

# Prostate Cancer

J A S C A P

JEET ASSOCIATION FOR SUPPORT TO CANCER PATIENTS MUMBAI, INDIA

## **JASCAP**

### **JEET ASSOCIATION FOR SUPPORT TO CANCER PATIENTS**

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JASCAP is a charitable trust that provides information on various aspects of cancer. This can help the patient and his family to understand the disease and its treatment and thus cope with it better.

Registered under the Societies Registration Act, 1860 No.1359 / 1996 G.B.B.S.D., Mumbai and under the Bombay Public Trusts Act, 1950 No. 18751 (Mumbai). Donations to JASCAP qualify for deduction u/s 80G (1) of the Income Tax Act, 1961 vide Certificate No. DIT (E) / BC / 80G / 1383 / 96-97 dated 28.02.97 subsequently renewed.

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Publisher: JASCAP, Mumbai 400 055

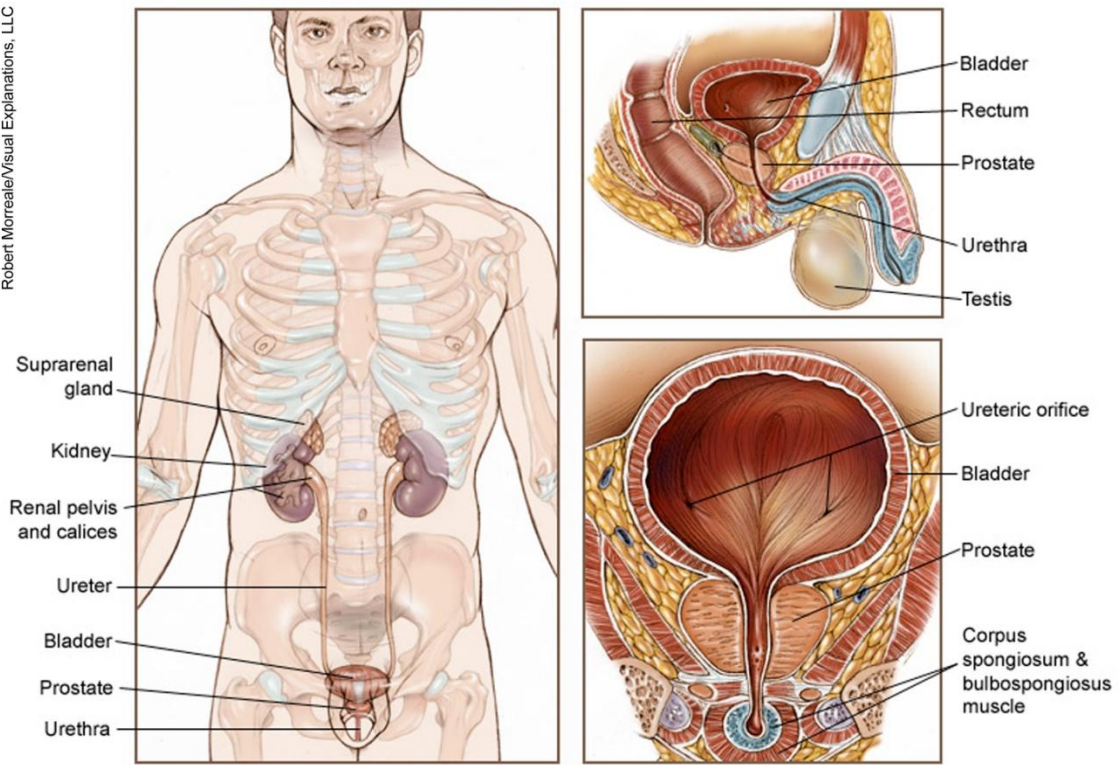
Printer: Surekha Press, Mumbai 400 019

