in 2013. That equates to approximately one in three deaths in the U.S. That is also roughly 2,200 deaths per day, or one death from a cardiovascular disease every 40 seconds. Every 40 seconds, someone in America dies from what was likely a preventable condition. About 85.6 million United States citizens live with some form of cardiovascular disease, or suffer with the aftermath of having had a stroke. The direct and indirect costs of these diseases and strokes total over \$316 billion per year.⁹



Source: CDC.org

The number of people who do very little to reduce their risk of disease is saddening. For instance, approximately one in three U.S. adults reports doing no leisurely physical activity or exercise. Nearly 30% of the population

does no exercise. This is compounded by the fact that most adults over the age of 20 are overweight or obese. Over 159 million adults in the United States are overweight or obese. That is just about 69% of the population – meaning more than two-thirds of the population is at risk for developing heart or cardiovascular disease. Worse still, about 32% of children are overweight or obese as well.

According to the American Heart Association (AHA), mean healthy diet scores for adults have improved by less than 1% between the years of 2003 and 2012. In 2011–2012, 1.5% of adults were found to be reaching the ideal healthy diet target, up from 0.7%.⁹ This means that, in nine years, adult diets improved by 0.8%. Technically, the number has just about doubled – making it statistically impressive. However, the fact remains that just 1.5% of adults in America – a first world country – have an ideally healthy diet. That statistic is less dismal than the 0.6% of children reaching the ideal healthy diet score. That’s right, just barely over one-half of a percent of children were reaching ideal nutrition each day in 2012. And we wonder why the United States is a nation of sick people.

The AHA attributes these dietary “improvements” to the inclusion of more whole grains in the diet, and fewer sugar-sweetened beverages. They also state that no changes were made in regard to decreasing sodium intake or increasing intake of fish. The AHA also notes that there was a small, insignificant change in fruit and vegetable intake.⁹ While I am glad that people are drinking less soda – how small of an increase could there have been in fruit and vegetable intake? If we consider 0.8% over nearly a decade to be significant, how small must an insignificant change be? Is eating more whole grains really that great of an improvement if you are still eating fried and processed foods? The answer is no. It’s really not that great of an improvement, and it is shameful. We should not be patting ourselves on the back for switching what kind of bread we buy at the supermarket and nothing else. Eating whole wheat bread isn’t going to have a terribly strong impact on your heart disease risk if you are failing to change anything else.

Obesity and overweight would appear to be among the most common risk factors in our population, followed by poor diet and inactivity. According to the Centers For Disease Control, about half of all Americans have at least one of their top three keys to heart disease: high blood pressure, high cholesterol and smoking.¹⁰ About 33% of adults in the United States also have hypertension. Nearly half of individuals who have high blood pressure do not have it under control. About 9% of the adult population in the States has been diagnosed with diabetes, as well. About 35% of adults have pre-diabetes, the precursor to type 2 diabetes.⁹ Being overweight increases your risk of developing coronary artery disease, high blood pressure, stroke, type 2 diabetes and metabolic syndrome.¹¹ These are all contributing factors and risk factors to the onset of heart and cardiovascular disease.⁸ Obesity can also lead to heart failure – a critical condition where your heart is not capable of pumping enough blood for your body's needs.¹¹

The obesity, poor nutrition status and the lack of exercise are the true root causes of what makes our population sick. The World Heart Federation even states on their website, World-Heart-Federation.org, that the role of diet is imperative to both the development and prevention of heart disease. They also state that diet is one of the only key things you can change that can and will impact all other cardiovascular risk factors. In fact, studies show that following a diet rich in fresh fruits, vegetables and fish that is lower in saturated fats reduces the risk of having a new cardiac event by 73%, when compared to a typical Western diet.¹²

Being physically active can also help extend your lifespan. Exercising and engaging in some form of physical activity regularly can help protect your heart against a number of cardiovascular diseases, as well as other conditions. Being active is beneficial for your blood pressure, blood lipid profile and the general health of your blood vessels.¹³ Nearly all of the conditions that are risk factors for heart and cardiovascular disease relate to basic nutrition and exercise. Engaging in just 30 minutes of physical activity a day, or about 150 minutes per week, is associated with a 30% reduction in one's risk of developing coronary artery disease when compared to doing no ac-

tivity at all. Even if you have other risk factors, staying active can still help reduce your risk of disease.

It is true that some risk factors are genetic, and others out of your control, such as age. Even genetic predisposition is not a rock solid guarantee for developing a heart or cardiovascular condition. Being old or being a male does not mean you have to succumb to a life crippled by disease. If you are predisposed to heart disease or another medical condition, you owe it to yourself to put the effort into prevention. By controlling as many risk factors as possible, you can reduce your risk of developing heart and cardiovascular disease.

Chapter 2

Pitfalls of Conventional Treatment

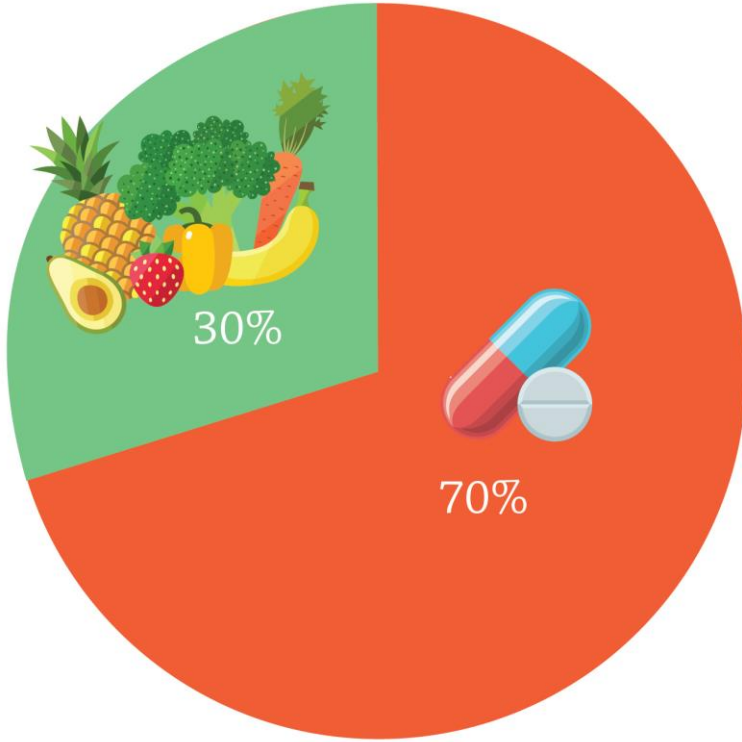


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One of the hallmarks of conventional Western medicine is the stream of prescription drugs available for almost any condition imaginable. If you can think of a complaint, chances are, there is a medication available to “fix” it. In the incidence of atherosclerosis – the cause of many heart and cardiovascular conditions – some of the most common drugs are statins, which are supposed to lower your cholesterol. Statins are generally prescribed to people with high cholesterol or diabetes, or those who have developed coronary artery disease or peripheral artery disease already. It is also common for doctors to prescribe drugs to prevent high blood pressure, prevent blood clots, lower your blood sugar or reduce inflammation.¹³ There is truly a pill for everything.

Adults in America are increasingly being prescribed medications for high cholesterol, for example. A report using data found by the National Health and Nutrition Survey from the years 2003 to 2012 found a dramatic increase in adults taking cholesterol-lowering drugs. The report was published by the Centers for Disease Control’s *National Center for Health Statistics Data Brief* in December 2014. In the 2011–2012 time period, over a quarter of all adults over the age of 40 were taking a medication to reduce their cholesterol. And approximately 70% of the adult population over the age of 40 and living with cardiovascular disease now takes a cholesterol-lowering drug. 93% of those adults taking a cholesterol-lowering drug are using statin drugs.¹⁴

Adults over 40 with cardiovascular disease on a cholesterol-lowering drug



93% of adults taking a cholesterol-lowering drug are using statin drugs

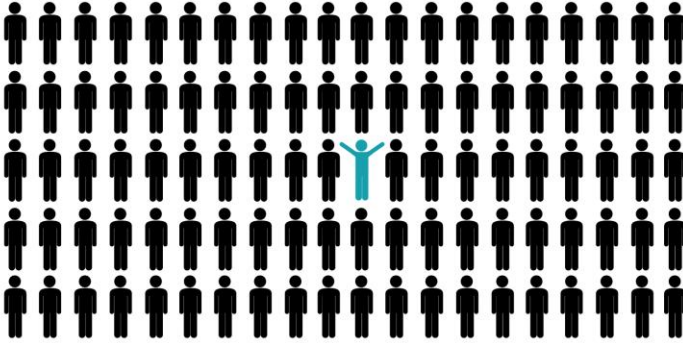
Source: NIH.gov

Statins have long been hailed as a miracle drug, since their induction to the pharmaceutical marketplace nearly two decades ago. However, new research suggests that the drugs, commonly prescribed to lower cholesterol and prevent heart attacks, do not do what they claim to do and are not as effective as they claim to be. A 2015 analysis conducted by Dr. David M. Diamond, professor of psychology, molecular pharmacology and physiology at the University of South Florida, and Dr. Uffe Ravnskov, an independent

health researcher and a specialist in cardiovascular disease and cholesterol, found some serious flaws in the rose-colored world of statin drugs. In fact, the doctors say that, while statins may produce dramatic results when it comes to lowering cholesterol, they have still “failed to substantially improve cardiovascular outcomes.”¹⁶ Furthermore, they state that the multitude of studies conducted on statins supporting their usefulness have neglected the many harmful side effects associated with statin use.

Diamond and Ravnskov refer to the studies used by statin supporters as “statistical deception” to prop up their products and inflate their claims about the efficacy of the drugs. Their analysis of the data gathered from statin trials led them to their conclusion that “statin advocates have used statistical deception to create the illusion that statins are ‘wonder drugs,’ when the reality is that their modest benefits are more than offset by their adverse effects.” Or in other words, the results of the data were manipulated to make the drugs appear far more effective than they really are while downplaying their potentially harmful consequences. The analysis also details how the statin studies pull off their deception. In statin studies, authors present absolute risk and relative risk. The *absolute risk* refers to the effect of the drug on the population. Studies have shown that statins only benefit about 1% of the population. However, *relative risk* transforms that 1% figure into 30-50%.¹⁶

Only 1 out of every 100 people on statins
may be prevented from having a heart attack.



Absolute risk reduction for 1% of the population means that out of 100 people being treated with statins, only one person might be prevented from having a heart attack.¹⁶ The book *Smart Health Choices: Making Sense of Health Advice* explains that absolute risk reduction is the best and most useful way of presenting research results to help with decision making. *Relative risk* refers to the proportional measure of the scope of the effect of the treatment compared to other treatments or no treatment at all. The relative risk is the proportion of bad outcomes in the group receiving a treatment divided by the number of bad outcomes in the control group, or the group that did not receive treatment. Sometimes, relative risk may also be used to measure good outcomes as well. They also explain that relative risk reduction tells you how much the treatment reduced the risk of a negative outcome relative to the control group. The number needed to treat (NNT) is a calculation used to determine how many people need to be treated in order to prevent a bad outcome, and is also a useful calculation. The number of people who benefited from the treatment, for instance, divides the number of people treated with a drug. For example, if 100 people test out a new drug and only one person experiences benefits from the drug, then the number needed to treat is 100.¹⁷ With a measly absolute risk reduction, it is easy to understand why supporters of statin drugs would focus on relative risk instead. The authors point to a statin study where 3% of the control

group had outcomes of heart attack or death, and 1.9% of the statin-receiving group also experienced heart attacks or death. That is a 1.1% difference. If the groups contained 100 people, that is the difference of just a single person. Naturally, when the study was publicized the figure was bloated up to an approximate 36% reduction in risk. This was technically correct, because they were using the statistic for relative risk reduction. $1.9\% \div 3\%$ is indeed 63.3%. This means there was a 63.3% relative risk of having heart attack. The inverse of this would be just about a 36% relative risk reduction, as reported. Do you see how manipulative that statistic is? One might be inclined to say that while statistically correct, to make such a claim is morally wrong. But the joy of statistics is that there is usually an equation to get the results that you want people to see. However, it is important to note that based on the statistics provided from the study, 100 people would still need to be treated with statin drugs to prevent one heart attack – based on the equation for NNT.