Edition: March, 2011

**Donation suggested ₹ 30.00**

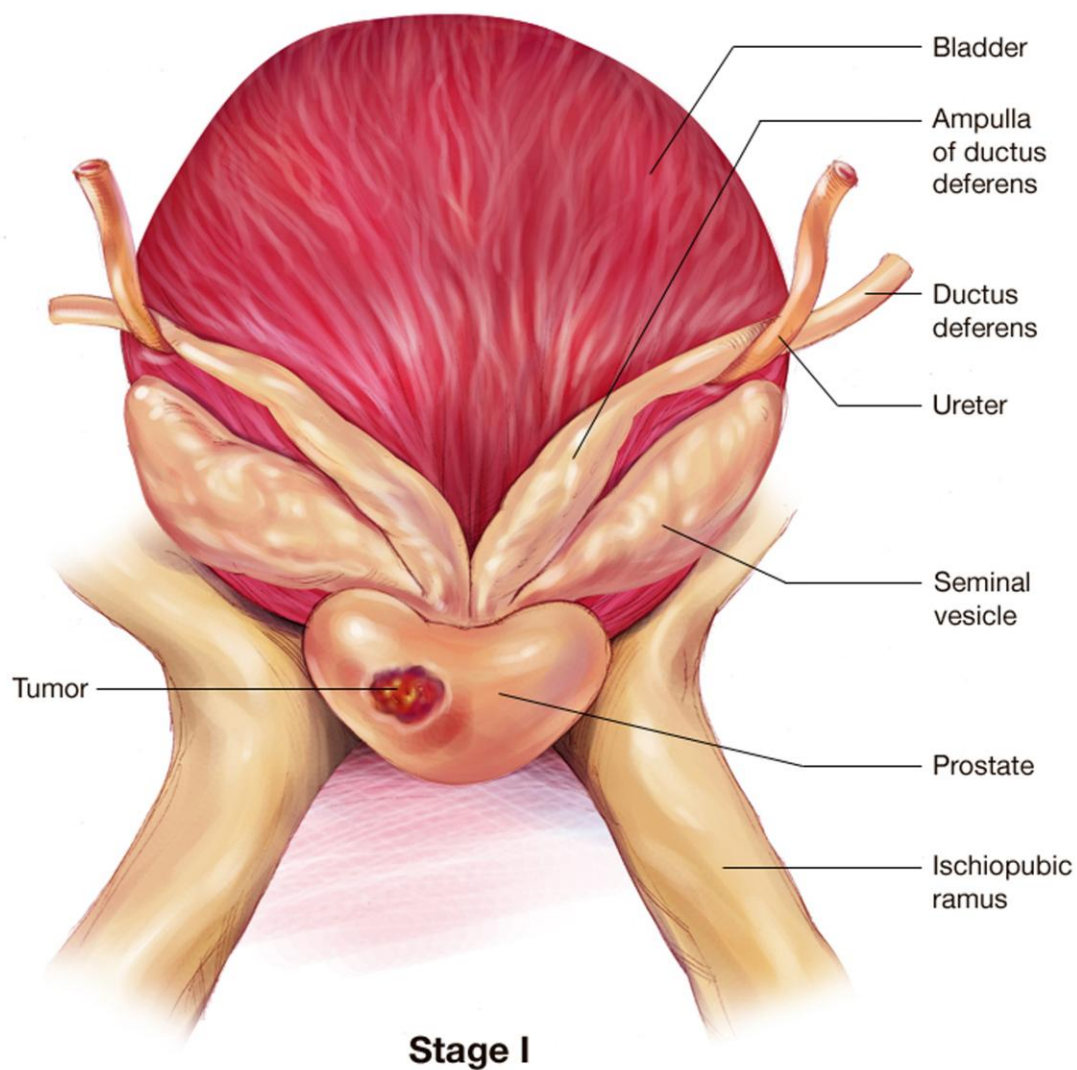
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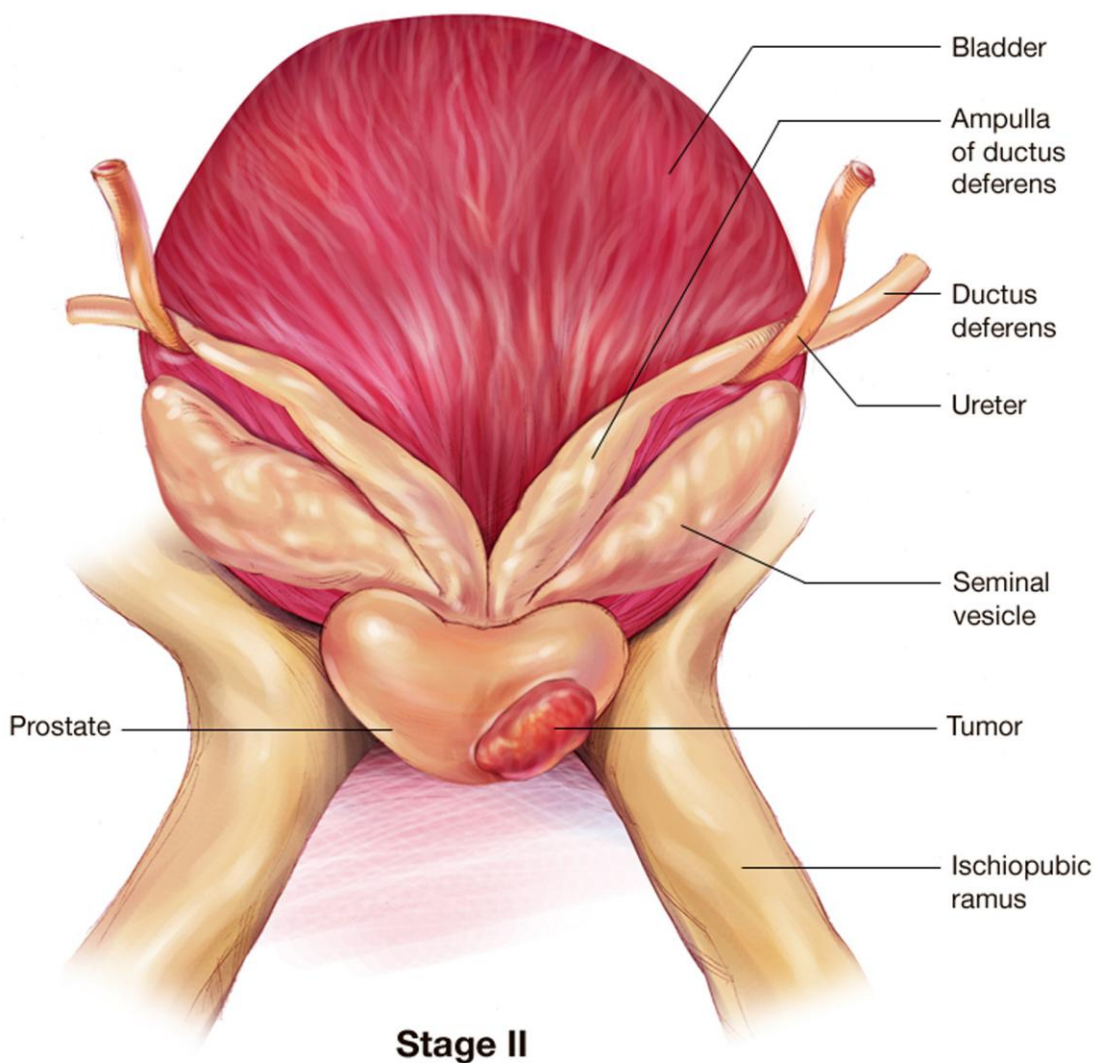
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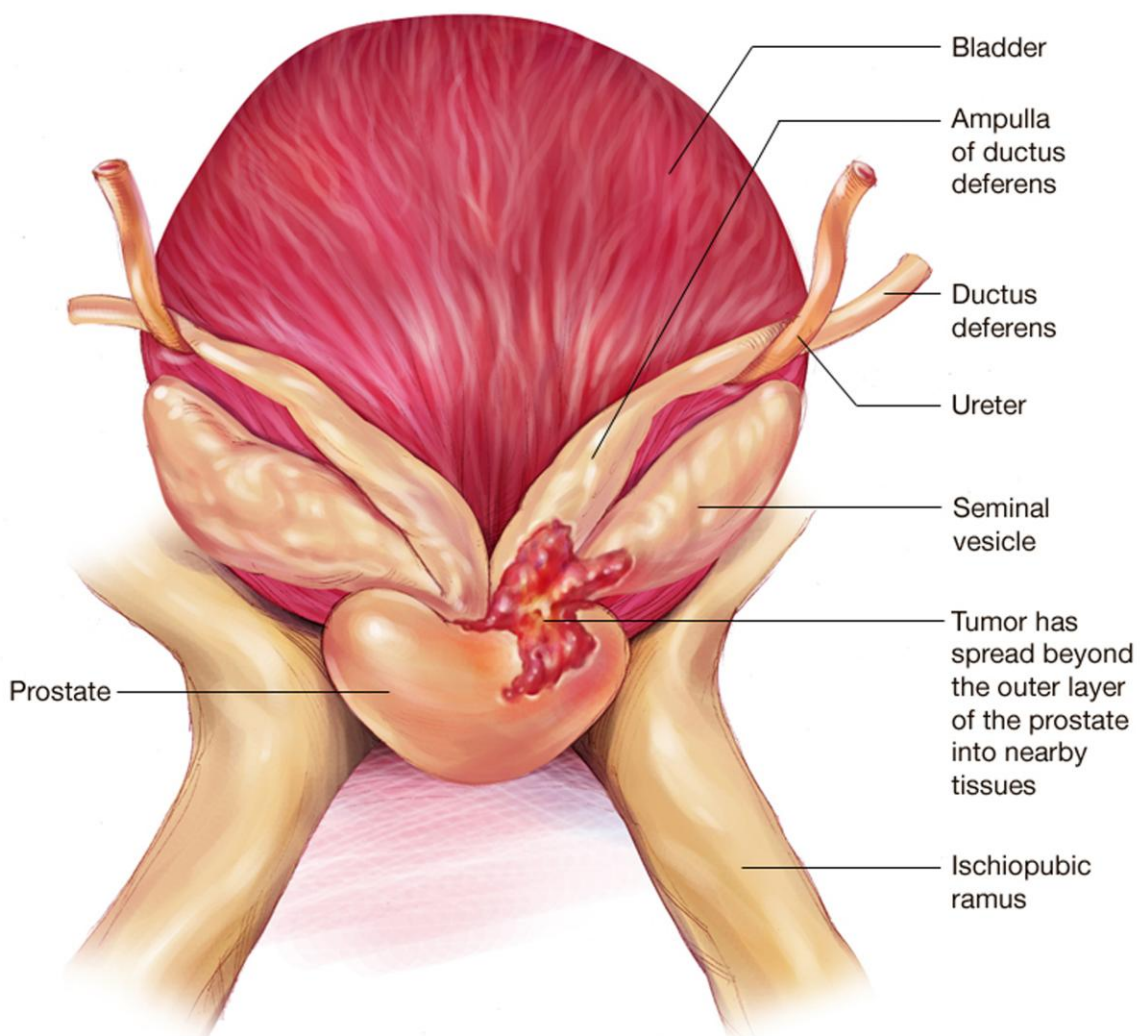