The report written by Diamond and Ravnskrov notes that the exaggerated claims of statin drugs' effectiveness and minimization of their enormous risks for harm to the recipient have led to not just an increase of their prescription, but even enthusiasm for their use. There are a number of adverse effects related to statin drug use that go unreported in the media, and even in medical conferences according to Diamond and Ravnskrov. The authors state that the increased frequency of cataracts, diabetes, cancer, cognitive impairments and musculoskeletal disorders more than outweigh the minimal cardiovascular benefits statin drugs may have. They also stress that low cholesterol levels due to statin use have been greatly associated with an increased risk of cancer. Studies have shown an increased frequency of cancer in patients taking statins, and one long-term study found that there was a staggering increase in breast cancer diagnosis among women who had been taking statins for more than ten years. The authors also point out that most studies of statin drugs are cut off between two and five years. Such a short time frame makes it very difficult to ascertain their true long-term effects. Diamond and Ravnskrov go on to caution the public about conflicts of

interest in the medical community and pharmaceutical industry, especially when it comes to statins.¹⁶

Statin drugs prevent your body from producing cholesterol. That is how they create their cholesterol-lowering effect. This might not sound so bad, but by preventing the liver from producing its cholesterol-making enzyme, hydroxy-methylglutaryl-coenzyme A reductase (HMG-CoA reductase), they are also setting up your body for a world of unpleasant side effects. Muscle and joint pain, nausea, constipation, diarrhea and headaches are the least of your worries when it comes to statin drugs. Liver damage is a much more concerning problem associated with statin use. Statin drugs can cause an increase in liver enzymes that can actually damage the organ's tissues. This can lead to jaundice or acute liver failure. A damaged liver can also wreak havoc across the body.¹⁸

Another known side effect of statin drugs that is rather serious in nature is kidney damage and kidney failure. Statin drugs can cause rhabdomyolysis. The condition causes degeneration of muscle tissue, kidney failure and death. The risk of developing type 2 diabetes is also increased if you take statin drugs. Type 2 diabetes is one the leading causes of death in the United States, with approximately 230,000 succumbing to the disease's complications each year. Statins have been linked to an increase in fasting blood glucose levels and elevated HbA1C levels. The drugs increase your diabetes risk in two different ways. In addition to raising blood glucose levels, statin use is also associated with increased insulin resistance. The two combined are a potent recipe for diabetes. Statin drugs are also associated with a number of neurological conditions. Cognitive impairments, memory loss and confusion are just some of the listed complaints associated with statin drugs. Some researchers have also linked statin drugs to the onset of amyotrophic lateral sclerosis, also known as ALS or Lou Gehrig's disease. The disease is known for its quick and devastating progression and poor outcomes.¹⁸

Known Side Effects of Statin Drugs:

- Muscle pain and damage
 - Liver damage
 - Increased blood sugar or type 2 diabetes
 - Neurological side effects
-

Statin drugs remain one of the most common drugs people take for heart and cardiovascular disease, with up to one out of every four Americans taking part in the prescription drug phenomenon. And why wouldn't pharmaceutical companies want that? Statin drugs are not drugs you can just stop taking. Most people who take statin drugs will be taking them for the rest of their lives.¹⁷ Talk about a cash cow. There is nothing more profitable than a lifelong patient. The American Heart Association and the American College of Cardiology updated cholesterol guidelines just a few years ago. Their aim was to prevent as many heart attacks as possible, but not with education on nutrition and exercise. True prevention requires too much work. Instead, they implore physicians to cast a much wider net when it comes to prescribing statin drugs.

The original guidelines, written in 2002, primarily focused on individual patients' numbers – how high their cholesterol was to begin with and what the numbers were after beginning treatment. The goal was to get that patient to an LDL level of 70 mg/dL. Now, these so-called experts have created new guidelines which suggest that anyone who might be at an increased risk of heart attack could benefit from the use of statins. The new guidelines recommend statin drugs to anyone who currently has heart disease or has previously had a heart attack or stroke, anyone with high LDL cholesterol, anyone between the ages of 40 and 75 that has diabetes, and anyone with a 7.5% or greater chance of having a heart attack or stroke or developing another cardiovascular condition in the next ten years. These new guidelines also discuss how doing away with target cholesterol levels is beneficial be-

cause it's really not about the number – it's about “lowering your risk” and taking an “effective dose.”

Reena Pande, MD, an instructor of medicine at Harvard University, wrote in an article regarding the guidelines that she is already prescribing statins to patients who have relatively normal cholesterol levels but are at a “high risk of heart disease.” So, this doctor is prescribing cholesterol-lowering drugs to patients who don't have high cholesterol because she is under the spell of statins. Dr. Pande also states, “We have long known that statins lower the risk of premature death, heart attack, and stroke, even among individuals with relatively normal cholesterol levels – who are not exempt from having heart attacks or stroke.”¹⁹

It is true that even a healthy person could randomly suffer a heart attack. People can die with no preexisting conditions. It doesn't happen often, but it does happen. But this woman, this doctor, is suggesting that other medical professionals should also prescribe drugs to people who don't need them for what is essentially nothing more than whimsy. More frightening still is the recommendation that diabetics take a drug that is associated with increasing blood sugar levels, increasing insulin resistance and instigating the onset of type 2 diabetes. I may not be a doctor, but if 100 patients need to be treated to prevent a single heart attack, the benefit for a diabetic patient just is not there and it surely does not outweigh the risk of worsening their diabetes – which will actually give them heart problems, among other health complications.¹⁸

Statins are being portrayed as a cure-all by modern medicine, when they are truly quite far and away from being anything close to that. Statistically, statins don't work that well. The analysis conducted by Diamond and Ravnskrov clearly suggests that statins really only lower your absolute risk for heart attack by about 1%.¹⁶

The fact is that statin drugs are not all that they are cracked up to be. Shockingly, or perhaps not so shockingly, saturated fats and cholesterol are not quite as bad as the mainstream media would have you believe, either. Nei-

ther the drugs nor the “culprits” are what conventional medicine would like us to believe.

Ansel Keys first developed the hypothesis on the evils of lipids in the 1950s. His theory was that there was a direct relationship between the amount of saturated fat and cholesterol in the diet, and the incidence of coronary heart disease. Keys promoted this hypothesis throughout the medical community. Hundreds of subsequent studies have failed to support his initial hypothesis, and many differing conclusions have been seen. In fact, about 90% of all properly documented studies examining Keys’ theory have not supported the claim that saturated fats and cholesterol cause heart disease. Interestingly enough, if one were to examine an arterial plaque, one would find saturated fat accounts for an estimated 26% of a plaque’s makeup. More than 50% of the fat found in an arterial plaque is comprised of polyunsaturated fat.²⁰

Cholesterol and saturated fats are generally looked at as evil substances that must be kept at bay and treated with prescription drugs in modern medicine. But the reality is that your body needs cholesterol and saturated fats to be in good health. It may seem hard to believe after you’ve been told all your life that cholesterol and saturated fat is bad, but it is true. Cholesterol is absolutely necessary for optimal health and disease prevention. The American Heart Association Task Force on Cholesterol Issues published a report in 1994, exposing the risks of having too little cholesterol. The report detailed a link between low total cholesterol levels (below 160 mg/dL) and an increased risk of death from trauma, certain cancers, hemorrhagic stroke and infectious disease. Many other studies link low total cholesterol to anxiety, depression, aggression and other mental health conditions.²¹

A 2010 study conducted by researchers from Johns Hopkins Medicine found that statins are often prescribed to people who likely won’t receive any benefit from them. The investigators followed 950 healthy men and women for six years. The team found that upwards of 95% of all heart attacks, strokes or other deaths related to cardiac events occurred in the study participants who had a measurable amount of calcium built up in their arteries.

Calcium deposits are known for causing blood vessels to harden. Only 5% of cardiac events occurred in the 47% of study subjects who had no measurable calcium deposits in their arteries. This suggests that statin therapy likely wouldn't offer coronary protection. The study's lead researcher Michael Blaha, M.D., M.P.H, says, "Our results tell us that only those with calcium buildup in their arteries have a clear benefit from statin therapy, and those who are otherwise healthy and have no significant calcification should with their physician focus on aggressive lifestyle improvements instead of early initiation of statin medications." Blaha goes on to say that not every adult needs to be on statin drugs to prevent heart attacks, especially when roughly half of all adults have a negligible risk of having a heart attack or cardiac event in the next five to ten years.²²

Results of the study also showed that C-reactive protein levels may not be a risk factor after all. Many statin drug advocates boast their ability to lower C-reactive protein levels, as it was once thought to be an indicator of heart disease risk. The Johns Hopkins team found that a high C-reactive protein level provided no predictive value after other established risk factors were accounted for, such as obesity or smoking. In other words, having a high C-reactive protein level but being absent of other risk factors doesn't automatically mean you are at risk for developing cardiovascular disease, so prescription of statin drugs may not be necessary.²²

Cardiologist Roger Blumenthal, M.D., professor and director of the Ciccarone Preventive Cardiology Center at Johns Hopkins and study co-investigator said, "Statin therapy should not be approached like diet and exercise as a broadly based solution for preventing coronary heart disease. These are lifelong medications with potential, although rare, side effects, and physicians should only consider their use for those patients at greatest risk, especially those with high coronary calcium scores."²²

Blumenthal makes a brilliant point, and goes on to recommend that individuals monitor their risk factors for heart disease. Lifestyle modifications such as changing dietary habits and increasing physical activity should absolutely be considered before prescribing patients – especially otherwise healthy

patients – statin drugs. It is shameful that people who do not need medications are prescribed them anyways under the guise of “prevention.”

In addition to the drugs that you might be prescribed for your high cholesterol, there’s a good chance you are going to end up being prescribed drugs for at least one or two other conditions that develop as a result of the first prescription. Maybe you’ll get type 2 diabetes, or maybe your cholesterol will drop low enough to incite depression. Or maybe you’ll be lucky enough to develop liver damage or some other horrific, debilitating condition – I’m sure there is a drug to “fix” it. You know who all of those drugs are benefiting? Certainly not you, the patient, that’s for sure. The pharmaceutical industry though, now they are taking all of that straight to the bank.

The other type of medication commonly prescribed in instances of heart and cardiovascular disease is blood pressure medication. Blood pressure medications are used to lower your blood pressure. There are quite a variety of medications used for this purpose, but some of the most common ones are diuretics, beta blockers, angiotensin-converting enzyme inhibitors (often called ACE inhibitors), angiotensin II receptor blockers (often called ARBs) and calcium channel blockers.

Diuretics work by helping your kidneys remove a little extra salt from your body, along with the fluid they’re expelling. This results in less fluid for your vascular system to carry and lower blood pressure. Diuretics are also commonly called water pills. Beta blockers work by slowing your heart rate and reducing the force with which it beats, which in turn lowers your blood pressure. ACE inhibitors and ARBs work in the same manner. They both serve to relax your blood vessels, which results in lower blood pressure. Calcium channel blockers also work by relaxing blood vessels by preventing calcium from entering cells.²³

Most blood pressure medications come with side effects. Some common side effects for blood pressure medications include nausea, vomiting, diarrhea, dizziness, constipation, nervousness, headaches, drowsiness, fatigue and weight changes.²³ A 2015 study conducted by researchers from the Uni-

versity of Alabama at Birmingham concluded that certain blood pressure medications may pose even more concerning risks. The study looked at 26,785 black and white participants ages 45-plus from the Reasons for Geographic and Racial Differences in Stroke (REGARDS) study. The participants were followed for 6.3 years. Hypertension, or high blood pressure, is considered a serious risk for strokes, but the study found that the harder a patient's blood pressure is to control, the higher their risk of having a stroke was – even if the blood pressure was being controlled by medication successfully. Patients with hypertension that was controlled by three or more medications were two and a half times more likely to have a stroke than people who have normal blood pressure without medication.

The lead researcher, George Howard, Dr.P.H., a professor in the Department of Biostatistics in the UAB School of Public Health, stated, "You're in as much trouble by the time you are on three medications that achieve excellent control as you are when you have hypertension and it is untreated, which is amazing." Requiring that many blood pressure medications to have normal blood pressure levels poses the same amount of risk as not controlling your blood pressure at all. It really is astounding, isn't it? Dr. Howard goes on to say that relying solely on medications to treat the issue of blood pressure is simply not enough. People have got to take the initiative to prevent hypertension in the first place. A healthy diet, healthy body and regular exercise are all suggested for keeping your blood pressure under control, naturally.²⁴

It is easy to see why prescription medication should not be at the forefront of heart and cardiovascular disease prevention. Diet, exercise, and a healthy lifestyle are the true keys to wellness. Changing the way you eat and live your life can have a profound impact on your health. Heart and cardiovascular diseases not only can be prevented with dietary and lifestyle changes but can be treated with these same natural methods as well.

Chapter 3

Natural Prevention and Treatment Is Possible



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Heart and cardiovascular diseases are most commonly caused by atherosclerosis. Atherosclerosis is caused by a build-up of plaque along the arterial walls. What actually causes these plaques to form is unknown, but a number of things can influence your risk for developing the condition.⁴

Preventing and treating atherosclerosis is of utmost importance to reduce the risk of other diseases such as coronary artery disease. Atherosclerosis can be prevented and treated with lifestyle changes such as a healthy diet, increased physical activity, weight reduction if overweight and the cessation of tobacco product use.⁴ Natural prevention and treatment of heart disease can be easily attained through a personal commitment to one's own health.

Perhaps one of the most influential risk factors for heart and cardiovascular disease is diet. Research has made it clear that abnormal blood lipid profiles, such as high cholesterol and high triglycerides, put you at an increased risk of heart and cardiovascular diseases.¹² However, newer research suggests that elevated cholesterol levels are not the actual cause of heart disease. In fact, more recent research suggests that cholesterol is essential for peak health. Cholesterol is imperative to the proper function of almost every organ, nerve and cell in the body.

Excess calcium, however, may be the more likely culprit behind the rise of cardiovascular diseases. Dr. Stephen Seely, a cardiologist, had an essay published in the *International Journal of Cardiology* in 1991. In this essay, he discussed why he believed excess dietary calcium was a primary cause of atherosclerosis in the Western world. Dr. Seely noted that, in countries where the average calcium intake is 200–400 mg daily, arterial disease is extremely rare and blood pressure does not typically increase with age. In contrast, other countries where the daily calcium consumption averages 800 mg or more, such as the United States, Ireland and Scandinavian countries, heart disease is the leading cause of death. Dr. Seely also notes that the average arterial plaque is only 3% cholesterol. Calcium, however, makes up roughly 50% of one plaque. Dr. Seely suggests that reducing dietary calcium intake by reducing milk consumption is imperative to reducing athero-

sclerosis risk. Vitamin D has also been associated with preventing the development of arterial plaques.²⁵

A study published in the *European Heart Journal* had some very shocking findings, as well. The study looked at a cohort of men and women over the age of 55, and their coronary calcifications were analyzed and ranked by the Agatston scoring method. The Agatston score refers to the size and density of calcified plaques. The well-recognized risk factors for heart disease – blood pressure, cholesterol and blood sugar levels – were all measured over a seven-year period, as were the Agatston scores. Smoking was also taken into account. 29% of the men and 15% of the women who had no discernable risk factors were found to have severe arterial calcification. No cardiovascular symptoms and no other risk factors were present in these individuals. The patients all had low to average cholesterol scores, yet their arteries were filled with life-threatening, calcified plaques. Upwards of 90% of patients who experience a heart attack have calcified plaques in their arteries.

Interestingly, about 45% of patients that are admitted to a hospital for a heart attack have cholesterol levels within a normal, healthy range.²⁵ America's penchant for dairy products has long been associated with heart disease risks due to their saturated fat content, but perhaps the calcium in dairy is what's truly to blame.

It is worth noting that studies have indicated that statin drugs actually increase the calcification of arterial plaque. Some researchers propose that this calcification is part of the “healing” process and helps “stabilize” the plaques – because calcification causes the plaques to harden, making them more difficult to rupture.

A study published in the *Journal of the American College of Cardiology* found that calcification of arterial plaques occurred independently of plaque regression – meaning that the plaques' calcification did not occur due to a reduction of plaque size. Rishi Puri, MBBS, Ph.D. and consultant for the Atherosclerosis Imaging Core Laboratory within the Cleveland Clinic Coordinating Center for Clinical Research, was the study's lead researcher. The study

analyzed the coronary arteries of 3,495 patients for 18 to 24 months. All of the patients had been diagnosed with coronary artery disease. 224 of them were in the control group and received no medication. 1,726 participated in the “low-intensity statin” group, and 1,545 subjects participated in the “high-intensity statin” group. All groups had statistically significant increases of arterial plaque calcification. The control group saw a 0.020 increase in calcium indices, and 0.038 and 0.044 increases were seen in the low-intensity and high-intensity groups, respectively.

Regarding the study, Dr. Puri stated, “What struck me were the differences in changes in plaque calcification between the no-statin and low-intensity statin groups. Both groups achieved relatively similar LDL-C levels and demonstrated the same degree of plaque progression over time, yet the increase in calcium index in the low-intensity statin group was nearly double that in the no-statin group.”²⁶

So, the group not receiving statins saw their arterial plaques increase at the same level as the group receiving statins. Perhaps what boggles the mind most is the fact these professionals see calcification of the arteries as a good thing. This is in no way a positive outcome, yet these medical professionals are claiming that it is.

Another study published in the journal *Molecular and Cellular Biochemistry* found that atorvastatin increased the calcification of vascular smooth muscle cells dose-dependently. The more of the drug was used, the more calcification was seen. The researchers note that calcification of the arteries is associated with increased morbidity and heart attacks.²⁷

Another study published by the *Journal of the American Society of Nephrology* also notes the dangers of arterial calcification, and why it is important to minimize it. Arterial calcification is part of the pathology of atherosclerosis. The plaques form and calcify over time, hardening your arteries along with them. Vascular calcification has been linked to a variety of conditions, including increasing the burden of atherosclerosis, cardiac event morbidity and an increase of ischemic events in peripheral artery disease. Calcification

of the coronary artery is suggested to be predictive of and associated with an increased risk of sudden cardiac death.²⁸ There is no rational reason for medical professionals to purport statin use and its capacity to increase calcification of arterial plaques and the blood vessels themselves as a good thing. It is beyond comprehension as to how these supposed professionals could be so careless as to foster out-and-out lies just to reinforce the belief that statins are actually of use.

Lowering your cholesterol levels with statins might not be of particular use to your heart health endeavors, but what about your blood pressure? Hypertension, or high blood pressure, is defined as a systolic blood pressure at or above 140 mmHg or a diastolic blood pressure at or above 90 mmHg. Systolic blood pressure is a measure of the maximum amount of pressure in the arteries as the heart contracts, while diastolic blood pressure is a measure of the minimum pressure in the arteries between contractions.

Hypertension is the single most important risk factor in stroke incidence. Around 50% of ischemic strokes are caused by high blood pressure, according to the World Heart Federation. High blood pressure can damage your arteries in a number of ways. It can cause hardening of the arteries and lead to atherosclerosis. It can also cause weak points along the arterial walls, which can rupture.²⁹



There are a variety of ways to keep your blood pressure in check, naturally and holistically. Weight loss is one of the top suggestions for people who are overweight and concerned about their blood pressure. Blood pressure often increases as weight increases. Losing even 10 pounds can significantly reduce your blood pressure and decrease your hypertension risk.

Carrying weight around your midsection is also a risk factor for developing hypertension. Men with a waist circumference of 40 inches or greater, and women with a waist circumference of 35 inches or greater, should be particularly concerned, as these measurements are associated with an increased risk of developing high blood pressure.

Regular exercise can both minimize your risk for becoming overweight or developing central adiposity. Exercising or engaging in physical activity regularly can also help reduce your blood pressure. However, it is important to engage in physical activity consistently. If you stop exercising once your blood pressure drops a few millimeters of mercury (mmHg), it will start to climb back up. Regular physical activity can prevent the onset of hypertension, and help reverse it.³⁰

Diet is another key factor in managing your blood pressure risks. Following a diet rich in fruits and vegetables can help boost your potassium intake. Potassium is known for its ability to balance the effects that sodium can have on blood pressure.²⁷ Potassium is an essential mineral that most Americans do not get enough of. According to an analysis of the data gathered by the National Health And Nutrition Examination Survey (NHANES) between the years of 2003 and 2008, 99.4% of Americans consumed more sodium each day than the amount recommended by the American Heart Association, which is 1,500 mg or less per day. Additionally, 90.7% consume more than the Institute of Medicine's Tolerable Upper Limit Level of 2,300 mg per day. Conversely, less than 2% of the adult population consumes enough potassium each day.³¹

A diet high in sodium is associated with an increased risk of developing hypertension in some healthy people. It also a significant factor in raising

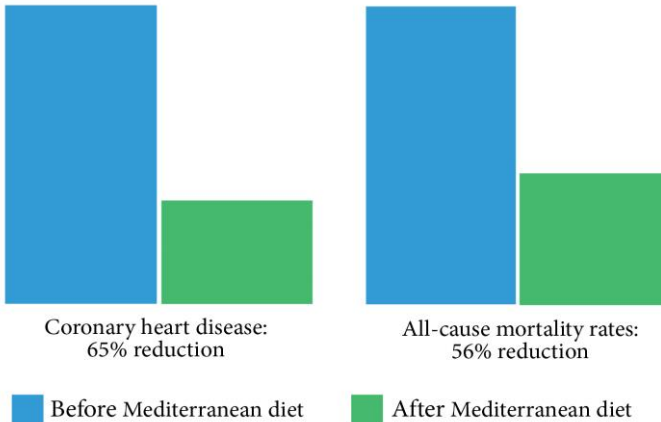
blood pressure in people already diagnosed with hypertension. In overweight and obese individuals, a high-salt diet increases the risk of cardiovascular disease as well. Hypertension causes damage to the blood vessels and may lead to atherosclerosis or narrowing of the arteries.³⁰

A report published in the American Heart Association's journal *Circulation* in 2002 and led by Daan Kromhout, Ph.D., M.P.H., from the Division of Public Health Research in the Netherlands, analyzed the effects of diet and exercise on heart disease prevention. The researchers began the study by noting that there are several likely hypotheses about the onset of atherosclerosis. The primary theories behind the cause of the condition are oxidation, a response to injury and a response to retention. It is important to note that the three theories are not mutually exclusive. The authors of the report also note that the oxidation hypothesis highlights the importance of modifying oxidative stress in the case of atherosclerosis. When compared to native LDL cholesterol, arterial walls take up oxidized LDL more favorably. This theory makes diet and lifestyle of great concern. For instance, oxidation can be reduced by consumption of antioxidants in the diet but can also be increased by behaviors such as smoking. The researchers state that there is overwhelming evidence tying risk factors such as smoking, alcohol consumption and physical inactivity to heart disease.³² In their overview of numerous studies on the correlations between diet and lifestyle to heart disease, a number of important observations can be found.

The Diet and Reinfarction Trial, conducted in 1989, found that consuming oily fish just twice a week provided a 32% reduction in coronary heart disease and a 29% reduction in all-cause mortality. A 46-month follow-up study known as the Lyon Diet Heart Study found even more impressive results. Participants in the study followed a Mediterranean diet supplemented with linolenic acid as their intervention. A 65% reduction in coronary heart disease and a 56% reduction in all-cause mortality were achieved by the study's conclusion. Nearly two-thirds of the participants experienced a reduction in heart disease with diet modifications alone.

Change of diet effects on heart disease, mortality numbers

*Participants in the study followed a Mediterranean diet supplemented with linolenic acid as their intervention.



Nearly two-thirds of the participants experienced a reduction in heart disease with diet modifications alone.

Source: *AHAJournals.org*

For hypertensive patients, dietary changes can be quite powerful as well. In the Dietary Approaches to Stop Hypertension (DASH) trials, results of the dietary changes made were found to be quite similar to the results seen in drug trials for blood pressure medications. The DASH diet emphasizes a diet that is high in key minerals such as potassium, calcium and magnesium. A more recent, secondary DASH trial found that decreasing sodium intake along with implementing the other DASH diet principles produced an even greater decrease in blood pressure than either modification would provide alone.

Another, smaller trial conducted with cardiac patients found that dietary and lifestyle modifications can also benefit patients who have been diagnosed with cardiovascular disease. The intervention group received extensive dietary and lifestyle modification. A whole-food, vegetarian diet was followed in conjunction with the implementation of aerobic exercise, stress-management classes, smoking cessation and support group meetings. A fol-

low-up after five years found that the intervention group had a 7.9% reduction in coronary artery stenosis. This is remarkable, especially when contrasted with the 27.7% increase in coronary artery narrowing found in the control group. In other words, the intervention group experienced a significant reduction in the severity of their condition, while the control group saw their condition continue to worsen.

The results show that healthy eating and lifestyle can reduce risks for cardiac patients as well as healthy individuals. It has previously been thought that dietary and lifestyle changes are only preventative measures that are worthwhile for primary prevention in healthy individuals.³² The results of this study, among others, show that dietary and lifestyle changes are not just for prevention – they can help improve diseases and conditions such as hypertension and coronary artery disease.

Conventional medicine seeks to create lifelong patients out of the majority of our population. Not because they care, but because the more patients there are, the more money they make. Part of how they do this is by trying to convince the public that heart disease, even simple hypertension, is irreversible and that you need to take pills for the rest of your life to control it. Even the American Heart Association says hypertension is a lifelong condition and that if your blood pressure is 140/90 mmHG or higher, your doctor will likely prescribe medication. Their website, Heart.org, also states that there is no cure for hypertension but that lifestyle modifications can help “manage” the condition.³³

Vigilance over one’s diet and lifestyle can drastically change your health, and that can’t be said enough. It is true that, once you have developed high blood pressure, you will be at an increased risk of developing it again. If you follow a healthy diet and exercise regularly until your blood pressure is normal and then go back to eating cheese fries and couch surfing, you’re going to find that your blood pressure goes right back up to where it was. Making the commitment to get healthy and stay that way is a lifelong commitment. Having a disease doesn’t have to be.