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### Anatomy of Male Genito-Urinary System and Prostate





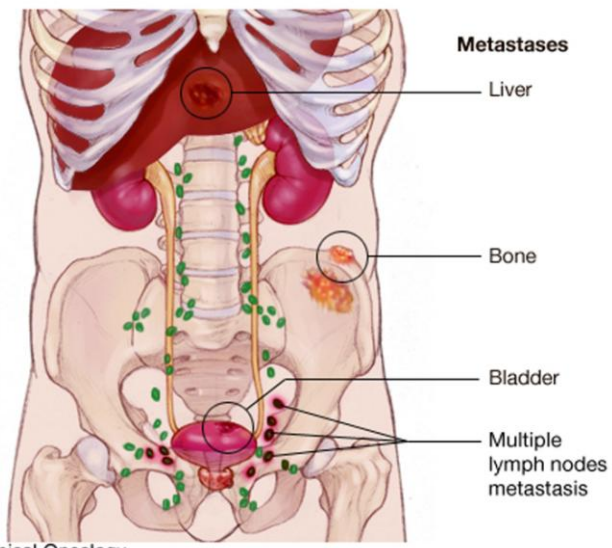
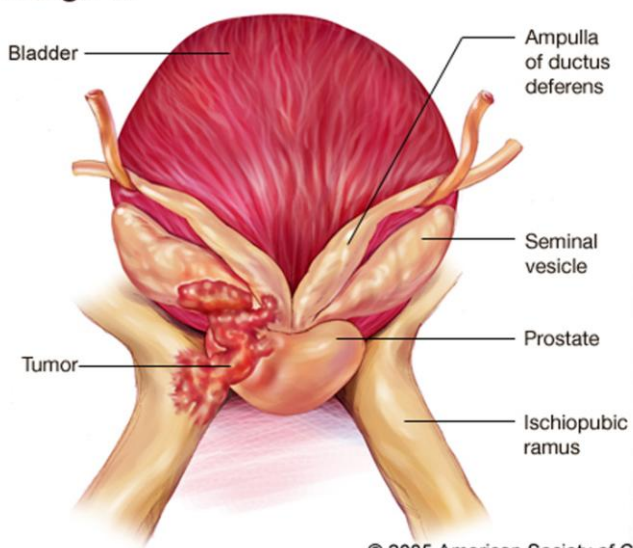


**Stage III**



Robert Morreale/Visual Explanations, LLC

### Stage IV



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# About prostate cancer

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## Introduction

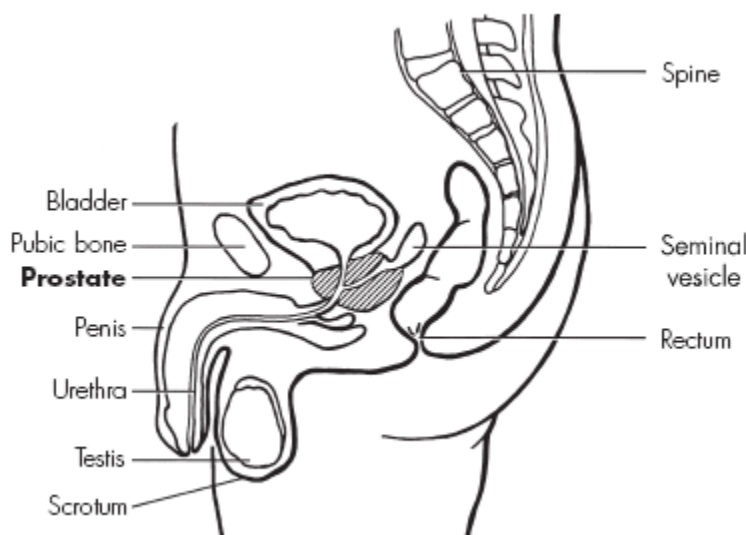
This booklet is for you if you have or someone close to you has prostate cancer.

If you are a patient your doctor or nurse may wish to go through the booklet with you and mark sections that are particularly important for you.

## The prostate gland

The prostate is a small gland found only in men.

It is the size of a walnut and surrounds the first part of the tube (**urethra**) which carries urine from the bladder to the penis.