Most dietary studies on nutrition and its relationship with heart and cardiovascular disease focus primarily on saturated fats, cholesterol and sodium intake. However, there is reason to believe that high glycemic load foods, such as refined grains and sugars, may also increase heart disease risks when consumed in large quantities.

A study published by the *American Society for Clinical Nutrition* found that their epidemiologic data suggested that high consumption rates of refined grains, sugars and other high-glycemic-index foods increased the risk of coronary heart disease, independent of other risk factors. In the study, a cohort of 75,521 women between the ages of 38 and 63 with no previous diagnosis of diabetes, heart attack, stroke or other cardiovascular conditions were followed for 10 years. The subjects filled out food frequency questionnaires, and their total dietary glycemic loads were determined. At the study's 10-year follow-up, dietary glycemic loads were indicated as directly related to coronary heart disease risk, even after adjustment for other risk factors. For women who were above average in weight (or with a BMI over 23), the association between dietary glycemic load and disease risk was more apparent.³³

The *Journal of the American Heart Association* published a systematic review and meta-analysis of the association between glycemic load and heart disease in 2012. The researchers began the study by noting the proposal that upwards of 80% of all heart disease in Western nations has been caused by high-risk lifestyle choices. They note that the primary concern in the modern medicine world has been saturated fat consumption. This has led to the adoption of a low-fat, high-carbohydrate diet across the board as the standard dietary protocol for patients with heart and cardiovascular disease. However, new research is suggesting that high carbohydrate consumption, particularly carbohydrates of the refined grain and sugary nature, may actually increase heart disease risks. The researchers analyzed a number of studies to determine the effects of a high-glycemic diet on heart disease risks. Their conclusion was that diets with a high glycemic index and high glycemic load were associated with a significant increased risk of developing coronary heart disease in women, but not in men. The researchers

posit that women normally receive protection from heart disease due to their higher levels of circulating HDL (high density lipoprotein) cholesterol. High-glycemic diets are associated with a reduction in circulating HDL cholesterol, and this may excessively increase the risk of heart disease in women.³⁴

The researchers also note that a high-glycemic index diet may also raise blood pressure and C-reactive protein levels, which can in turn increase the risk of developing coronary heart disease. The link between low glycemic index diets and heart disease risk reduction was also validated through randomized clinical trials evaluating the effects of low glycemic index and low glycemic load as well as low saturated fat. A systematic review of these studies found that, in obese and overweight individuals, exchanging refined carbohydrates for low glycemic index complex carbohydrates provided a much greater impact on coronary heart disease lipid risk factors. Meta-analyses of low glycemic index foods in randomized clinical trials have shown impressive effects on body weight and lipid profiles in overweight and obese individuals.

Budding research suggests that there may also be positive effects of low-glycemic diets on other heart disease risk factors, such as oxidative stress in overweight and obese individuals and inflammation in type 2 diabetics. The researchers concluded their study by stating that they believe that reducing glycemic index and glycemic load in the diet may have promising effects for coronary heart disease outcomes for women, but further studies are required to deduce the effects provided to men.³⁵

The average American diet is known for being notoriously high in refined grains and sugars, along with saturated fats, trans fats and salt. The typical fast food hamburger is the perfect example of these ingredients. The food most people eat every day is the primary source of their disease or condition, and yet they remain none the wiser. Some people believe that there is nothing they can do to prevent heart disease. This pessimistic attitude serves only to lead you to an early grave. The truth is that many common causes of heart and cardiovascular diseases are known. The vast majority of

all cases could have been avoided with lifestyle changes. In fact, the World Health Organization states that, if risk factors are eliminated, 80% of all heart disease, strokes and type 2 diabetes could be prevented.³⁶

Most cases of heart disease are not only preventable but also manageable and treatable with appropriate lifestyle changes. Surgery and prescription medications are too often used as a quick and easy solution. By-pass surgery may solve the problem of a clogged artery, but it will not change the dietary and lifestyle habits that created the condition. Major surgery and potentially harmful drugs should not be our go-to method of treating what is often a disease caused by the way a person leads their life. It has been proven that diet and lifestyle modifications can not only prevent the onset of heart and cardiovascular disease but can also treat these conditions after they have developed.

Chapter 4

The Impact of Food on Heart and Cardiovascular Diseases



The foods you choose to eat can either have a negative or a positive impact on your health. There are a wide variety of foods to choose from, but not all foods are created equal. In fact, quite a lot of the food available at your local supermarket is of little nutritional value and often toxic.

For example, a study published in the journal *Circulation* concluded that processed meats raise the risk of heart disease significantly. The researchers performed an extensive review and meta-analysis of 20 studies on the impact that consuming red and processed meat has on the development of diabetes, heart disease and stroke. Consumption of red meat was not linked to the development of heart disease and diabetes, based on the four studies on red meat consumption. However, the analysis of five studies on processed meat suggested that a 50-gram serving per day increased the risk of heart disease by 42%.³⁷ This distinction is important, because it shows that red meat is not inherently bad for you. It also suggests that the chemicals and preservatives that are added to foods do indeed play a role in the onset of disease and death, despite safety claims.



There are a number of preservatives used in processed meats and other products. Sodium nitrate is one of the more widely known preservatives. It is recognized for its ability to enhance flavor and color of meat products. Sodium nitrites can also produce nitrosamines when heated to high temperatures – like during cooking – or when they come into contact with stomach acids. Nitrosamines are associated with an increased risk of colorectal and pancreatic cancers.³⁸ It is also thought that sodium nitrites can damage blood vessels and make your arteries more likely to harden and narrow over time – leading to heart disease.³⁹

Monosodium glutamate (MSG) is a food additive used to enhance flavor in many types of food. Asian cuisine, soups and other processed foods are likely to contain MSG.³⁸ MSG is linked to a number of negative side effects, such as obesity and damage to the hypothalamus. Consumption of MSG can also over-stimulate the electrical pulses of the heart muscle. This can lead to arrhythmias and sudden cardiac arrest. MSG can go by many names on an ingredient list, too. In addition to *monosodium glutamate*, it may also be listed as *glutamate textured protein*, *glutamic acid*, *yeast extract*, *gelatin yeast nutrient* or *hydrolyzed vegetable protein*. The best way to avoid MSG is to avoid processed foods.⁴⁰

Another popular food additive is trans fat. Trans fats are an artificial, man-made substance created by adding hydrogen molecules to liquid oils in order to make them more solid at room temperature. Trans fats are often called “partially hydrogenated oils” under the ingredient list of a food label. Trans fats are most commonly found in processed foods. They provide a better taste and texture to the item at low cost to the company. Instead of making a pastry with real butter, they make it with hydrogenated corn oil. Trans fats can be found in a wide array of foods. Cookies, crackers, pre-made piecrusts, frozen pizzas and other items such as donuts and pastries are all likely to contain trans fats. The ever-popular margarine is also a trans fat. Once thought to be the healthy alternative to butter, it is now known that this replacement is not in fact a newer and better version of the original. Trans fats can negatively impact your health by reducing the good HDL (high density lipoprotein) cholesterol, and increasing the LDL cholesterol in

your bloodstream. Trans fat consumption increases the risk of having a heart attack or stroke and developing type 2 diabetes.⁴¹

Hidden Sources of Trans Fats:

- Cakes, pies and cookies
 - Biscuits
 - Breakfast sandwiches
 - Margarine
 - Crackers
 - Microwave popcorn
 - Cream-filled candies
 - Doughnuts
-

An article published by the journal *Circulation* in 1997 cautioned against the use of trans fats due to their negative effects on blood lipid profiles. Author Alice H. Lichtenstein, D.Sc., states that studies, even at that time, found that trans fatty acids increased cholesterol levels more than naturally occurring fats. Lichtenstein even stated that it was prudent to substitute natural, unhydrogenated cooking oil for trans fats whenever possible.⁴²

Unfortunately, the act of reducing dietary intake of trans fat can be made difficult by the FDA regulations on trans fat labeling. Though it is mandatory to list trans fat as an ingredient – if one serving contains less than half a gram, it may be listed as “0 g trans fat” on the nutrition label. Presumably, this should mean that if you see “0 g trans fat” on the label, the food actually does contain trans fat. And, if you don’t see it at all – the food likely doesn’t contain any trans fat. That would still be relatively sneaky, as most people would not be aware that *zero grams* doesn’t actually mean “zero grams” – it just means “less than half a gram.” However, the FDA doesn’t stop there. Just to keep things interesting, there is also a loophole for even

listing trans fat on the nutrition label. If there are no claims about the food being low in trans fat, manufacturers don't even have to list "0 g trans fat" on the label.⁴³

Per the FDA.gov website, "For conventional food products (those food products other than dietary supplements), declaration of '0 g' of *trans* fat is not required for such products that contain less than 0.5 g of total fat in a serving if no claims are made about fat, fatty acid or cholesterol content. In the absence of these claims, the statement 'Not a significant source of *trans* fat' may be placed at the bottom of the table of nutrient values in lieu of declaring '0 g' of *trans* fat."⁴³

The language here is pure semantics. By stating it's "not a significant source," a product can easily fool low-comprehension readers into thinking that the product is good for them. But the same statement still implies that the item does contain trans fats, just miniscule amounts of them. It is legally permissible, but is it morally acceptable? Is it okay for manufacturers to deceive the general public with misleading language and numbers? Apparently, according to the FDA, not only is it okay, but they will provide the instructions. Ultimately, it is up to the consumer to avoid consuming trans fats. The best way to do that is by avoiding processed foods altogether.

Refined grains and sugars may also play a role in the development of heart and cardiovascular diseases. Many studies have shown that consuming whole grains and other lower-sugar, higher-fiber carbohydrate options instead of white flour, white rice and other low-fiber or high-sugar foods decreases heart disease risks. Whole grains are also associated with preventing weight gain over time. Whole grains can also help reduce cholesterol and lower blood pressure, and they may also help improve blood vessel function and stave off hunger. Processing removes most of the nutritive value found in grains, like dietary fiber. It also transforms a food's natural structure. A finely milled product, like oat flour, is going to break down more rapidly than whole oats in the digestive system.

Sodas and other sugar-sweetened beverages are also huge offenders when it comes to their impact on the diet. Not only do they provide an easy way to consume far more calories than you need each day, but they also cause blood sugar spikes. Sugary drinks are just as bad for your body as refined carbohydrates, but with even fewer nutrients and no fiber. A study published in 2000 in *The American Journal of Clinical Nutrition* concluded that a high glycemic load from consumption of refined carbohydrates increases the risk of coronary heart disease, independent of other known cardiovascular disease risks.³⁴

Another study published in 2010 in the journal *Circulation* noted that sugar-sweetened beverages increase the risk of heart disease in several ways. Not only do they increase the risk of becoming overweight or obese, but they also increase the risk of developing type 2 diabetes. Being overweight, obese or a type 2 diabetic significantly increases your risk of developing a heart or cardiovascular disease.

Other studies indicate that sugar-sweetened beverage consumption also may play a role in the development of cardiovascular disease, independent of these other risk factors. Sugary drinks may also be linked to the development of hypertension, undesirable blood lipid profiles and inflammation.

One study followed 88,000 women for 22 years. Women who consumed two or more sugar-sweetened beverages per day had a 35% greater chance of having a fatal or nonfatal heart attack than those who consumed one or fewer sugary beverages per month. The researchers, from the Harvard School of Public Health in Boston, concluded that sugar-sweetened beverage consumption is a significant contributor to increased rates of obesity, type 2 diabetes and cardiovascular disease.

Sugar-sweetened beverage consumption likely increases cardiovascular disease risks independent of other risk factors. This is because sugary drinks promote a high dietary glycemic load and increased fructose metabolism, which can lead to inflammation and high blood pressure. Sugar-sweetened beverages are also associated with the accumulation of visceral fat, or fat in

or around internal organs, and dyslipidemia that may lead to atherosclerosis.⁴⁴

Salt is another additive found in many prepackaged or processed foods and kept in most kitchens. The debate on sodium is a complex one. Many studies have implicated salt overconsumption as a cause of high blood pressure and a risk factor for developing heart and cardiovascular diseases.

A report published in *The New England Journal of Medicine* indicated that reducing the average worldwide sodium intake from nearly 4,000 milligrams to a more modest 2,000 milligrams daily would save over one and a half million lives each year. Conversely, another report also published by the same journal concluded that the current average wasn't problematic, but having much more or much less could be detrimental. A third study concluded that, while too much sodium can have negative side effects, consuming too little potassium is equally damaging.⁴⁵ The overwhelming majority of adults in the United States, for instance, consume well above the recommended amount of sodium each day, while a very miniscule number of people manage to consume enough potassium each day. According to NHANES survey data from the years 2003 to 2008, less than 2% of American adults consume enough potassium each day.³¹

A diet high in sodium can lead to fluid retention and increase blood pressure. A diet too low in potassium can also increase blood pressure. High blood pressure is a risk factor for having a heart attack or stroke or developing a cardiovascular disease. The excess fluid associated with a high sodium intake can cause other potential problems as well. For people with poorly functioning hearts, this fluid retention can lead to congestive heart failure. Decreasing the consumption of salt-laden foods is recommended for heart health, as is increasing the amount of potassium-rich foods that are consumed.⁴⁵

The keys to avoiding foods that promote heart disease are simple. By removing refined grains, added sugars, preservatives and other food additives from your diet, you can begin the path to preventing and reversing disease.

Eliminating processed foods that are loaded with sugars, salt and artificial ingredients will make it easy to begin eating more nutritious foods.

Foods to Prevent and Treat Heart Disease

Getting enough potassium each day is vital to achieving optimal heart and cardiovascular health. A Swedish study published by the British medical journal *The Lancet* found that increased potassium intakes were able to reduce stroke risks. The same study also found that greater levels of potassium reduced blood pressure.

Potassium is a vital nutrient and electrolyte. It plays a number of important roles in the body, such as maintaining electrical conductivity within the nervous system and muscle function and formation. The heart is a muscle, and it requires electrical pulses to function properly. The influence of potassium as a necessary medium for proper electrical conductivity and muscular function is imperative to heart health. Without potassium, the heart muscle simply cannot operate properly. Potassium also interacts with sodium.⁴⁶

A wide variety of foods contain potassium, particularly fresh fruits and vegetables. Bananas are often considered one of the best sources of potassium, but there are many foods with just as much or more of the mineral. A glass of orange juice or a serving of potatoes has nearly double the amount of potassium as a banana. A cup of lima beans or a serving of cantaloupe is also another way to get your daily dose. Tomatoes, almonds and wild-caught salmon are also rich in potassium.⁴⁶ Eating a diet centered around whole foods, fruits and vegetables makes it quite easy to get enough potassium each day.

Vitamin D is another nutrient that is linked to heart and cardiovascular health. Emerging research suggests that vitamin D promotes heart health in a variety of ways. Type 2 diabetes, for instance, has been linked to low vitamin D levels and an increased risk of developing heart disease. Osteoporosis has also been closely linked to heart disease.

The relationship between vitamin D, osteoporosis and arterial calcification makes sense. There is a strong correlation between low vitamin D levels and arterial calcification. The more vitamin D a person has in their bloodstream, the less their arteries calcify. Low vitamin D levels are also associated with an increased risk of developing atherosclerosis. Some research suggests that a low vitamin D level escalates the likelihood of developing plaques along the arterial walls due to calcium build-up. High levels of vitamin D appear to reduce this risk.⁴⁷

A review of epidemiological and clinical evidence of the effects of vitamin D on heart disease risk was published in *The American Journal of Medical Sciences* 2010. The review examined data from a number of studies. One study looked at vitamin D status in 3,000 patients with already existing cardiovascular disease and found that those with severe vitamin D deficiency had a risk of dying from sudden cardiac arrest or heart failure during the seven-year follow-up period that was three to five times greater than subjects with optimal vitamin D levels. In the same study, participants with low vitamin D levels were also found to have a 50% increased chance of having a fatal stroke.⁴⁸

Vitamin D can be obtained through exposure to sunlight, consumption of food or supplementation. The skin produces vitamin D₃ when exposed to ultraviolet-B rays. In dietary form, vitamin D may be seen as D₂ or D₃.⁴⁸ The exact length of time needed for your body to produce ample amounts of vitamin D is largely dependent on where you live and the shade of your skin. People with fair skin may produce their daily dose of vitamin D in just 15 minutes, if the sun is just right. For darker-skinned individuals, it may take an hour or two. Where you live, what time of day it is and how much skin is exposed are other variables that effect how much of the vitamin is produced. The farther away from the equator you are, the less potent the sun will be. The time of day and year are also important to take note of. Around noon is when the sun tends to be most powerful. Taking a supplement is necessary for many people to ensure that they are not deficient, due to the constraints of where they live or what their schedule is like. There are foods that contain vitamin D, but getting enough through food and sun exposure

can be very difficult, especially if you live in a low-sunlight region of the globe, such as Canada.⁴⁹

Fatty fish are some of the most excellent sources of dietary vitamin D. Cod liver oil is especially potent, but wild-caught salmon or swordfish can also pack a serious punch. Egg yolks are also a good source of vitamin D, with one yolk providing 10% of your daily needs. Mushrooms are also a great vegetarian source of vitamin D. Fortified foods such as orange juice and yogurt with added vitamin D can also help you get enough vitamin D each day.⁵⁰

Vitamin C is also a beneficial nutrient that may help prevent heart disease and atherosclerosis. Vitamin C is imperative for multiple processes in the body. For instance, vitamin C is needed for growth and repair of bodily tissues. It aids in the construction of collagen, a vital protein used to make skin, cartilage, tendons, ligaments and blood vessels. Vitamin C is also an antioxidant vitamin that is necessary for healing wounds and maintaining healthy bones and teeth.

It is rare to be dangerously deficient in vitamin C, but people who smoke are more likely to have lower levels of the vitamin. Smoking cigarettes or using other tobacco products decreases the amount of vitamin C that you have in your body. A few signs of deficiency include dry hair with split ends, dry or scaly skin, decreased wound healing and easy bruising. Low levels of vitamin C are also associated with high blood pressure, atherosclerosis and an increased incidence of heart attacks and strokes.

Studies suggest that, while vitamin C doesn't lower cholesterol levels, it can protect the arteries against damage. Some studies suggest that vitamin C protects against the onset of atherosclerosis and the build-up of plaques along the arterial walls. Other studies have suggested that vitamin C helps arteries maintain their flexibility and prevent hardening. A diet rich in vitamin C and other antioxidants has also been shown to reduce the risk of developing hypertension in population-based studies.⁵¹

For disease prevention and treatment, it is often recommended that a person consume anywhere between 500 and 1,000 milligrams of vitamin C per day. There are a variety of foods that are rich in vitamin C, making it easy to obtain enough of this valuable vitamin every day if you are following a healthy diet. Fruits such as oranges, grapefruits, papayas, melons, berries, kiwis, pineapples and mangoes are all excellent sources of vitamin C. Vegetables such as red and green peppers, tomatoes, cabbage, Brussels sprouts, potatoes, winter squash, cauliflower, broccoli and other dark, leafy greens are also excellent sources of this vital nutrient. A supplement can also be taken, but you should speak with your naturopathic doctor before beginning supplementation if you are likely getting enough of the vitamin through your diet.⁵¹

Top 10 Vitamin C rich foods



Oranges



Red peppers



Kale



Brussels sprouts



Broccoli



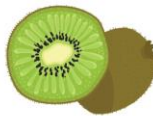
Strawberries



Grapefruit



Guava



Kiwi



Green peppers

In addition to vitamins and minerals, some foods have also been indicated as especially protective for the cardiovascular system. Garlic, for example,

has shown a variety of benefits for protecting against and even treating heart disease. Several studies have indicated that garlic can inhibit some of the key enzymes involved in the synthesis of cholesterol. Studies also show that aged garlic contains higher amounts of beneficial, water-soluble compounds such as S-allylcysteine, which are less cytotoxic and more efficient at preventing cholesterol production than the lipid-soluble sulfuric compounds that are also found in the plant. Garlic is also shown to prevent platelets from clumping together and forming blood clots. Aged garlic extract has been shown to actually help dissolve clots and improve circulation.⁵² Garlic can be found in a variety of supplemental forms, such as garlic powder, aged garlic extract or garlic oil. Garlic is also a very popular ingredient in a variety of cuisines, and is a delicious, healthy way to bring flavor to a meal.

Tree nuts and peanuts also provide multiple benefits in the fight against heart disease. A number of epidemiologic and clinical trials have shown that tree nuts and peanuts consistently help protect against coronary heart disease and other heart disease risk factors. Nearly all studies conducted in the United States on the relationship between nut consumption and heart diseases have reported that there is a beneficial association between the two.

A meta-analysis of four epidemiologic studies found that people in the highest nut consumption group had a 35% reduction in coronary heart disease risk. In addition to having a very desirable fatty acid profile, tree nuts and peanuts also have a number of bioactive compounds that can promote heart health. The fatty acid profile of peanuts and tree nuts can help reduce LDL cholesterol, but when in concert with antioxidants, vitamins and minerals, the beneficial effects are far greater than the fatty acids could produce alone. The phytochemicals, micronutrients and fiber found in nuts gives them an extraordinary nutritional punch. Walnuts are particularly rich in two types of polyunsaturated fats, linoleic acid and linolenic acid, which are quite healthful.

Most nuts are rich in monounsaturated fats, which are also very good for you. Nuts are very complex and nutritionally dense. They contain a wide variety of micronutrients, such as potassium, magnesium and tocopherols.

They are also rich in phytonutrients, such as resveratrol, phytosterols and phenolic compounds. Together, all of these compounds make tree nuts and peanuts especially cardioprotective.⁵³

In addition to their cholesterol-lowering capacity due to their unique fat make-up, nuts are also good at reducing oxidative stress. One study published in *The American Journal of Clinical Nutrition* found that following an almond diet was better at reducing plasma oxidation and LDL cholesterol levels than a low-fat diet. Nuts are rich in antioxidants, but most of the antioxidants are in the skin of the nut. In fact, up to 50% of a nut's antioxidant content can be found in its skin. Many nuts, like almonds, are often peeled before consumed. It is better to leave the skin on, as with walnuts, if you want to get the most nutritional bang for your buck. Walnuts have also been shown to reduce inflammation and improve vascular reactivity. This means walnuts help maintain healthy veins and arteries, and help keep them flexible.⁵³ Walnuts have been studied extensively for their myriad of health benefits. The omega-3 fatty acids found in walnuts have also been associated with promoting good heart and cardiovascular health.

A study published by the *Journal of Nutrition* found that the consumption of walnuts or walnut oil helps reduce heart and cardiovascular disease risks through a variety of mechanisms. Regarding the results, one of the researchers, Dr. Penny Kris-Etherton stated, "We already know that eating walnuts in a heart-healthy diet can lower blood cholesterol levels... but, until now, we did not know what component of the walnut was providing this benefit. Now we understand additional ways in which whole walnuts and their oil components can improve heart health." The researchers discovered that, in addition to lowering LDL cholesterol levels, walnuts can help preserve blood vessel elasticity and also provide health-enhancing effects even just 30 minutes after consumption.⁵⁴

High levels of consumption of foods rich in antioxidants is also associated with a decrease in heart disease risk. Researchers from the Institute of Environmental Medicine, located in Stockholm, Sweden, conducted a study which confirmed the importance that antioxidants in the diet has on heart

health. The scientists followed a cohort of 32,561 Swedish women between the ages of 49 and 83 for a period of 10 years. They found that women with the highest amounts of antioxidant consumption had a 20% reduction in risk of having a heart attack.

Dr. Alicja Wolk, the study's lead researcher, said, "In contrast to supplements of single antioxidants, the dietary total antioxidant capacity reflects all present antioxidants, including thousands of compounds, all of them in doses present in our usual diet, and even takes into account their synergistic effects." In other words, antioxidants are more powerful when combined.⁵⁵

Many studies are focused around the effects of a single antioxidant that's been isolated and often synthesized. The effects of these types of antioxidants are nowhere near as beneficial as those that are naturally occurring in concert with other complementary bioactive compounds found in plants. It is the scientific equivalent of conducting a symphony with a single instrument and wondering why it doesn't sound the same.

A host of antioxidants have been studied for their potentially cardioprotective benefits. Lycopene, the fat-soluble carotenoid that gives tomatoes their brilliant red color, is associated with a reduced risk of stroke. The study, conducted by Finnish researchers, was published in the medical journal *Neurology* and had some very impressive findings. For instance, men with the highest levels of lycopene had a 55% reduction in risk for all types of strokes. High levels of lycopene were also associated with a 59% lesser chance of having a stroke related to blood clots. The researchers hypothesized that, in addition to its antioxidant benefits, lycopene may also improve cholesterol levels, decrease inflammation, boost immunity and prevent blood clots from forming. These are all factors that help reduce the risk for having an ischemic stroke.

Dr. Edward Giovannucci, a professor of nutrition and epidemiology at the Harvard School of Public Health, has said that the shape of the lycopene molecule is part of what makes it such an effective antioxidant. Dr. Giovannucci recommends that people consume at least 10,000 micrograms of ly-

copene per day. That sounds like a lot, but even half a cup of tomato sauce has over 6,000 micrograms. While it's not necessary to go out of your way to eat fatty foods with tomatoes, because lycopene is fat-soluble, drizzling a little olive oil on your favorite salad or adding a handful of nuts can be a great way to really boost the nutrition of your meal.⁵⁵

Reaching the minimum recommended amount of fruits and vegetables each day is also paramount to heart health. According to the CDC, in the years 2007 to 2010, only 13% of American adults consumed enough fruit each day, and only 8.9% consumed the suggested amount of vegetables. The recommendation for adults listed by the CDC is one to two cups of fruit, and two to three cups of vegetables.⁵⁷ Some professionals recommend consuming up to 10 cups of fruit and vegetables a day for maximum health protection.⁵⁵

Poor fruit and vegetable consumption is widespread across the United States. Ample consumption of produce is strongly associated with better health and reduced risk for a myriad of diseases and conditions.⁵⁷ Fruits and vegetables are nutrient-dense but low in calories. They are also high in fiber and water content. This makes them the perfect heart-healthy food. The higher your fruit and vegetable intake is, the less likely you are to develop heart disease. In fact, people who consume eight or more servings of produce per day are 30% less likely to have a heart attack or stroke. All fruits and vegetables are good for you and help fight disease. However, leafy green and cruciferous vegetables and citrus fruits are of particular benefit in the fight against heart disease.⁵⁸

Multiple studies have also confirmed the benefits of consuming enough dietary fiber each day. A comprehensive review published in the journal *Circulation* notes that a diet with at least 25 grams of fiber per day is associated with a decreased risk of death from coronary heart disease. The average adult in the United States gets about half, or 15 grams per day. Some studies also suggest that dietary fiber can help reduce cholesterol levels. It is unclear if the antioxidants and phytonutrients found in fiber-containing foods are what precipitate this phenomenon, or if it is the fiber itself. How-

ever, fiber-containing foods are generally associated with a number of nutritional benefits in addition to their cholesterol-lowering effects.⁵⁹

The hallmarks of good nutrition to prevent and treat heart disease are centered on eating whole, natural foods. Avoiding refined, processed grains, added sugars, trans fats and other food additives like artificial colorings and preservatives are the keys to eliminating disease from your life. Restructuring your diet, and your pantry, to focus on fresh fruits, vegetables, nuts and seeds is of utmost importance to regain and maintain your health.

Chapter 5

Lifestyle Changes to Prevent and Reverse Heart Disease



Dietary modifications can go a long way towards preventing and treating a number of conditions in addition to heart disease. However, many lifestyle factors also play a pivotal role in the development of heart and cardiovascular diseases. Making necessary changes to your daily life is often imperative to reducing your risks and treating disease. Getting plenty of exercise, quitting smoking and reducing stress are some of the keys to living a healthier life.

An article published by the American Heart Association's journal *Circulation* by Jonathan Myers, PhD., from the Cardiology Division of the VA Palo Alto Health Care System at Stanford University in California examines and explains the importance of physical activity to reduce heart disease risks. Myers states that as many as 250,000 deaths each year in the United States alone are due in part to a lack of regular exercise. Many studies over the years have shown that people who engage in regular physical activity are less likely to develop a number of conditions, including heart disease. These same studies also often find that people who don't exercise are more likely to develop conditions like hypertension and type 2 diabetes, both of which increase the risk of developing heart and cardiovascular diseases. People with low levels of fitness are also more likely to have a cardiac event, such as a heart attack. An inactive lifestyle is a major risk factor in the onset of disease.

Participating in regular physical activities is associated with a reduction in a number of other risk factors for heart disease. For example, exercise can help you lose weight and lower your blood pressure. It can also help improve blood lipid profiles and increase insulin sensitivity. Exercise also provides a host of physiological benefits as well. Aerobic activity can help improve your blood vessels' capacity to dilate, which can help maintain good function of the vascular walls.⁶¹

The introduction of regular exercise is also beneficial for cardiac patients. People with heart disease who begin to exercise regularly are able to return to work more quickly, and report feeling less stress and anxiety as well as being more confident. Even better, studies show that beginning an exercise

regimen reduces the risk of death by 20 to 25% in patients who have had a heart attack. Researchers also estimate that up to 40% of cardiac events in America could be prevented just by meeting daily exercise requirements.

The CDC recommends that Americans achieve at least 30 minutes of moderate physical activity most days of the week, if not every day. Moderate activities include brisk walking or activities that require similar exertion, such as yard work or cycling. There are many other options as well, such as recreational activities like playing a sport.⁶⁰

A 2013 study published in the journal *BMJ* compared the mortality outcomes of exercise and medication. The researchers concluded that, in many instances, exercise interventions are equally as effective as drug interventions in secondary heart disease prevention, rehabilitation after stroke, treatment of heart failure and prevention of heart disease.⁶¹

According to the CDC, only about one in five Americans meet the 2008 Physical Activity Guidelines. This equates to a little over 20% of the population. That doesn't seem so bad, but it leaves us with 80% of American citizens who are not getting enough exercise. Inactive adults are at an increased risk of early death, stroke or heart attack as well as type 2 diabetes and some types of cancer.⁶²

Physical activity provides a myriad of benefits, such as a stronger heart and improved lung function. Regular participation in moderate or vigorous physical activities can lower your risk for coronary heart disease and other related conditions. According to the National Heart, Lung and Blood Institute, exercise can reduce your blood pressure and help lower the number of triglycerides circulating in your bloodstream. Regular exercise can also help increase good HDL cholesterol levels. These are key elements in the prevention of developing a heart or cardiovascular condition, such as atherosclerosis.

Exercise can also help you lose weight and maintain a healthy weight. Being overweight or obese is another major risk factor in the development of heart and cardiovascular disease. Additionally, exercising regularly can make

it easier to quit smoking, and stave off the dreaded weight gain associated with smoking cessation. Quitting smoking is one of the best things you can do to reduce your risk of disease.⁶³

There are many types of exercise a person can do to help reduce their heart disease risk. Most people think of aerobic exercise when they think about exercising for better heart health. However, both aerobic and anaerobic activities have been indicated as beneficial to preventing heart disease. Anaerobic exercise, such as strength or resistance training, can also help stave off age-related muscle loss. Muscle loss typically occurs as we age and is associated with the onset of abnormal blood lipid profiles, obesity, type 2 diabetes and hypertension. These issues are also related to cardiovascular structural abnormalities, such as arterial stiffness. Evidence suggests that regular resistance training can help reduce muscle loss over time. Both the American Heart Association and the American College of Sports Medicine have endorsed resistance trainings for the prevention and treatment of hypertension.

A meta-analysis of data from 1996 and 2003 included nine randomized controlled trials and 341 participants. Resistance training lowered systolic blood pressure by 3.2 mmHg and diastolic blood pressure by 3.5 mmHg. This may not seem like a lot, but a reduction in blood pressure of just 3 mmHg in populations has been shown to lower cardiac death risks by up to 9% and risk of stroke by 8% to 14%.

Resistance training has also been shown to help reduce total fat mass in both men and women, independent of caloric restriction. In other words, even if you aren't actively dieting, resistance training can help improve your body composition. Studies have indicated that where the body fat is located can be just as important as total body fat. Central obesity, especially visceral fat, is heavily linked to a number of conditions. Type 2 diabetes, abnormal blood lipids, hypertension and heart disease are all associated with abdominal obesity. Several studies have displayed that engaging in resistance training can help reduce central adiposity and visceral fat.⁶⁴

In addition to beginning a regular exercise regimen, or including some kind of physical activity to your daily routine, quitting smoking is another pivotal step you can take to reduce your heart disease risk. Smoking is one the most lethal lifestyle choices you can make. The chemicals in tobacco do not just harm your lungs. They also harm your blood cells and damage the structure of your heart and blood vessels. The functional damage incurred by tobacco product use is a major risk factor for the development of atherosclerosis. When in concert with other risk factors such as abnormal blood lipid levels and obesity, smoking exponentially raises the risk of developing heart disease.

Smoking also increases the chances of developing peripheral artery disease. The accumulation of plaque and narrowing of the arteries to your head, organs and limbs are the characteristics of peripheral artery disease. It increases your risk of heart disease, heart attack and stroke. Breathing in secondhand smoke can be just as harmful to the heart and blood vessels as being a smoker. Secondhand smoke also raises the risk of children and teens developing coronary heart disease in the future.⁶⁵

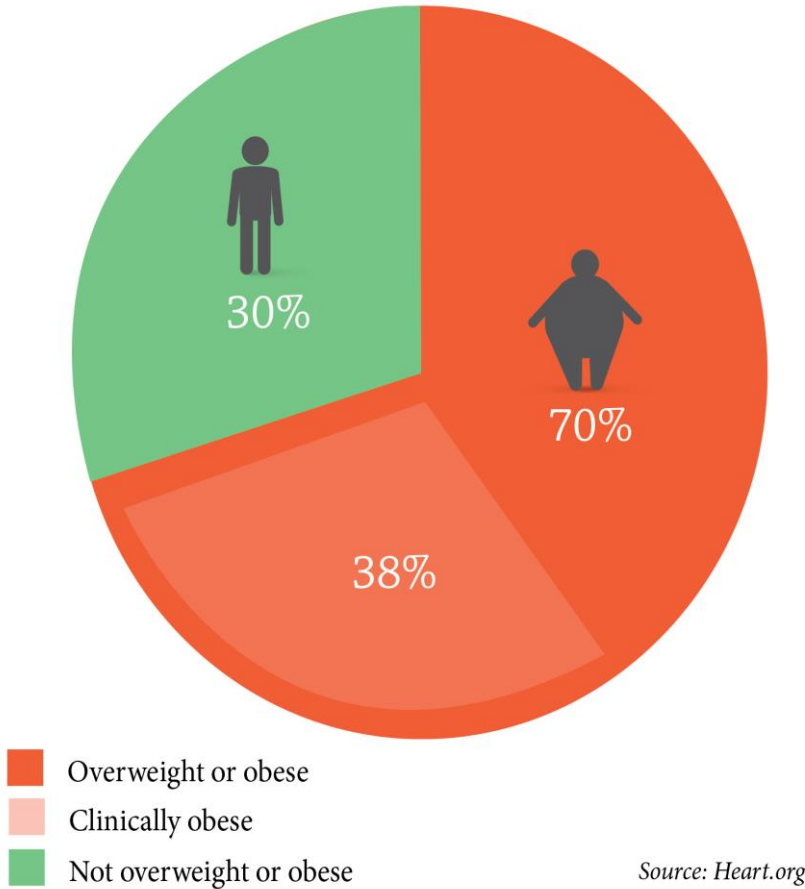
The CDC reports that cigarette smoking is the leading cause of preventable deaths in the United States. In fact, cigarettes alone lead to the death of 480,000 citizens each year. It is estimated that smoking increases your chances of developing cardiovascular disease by two to four times that of a nonsmoker. It can double or quadruple your risk of having a stroke as well. Smoking increases your chances of developing blood clots and also raises your blood pressure, two major risk factors for having a heart attack or stroke.⁶⁶ Smokeless tobacco is often considered a safe alternative to cigarettes, but in addition to the cancers and oral ulceration that it is associated with, smokeless tobacco still doubles your risk of having a heart attack, according to the World Heart Federation.⁶⁷

Fortunately, when you quit smoking, there are nearly immediate benefits to be had. Just 20 minutes after your last cigarette, your blood pressure and pulse will begin to lower. Your circulation will also begin to improve. Within the first eight hours, your blood oxygen levels will begin to rise and your risk

of having a heart attack will begin to drop. After a single day without a cigarette, carbon monoxide will be eliminated from your body, and your lungs will begin to expel the mucus and debris caused by cigarettes. After three days, it will be noticeably easier to breathe and your lung function will continue to improve. Heart attack risks will continue to drop, and after five years your risk of a heart attack will be half that of a smoker. It will take about 15 years smoke-free to have the same heart attack risk of a non-smoker, but it is worth it. Even for older adults, quitting smoking can still extend the lifespan by two to three years, and improve quality of life for those remaining years.⁶⁷ Quitting smoking or halting the use of other tobacco products is a vital factor in the prevention and treatment of heart and cardiovascular disease. It is an extremely worthwhile endeavor and is imperative to reducing your risks and reversing disease.

Another obstacle that many people face on their path to preventing and reversing heart disease is weight. Obesity reached epidemic proportions in the United States a few years ago. America is a fat nation. In fact, nearly 70% of all American adults are overweight or obese. About 38% of the population is clinically obese. Can you believe that? That is roughly 78 million people!⁶⁸

Adults over 40 with cardiovascular disease on a cholesterol-lowering drug



Being overweight or obese is sadly not just a superficial, aesthetic issue. It is associated with a myriad of conditions and health concerns. The risk of developing coronary heart disease, for instance, is much higher in those that are obese or overweight. The higher your BMI, the more at risk you become. Higher risks of developing hypertension and having a stroke are also associated with being overweight or obese. Being overweight can cause plaques to build up along your arterial walls that can eventually break off, clog an

artery and cause a stroke. Obesity also greatly increases your chances of heart failure, where the heart is not capable of pumping blood throughout the body to meet its needs. Excess weight also increases your risks of many other conditions that are associated with an increased risk of heart disease.

Type 2 diabetes, abnormal blood lipid profiles and metabolic syndrome are all conditions that are closely related to overweight and obesity and are linked to an increased risk of heart disease. *Metabolic syndrome* is the name given to a group of risk factors that increase your risks for developing heart disease. Abdominal obesity, high triglycerides, hypertension and high blood sugars are all parts of the conditions known as *metabolic syndrome*.¹¹

A 2002 study published in the *Journal of The American College of Cardiology* detailed the relationship between obesity, insulin resistance and heart disease risk. The study utilized 314 non-diabetic, healthy participants. The study found that both obesity and insulin resistance are major indicators for coronary heart disease risk. They also found that insulin resistance seen at any level of obesity greatly increased the risks for developing heart disease and type 2 diabetes.⁶⁹ In other words, having high blood sugar while also being obese greatly increases your disease risks.

A more recent study, conducted in 2014 and published by the same journal, found that obesity independently increases heart failure risks and can induce subclinical damage to the heart muscle. Lead researcher Chiadi Ndumele, an assistant professor at the Johns Hopkins Ciccarone Center for the Prevention of Heart Disease, stated, “Obesity is a well-known ‘accomplice’ in the development of heart disease, but our findings suggest it may be a solo player that drives heart failure independently of other risk factors that are often found among those with excess weight.”

Ndumele also went on to say, “The direct relationship we found between obesity and subclinical heart damage is quite potent and truly concerning from a public health standpoint given the growing number of obese people in the United States and worldwide.”

In the study, the researchers looked at participants' troponin T levels. Troponin T is a heart enzyme that is released by injured cardiac muscle cells. Measuring troponin T levels is the most often method used for diagnosing acute or recent heart attacks, and is commonly used in emergency rooms for testing patients with chest pains or other symptoms that may be indicative of a heart attack. Data from the study showed that obese subjects had elevated levels of the enzyme, which is suggestive of subclinical heart damage. In other words, obese individuals may incur minor damage to the heart muscle that goes unnoticed long before they have heart disease or experience a cardiac event.⁷⁰

The study also found that increases in the hormone correlated with increased body mass index (BMI). As a subject's BMI increased, so did their troponin T levels. The researchers measured BMI and troponin T levels in 9,500 men and women who did not have heart disease and were between the ages of 53 to 75. The subjects' health statuses were tracked for 12 years, and during the follow-up, 869 of them were found to have heart failure. People who were extremely obese – having a BMI above 35 – were found to be twice as likely to develop heart failure as normal-weighted individuals. Additionally, the researchers found that heart failure risk rose proportionally with BMI. For every five-digit increase in BMI, the heart failure risk rose 32%. So, a person with a BMI of 30 has a 32% greater chance of developing heart failure than a person with a BMI of 25.

The researchers also found that people with elevated troponin T levels had an increased risk of heart failure, irrespective of their BMI. This suggests that BMI and troponin T can affect heart failure risks independently. Combining the effects of troponin T and obesity led to some staggering results. Obese subjects with elevated troponin T levels were nine times more likely to develop heart failure than those that were of normal weight and had undetectable troponin levels, even when other risk factors were accounted for.⁷⁰

Childhood obesity is also on the rise and is of great concern. In fact, approximately 31% of children between the ages of 2 and 19 in the United States

are overweight or obese.⁶⁸ An article written by Tracey Bridger, MD, FRCPC, from the Janeway Children's Health and Rehabilitation Centre in Canada, notes that many overweight or obese children are already showcasing risk factors for diseases later in life, including cardiovascular disease. For example, carotid intima-media thickening (IMT) is considered a marker for the development of atherosclerosis. *Carotid IMT* refers to a thickening of the carotid artery walls. In adults, it's often associated with obesity and other related risk factors. In children, IMT is also associated with obesity, hypercholesterolemia – or high cholesterol in the blood – and hypertension.

One study examined carotid IMT in over 70 children, 57% of whom were obese. The average age was 13 years old. 75% of the children were found to have advanced vascular age or arteries that would generally be characteristic of a person who was 45 years old. Children who were obese and had high triglycerides had the most advanced vascular aging. Obese or overweight children are also more likely to develop adult diseases at a young age. They may also carry their weight trend into adulthood. Some studies suggest that anywhere between 40% and 80% of overweight children will become obese adults.

While it is widely recognized that obesity in adulthood increases the risk for a variety of diseases, particularly heart and cardiovascular diseases, adults who were overweight or obese as children also may have a greater prevalence of risk factors for cardiovascular diseases. For example, adults who were overweight or obese as children had a greater incidence of hypertension and abnormal blood lipids than obese adults who were not overweight as children.⁷¹

If you are overweight, it is far more likely that your children are or will become overweight. After all, most children are eating what their families eat, and in similar portions as well. Parental obesity can lead to child obesity simply through an adoption of similar habits. If you eat a few cheeseburgers, fries and a milkshake for dinner before setting up shop on your sofa for the evening, there is a good reason to believe that your child will follow your footsteps. A study published in the *Journal of Pediatrics* found that 48%

of children with overweight parents became overweight themselves, while only 13% of children with normal-weight parents became overweight. At the study's conclusion, researchers found that parental obesity was the most important factor in childhood obesity.⁷²

Childhood obesity is a serious issue, and it can lead to lifelong conditions such as cardiovascular disease. If you are a parent that is overweight, the best thing you can do for yourself and for your children is to lead by example. If you begin a path towards wellness, you can help your children lead a healthier life as well. By eating more fruits and vegetables each day and increasing your activity levels, you can encourage your children to do the same. After all, if you never eat your vegetables, you can't expect them to! Leading a healthier lifestyle can have many impacts on your life, and your children's lives as well. For example, if everyone is eating healthier, you will have more energy to do activities together as a family. It can be difficult to make time for yourself when you have children to worry about, so making exercise a family activity can be beneficial both for its health benefits and the quality time spent together.

Being overweight or obese is not a life sentence. You can lose weight, you can change the way you eat, and most importantly – you can change the way you live your life. Reducing your weight does not mean you need to go on some crazy diet, either. Simply eating more produce and less processed food, along with increasing your activity levels, will actually help promote a healthy weight along with countless other health benefits. The best way to become healthy is not to follow a low-carb or a low-fat diet, or whatever the current dieting trend may be. The best way to reduce your heart disease risk is to eat healthy, wholesome foods that are nutrient-dense, engage in a daily physical activity and to cease unhealthy behaviors such as smoking.

Eating a more varied and wholesome diet and beginning an exercise routine can also help reduce stress. Stress can be good in some ways. Stress on your muscles causes them to grow stronger and increases endurance, for instance. However, experiencing unrelenting stress for a long period of time is not good for you. Unfortunately, many of us experience and accept exces-

sive stress as part of life. Stress is part of life, but it is not supposed to be a constant state. Consistent stress all day, every day for long periods of time can be very damaging to your body. When stressed, the body releases a hormone called cortisol. Some studies indicate that high levels of cortisol from continual stress may lead to a rise in blood pressure, triglycerides and cholesterol, and may promote the depositing of plaque along arterial walls. Long-term stress may also lead to changes in the blood and how it clots – increasing the risk of clot formation and stroke.⁷³

Exercise can help reduce the harmful effects that stress has on your body, and help relieve the emotion of stress that you are experiencing. Having a good support system, such as a spouse, family or friends whom you can talk to, or being part of a community or organization, can help reduce stress and decreases your chances of developing heart disease. Studies suggest that belonging to a group of some sort can help reduce your risk of developing cardiovascular disease and lower your stress. Not having to feel like you are facing life alone is truly helpful. Even if you already have heart disease, this same support system can help prevent future heart attacks. Research also shows that lacking a support system is associated with an increase in unhealthy behaviors such as smoking, drinking and eating poorly.⁷³

Seeking treatment or engaging in therapy for consistent depression or anxiety is also beneficial in the prevention of heart disease. Some studies have suggested that long-term anxiety can increase your chances for sudden cardiac death. Some natural methods for reducing stress and anxiety include yoga and meditation.⁷³

All in all, there are number of steps that you can take to reduce your risks of heart disease when it comes to your lifestyle. You may not be able to reduce stress at work, but you can choose to take the time to de-stress when you get home. Taking your dog for a stroll, or taking up yoga or another activity can help not only to reduce your stress levels but to increase your activity levels also. Trying to reach and maintain a healthy weight through sustainable lifestyle modifications is beneficial in a multitude of ways and can greatly impact your overall health.

There are many things that you can do, but remember that you don't have to do them all at once. Pick a change that you want to make and commit to it. It is better to make small changes and be successful with them than to try to change everything at once and become overwhelmed. Being successful doesn't mean that you have to be perfect. Being successful means that you are putting in the effort to change. Being successful means that you didn't give up just because it was hard. Changing your diet, learning to exercise, quitting smoking and losing weight are all things that can be very difficult to accomplish. It's not easy. If it were easy, everyone would be doing it already.

Chapter 6

Supplements to Promote Cardiovascular Health



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In addition to dietary and lifestyle modifications, you may wish to include supplements to boost your efforts. Dietary supplements may help fill in nutritional gaps, reverse deficiencies and much more. Supplements can also boost consumption of beneficial phytonutrients such as antioxidants.

Turmeric, for example, is a heavy hitter in the natural medicine world. Curcuminoids are considered the active compounds in turmeric and are what give the root its unique yellow-orange color. There are a number of curcuminoids that are present in turmeric. One of these compounds is named *curcumin*, though sometimes the name may be used to refer to all curcuminoids. Curcumin is actually turmeric's most studied compound, and it has been shown to be nothing short of miraculous. Curcumin boasts incredible healing abilities across a wide spectrum of diseases and conditions. It's no wonder that turmeric has been part of traditional Asian medicinal practices for hundreds of years.

Researchers from the University of Tsukuba in Japan conducted a series of three studies which show that the spice can promote heart health. For the first study, researchers randomly assigned 32 women to participate in moderate aerobic exercise, take a curcumin supplement or to be in the control group, where no changes were made. The investigators then measured the "flow-mediated dilation," or "FMD," of the participants' blood vessels, a measure that can be used to predict cardiovascular risk. While there was no improvement in the control group, the researchers found that both the supplement group and the exercise group experienced improvements in their FMD. The results of the two groups were, in fact, identical.⁷⁴

A second study surveyed the effect that curcumin had on arterial responsiveness to changes in blood pressure. Another 32 women were randomly assigned to participate in a group receiving either a curcumin supplement or placebo, or to participate in a group engaging in exercise while also receiving a supplement or placebo. The researchers found that the group not doing exercise and receiving a placebo showed no improvements. The exercise with placebo group and the curcumin supplement group showed similar improvements in arterial responsiveness. The group that showed the most

improvement, however, was the group that was exercising and taking a curcumin supplement.

For the third and final study, the researchers wanted to assess what effects curcumin and exercise had on the heart's left ventricle and age-related degeneration. The same four test groups were used for this final study, but this time 45 participants were used. The researchers found that participants who took a curcumin supplement and engaged in daily exercise had substantial increases in their heart health. In fact, the heart-rate-corrected aortic augmentation index, which is used to gauge the efficiency of arterial function, and aortic systolic blood pressure only decreased significantly in the subjects who were taking the curcumin supplement and engaging in an exercise routine.⁷⁴

The beneficial effects of turmeric and curcumin are multi-faceted. Some studies have indicated that the antioxidant properties of curcumin may help prevent blood clots and diabetes-related heart conditions. The anti-inflammatory powers of curcumin, along with its potential to lower serum cholesterol levels, may also play a role in protecting against cellular changes seen in atherosclerosis. Some studies have also indicated that curcumin may protect cardiac muscle cells from apoptosis (cell death) after an ischemic cardiac event and subsequent reperfusion injury. Reperfusion injuries are injuries that are caused by the return of blood flow to tissues that had lost circulation.⁷⁵

A research team from Chang Mai University at the University Hospital conducted a study following 121 heart bypass operation patients who had undergone non-emergency bypass surgery at the hospital between the years 2009 and 2011. Half of the patients were given a placebo pill, and the other half was given one gram of curcumin supplement. Both groups received their pills four times a day, three days before surgery and for five days after. The researchers found that the curcumin group had a 65% reduction in risk for post-surgery heart attack. The group receiving the supplement also showed a reduced presence of oxidative stress and inflammatory markers in their blood.⁷⁶

Another popular spice revered for its myriad of health benefits is ginger. Ginger has been widely used in natural medicine practices across the globe for many generations. The active ingredient in ginger is a compound known as *gingerol*, but there are other potentially active ingredients in the root known as *phenolic compounds*. Gingerol is thought to relax blood vessels and improve circulation. Ginger also boasts powerful anti-inflammatory benefits, making it ideal for preventing and treating a number of conditions, including heart and cardiovascular diseases.

One study found that the consumption of ginger extract prevented the progression aortic atherosclerosis in atherosclerotic mice. Researchers associated this result with the dramatic reduction in plasma LDL cholesterol levels that was seen in the mice. In another study, 20 healthy male human volunteers were given 5 grams of ginger daily. The results found that it was able to decrease platelet aggregation, or the formation of blood clots.

Another study of human volunteers that taking a one-time dose of 10 grams of dried ginger still promoted a distinct reduction in platelet aggregation.⁷⁵ In other words, several studies have shown that ginger may fight heart disease through a number of different avenues, such as reducing LDL cholesterol levels, preventing arterial plaque progression and inhibiting blood clot formation.

Black pepper has also been indicated as a heart-healthy spice. It boasts impressive antioxidant properties, aids digestion and promotes the breakdown of fat cells. The active compound in black pepper is known as *piperine*. Piperine has been shown to have a number of beneficial interactions in the body. For example, piperine has been shown to help protect cells against oxidative damage and free radicals.

Black pepper has also been said to influence fat metabolism, primarily through the mobilization of fatty acids. In animal studies, rats fed a high-fat diet and treated with black pepper had significant decreases in cholesterol and triglycerides. The rats on a high-fat diet receiving black pepper also had much higher levels of good HDL cholesterol and lower levels of LDL chole-

terol than the rats that were fed a high-fat diet and did not receive supplementation.

Black pepper is also rich in vanadium. Vanadium compounds are associated with increasing cardiac function. In this way, studies suggest that black pepper may help improve cardiac recovery after a heart attack.⁷⁵

Astaxanthin is a popular health supplement, regarded for its antioxidant benefits. Astaxanthin is a xanthophyll carotenoid that is found primarily in microalgae, along with fungi and seafood, as well as flamingoes and quail. Astaxanthin is what gives fish such as salmon their reddish hue. Due to its immense antioxidant and anti-inflammatory properties, it has great potential to offer cardiovascular benefits.

A small number of clinical trials have assessed the bioavailability, safety and effects of astaxanthin on inflammation and oxidative stress which suggest that it has relevance in the prevention and treatment of cardiovascular disease. For example, one study analyzed the effects of astaxanthin on spontaneously hypertensive rats. After 14 days of astaxanthin supplementation, the rats experienced a significant reduction in blood pressure.⁷⁷

Another study analyzed the effects of synthetic astaxanthin in mice. Interestingly, the supplementation of synthetic astaxanthin resulted in the presence of free astaxanthin in their hearts, livers, plasma and platelets. An increase in arterial blood flow and a delay in the formation of obstructive blood clots, or “occlusive thrombosis,” after an endothelial injury were seen in mice that were fed the astaxanthin. The authors of the study concluded that the evidence was supportive of the potential for astaxanthin to be used as a possible therapy to prevent blood clots related to cardiovascular disease. A number of other studies have also shown that astaxanthin may provide cardiac protection and prevent thrombosis.⁷⁶

Omega-3 fatty acids are also quite beneficial to the prevention and treatment of heart disease. An article published by the journal *Arteriosclerosis, Thrombosis and Vascular Biology* denotes the broad range of benefits seen in cardiac patients by consuming omega-3 fats, as well as the number of

studies that have indicated its usefulness. Large-scale epidemiological studies have suggested that people who are at risk of developing coronary heart disease are helped greatly by the consumption of omega-3 fats from plants and fish. Secondary prevention studies have indicated that intakes of EPA and DHA ranging from 0.5 to 1.8 grams per day, either from fatty fish or a supplement, can significantly reduce all-cause mortality in addition to reducing death from heart disease. In randomized clinical trials, supplementation of omega-3 fatty acids substantially reduced the number of cardiovascular events, such as non-fatal heart attacks or strokes, in patients with coronary heart disease.

Research has suggested that omega-3 fatty acids reduce heart disease risks in a number of ways. For example, omega-3 fats can help inhibit the formation of blood clots, which can trigger heart attacks and strokes. They can also reduce triglycerides and lipoproteins in the blood as well as decrease the growth and formation of arterial plaques associated with atherosclerosis. In addition to this, omega-3 fats can also improve and enhance endothelial function and reduce inflammation. Omega-3 fatty acids are also associated with modest reductions in blood pressure.⁷⁸

Flax seeds are a popular choice for supplementing omega-3 fatty acids in the diet. They are one of the richest plant sources of the nutrient, especially alpha-linolenic acid, or ALA. ALA levels have been inversely associated with primary cardiovascular events in nine major studies. This means that a lower level of ALA is associated with a greater risk of having a first-time cardiac event, such as a heart attack or stroke.

Secondary prevention trials have also been supportive of dietary ALA's substantial heart-protective qualities. For example, the Lyon Diet Heart study found that alpha-linolenic acid was related to a reduced risk of recurrent non-fatal and fatal heart attacks. There was also a 73% decreased risk of primary cardiac mortality and morbidity. A study conducted by the National Heart, Lung and Blood Institute also found that consumption of dietary ALA was also associated with a decreased incidence of hypertension and lower systolic blood pressure. Another study of obese human subjects found that

the consumption of 20 grams of flaxseed oil per day substantially increased arterial compliance and reduced the oxidation of LDL cholesterol when compared to other interventions involving oleic acid or saturated fat.⁷⁹

Whey protein, the popular ingredient in protein shakes, may also help boost heart health. A study published by the journal *Clinical Nutrition* found that just four weeks of whey protein supplementation led to substantial improvements in the test subjects' blood lipid profiles. The team of Swiss researchers behind the study noted that the data suggests that whey protein could be protective against heart and cardiovascular disease. In the study, 11 obese, non-diabetic women were given 60 grams of whey protein a day for four weeks. At the end of the four-week period, the women had some amazing results. Intra-hepatocellular fat, or fat inside the liver, had decreased by about 21%; fasting plasma triglycerides had dropped 15%; and there was a 7% reduction in total plasma cholesterol concentration. The researchers also noted that the participants had no major changes in body weight or body composition. The scientists stated that this evidence suggests that following a high-protein diet supplemented with whey protein may help fight against heart disease in obese patients.⁸⁰

Whey protein supplementation, or other protein supplements, can also provide some secondary benefits when it comes to heart disease. For instance, whey protein can be a healthy addition to your diet in the form of a shake. Consuming a protein shake every morning for breakfast instead of donuts will help cut calories, boost your protein intake and reduce the glycemic index of your meal. These things can indirectly benefit your heart by helping you along the path to a healthy weight.

There is substantial evidence supporting that a higher protein intake can help promote weight loss and weight maintenance. A review of evidence from controlled clinical trials that was published by the journal *Advances in Nutrition* in 2013 showed that, while whey tends to quickly release amino acids into the bloodstream after consumption, casein tends to enter the bloodstream at a more gradual rate. Whey protein is only one type of dairy protein, while casein actually makes up the majority of dairy protein. There

are clear benefits to both, but some studies have sought to compare the two.⁸¹

For example, a 2009 study published by the *International Journal of Obesity* examined the results that consuming whey, casein or carbohydrates had on body weight and composition for 12 weeks of weight maintenance. The participants of the study had previously engaged in five weeks of calorie restriction. Both groups receiving proteins had much better weight maintenance after weight loss than the group receiving carbohydrates. The protein groups also showed a much greater loss of body fat than the carbohydrate group, but there was no significant difference between proteins. There was a tendency for whey to help build more lean body mass, or muscle tissue, over casein.

A previous study conducted in 2006, published by the *International Journal of Sports Nutrition and Exercise Metabolism* also suggested that whey protein could help build a greater amount of lean mass than casein. Consuming more protein can also help preserve muscle tissue during times of calorie restriction. If you are trying to restrict calories to lose weight, consuming a protein supplement can help preserve valuable muscle mass and also increase satiety.⁸¹ These benefits are of great use to people wishing to reduce their heart disease risk in that whey protein may help with weight loss efforts and may also promote a reduction total fat mass, especially for those engaging in physical activity.

Grape seeds and grape seed extract are also a popular supplement with a myriad of health benefits. Grapes and grape seeds have been celebrated for their nutritional and medicinal values for centuries. It is thought that grape seed extract can treat a variety of conditions, including cardiovascular disease. An analysis of healthy volunteers found that consuming grape seed extract dramatically increased antioxidant levels in their bloodstreams. Antioxidants can help prevent damage to DNA by destroying free radicals. Grape seed extract contains a potent combination of antioxidants consisting of vitamin E, flavonoids, linoleic acid, resveratrol and oligomeric proanthocyanidin complexes, or OPCs. Resveratrol is a very popular antioxidant that

is still being studied for its efficacy in fighting against a number of diseases. OPCs are also believed to treat a number of conditions and are considered very powerful antioxidants.

Hypothetically, grape seed extract may help reduce high blood pressure by protecting the blood vessels from becoming damaged. Maintaining the elasticity and health of your blood vessels is imperative to preventing high blood pressure and other related conditions. In preliminary trials, grape seed extract has also been effective at reducing LDL cholesterol levels.

In a study of 24 male smokers that were otherwise healthy, those receiving grape seed extract saw a significant drop in LDL cholesterol levels compared to placebo recipients. Another study of 40 individuals with high cholesterol sought to determine if chromium, grape seed extract or a combination of both would be more effective at lowering cholesterol levels. A control group also received a placebo. The study ran for two months. At the end, it was found that the people taking a combination of grape seed extract and chromium had the biggest reduction in cholesterol levels.⁸²

Chromium is an essential mineral that is required for optimal lipid and carbohydrate metabolism. Chromium deficiency has been seen in people with high blood glucose levels and abnormal blood lipid profiles. A wide variety of foods contain chromium, such as egg yolks, meat, green beans, broccoli, nuts and whole grains. Once absorbed, chromium is distributed throughout the body. As people age, their total body chromium concentrations decrease anywhere from 25 to 40%. To make matters worse, most people in the United States do not get enough chromium from their diet. This combination can lead to serious deficiency.

One of chromium's functions is its role in an auto-amplification system for insulin signaling. Chromium also encourages insulin sensitivity to rise.⁸³ Type 2 diabetes is a significant risk factor in the development of heart and cardiovascular diseases, such as atherosclerosis.⁷ The majority of well-controlled studies of chromium supplementation have indicated positive effects in people with insulin resistance or diabetes.⁸³

Chromium may also play a role in the prevention of heart disease. There is some interesting epidemiological data to be had on the relationship between chromium and the risk of heart disease. Some studies have found that there is an inverse relationship between chromium levels in toenails and the risk of coronary heart disease in men. Toenails are an excellent reflection of long-term nutrient intake. In case-controlled studies, higher levels of toenail chromium was correlated with a decreased risk of having a heart attack.

A study on erythrocytes, also called red blood cells, featured erythrocytes that were treated with high levels of glucose to mimic diabetes. Some were placed in a medium with chromium, and others were not. The results found that chromium prevented protein glycosylation and oxidative stress associated with high levels of glucose in cells. These findings are indicative of chromium providing an antioxidant effect, and shows that it may prove quite beneficial at protecting diabetic patients in particular from the onset of heart disease.⁸³

There are a number of herbs and other supplements available to help boost your heart health. Supplements and other aids can only take you so far, though. It is important to remember that supplements should only be used to bolster other efforts, such as learning to eat more nutritious food and exercising. A supplement is not a replacement for other key factors in living a healthy lifestyle. A supplement is meant to complement your hard work. With the exception of a whey supplement – which can effectively be a meal or snack when combined with some other ingredients – none of these things can replace or reverse other aspects of your life.

Taking a turmeric supplement doesn't mean that your heart will be protected if you continue smoking, for example. Nutritional supplements can help fill in dietary gaps and boost immunity and antioxidant intake, among many other great things. They are very beneficial, but they are most powerful when combined with other healthy lifestyle choices.

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