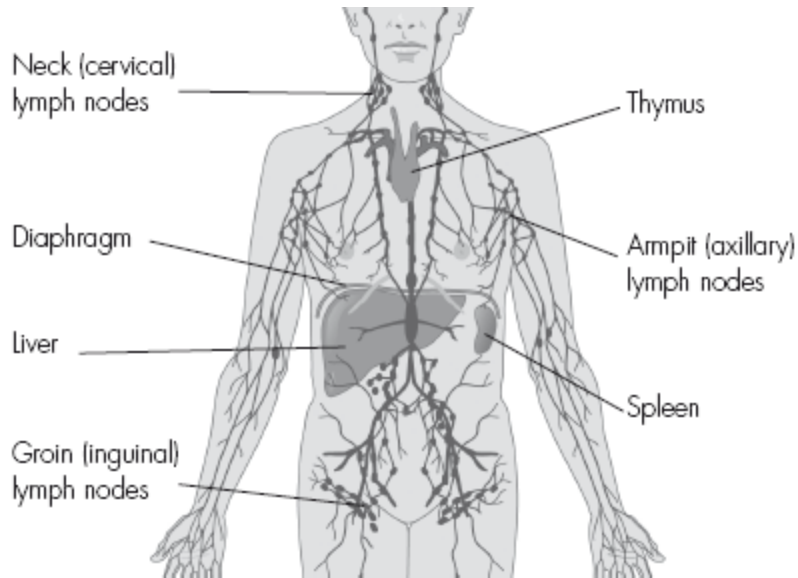


A diagram showing the position of the prostate gland

The prostate produces a thick white fluid called semen that mixes with the sperm produced by the testes. It also produces a protein called **prostate-specific antigen (PSA)** that turns the semen into liquid.

The gland is surrounded by a sheet of muscle and a fibrous capsule. The growth of prostate cells and the way the prostate gland works is dependent on the male sex hormone, testosterone, which is produced in the testicles.

The back of the prostate gland is close to the rectum (back passage). Near to the prostate are collections of lymph nodes. These are small glands, about the size of a baked bean.

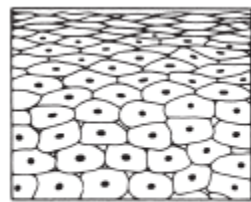


The lymphatic system

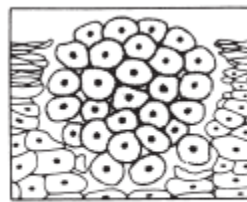
## What is cancer?

The organs and tissues of the body are made up of tiny building blocks called cells. Cancer is a disease of these cells.

Cells in different parts of the body may look and work differently but most reproduce themselves in the same way. Cells are constantly becoming old and dying, and new cells are produced to replace them. Normally, cells divide in an orderly and controlled manner. If for some reason the process gets out of control, the cells carry on dividing, developing into a lump which is called a **tumour**.



Normal cells



Cells forming a tumour

Tumours can be either **benign** or **malignant**. Cancer is the name given to a malignant tumour. Doctors can tell if a tumour is benign or malignant by examining a small sample of cells under a microscope. This is called a **biopsy**.

In a benign tumour the cells do not spread to other parts of the body and so are not cancerous. However, if they continue to grow at the original site, they may cause a problem by pressing on the surrounding organs.

A malignant tumour consists of cancer cells that have the ability to spread beyond the original area. If the tumour is left untreated, it may spread into and destroy surrounding tissue. Sometimes cells break away from the original (primary) cancer. They may spread to other organs in the body through the bloodstream or lymphatic system.

The lymphatic system is part of the immune system - the body's natural defence against infection and disease. It is a complex system made up of organs, such as bone marrow, the thymus, the spleen, and lymph nodes. The lymph nodes (or glands) throughout the body are connected by a network of tiny lymphatic ducts.

When the cancer cells reach a new area they may go on dividing and form a new tumour. This is known as a **secondary cancer** or **metastasis**. Even when cancer spreads somewhere else in the body, it is still the same kind of cancer, and is still named after the part of the body where it started. For example, if lung cancer spreads to the bones, it is still lung cancer, not bone cancer. In that case, it may be said that the person has "lung cancer with bone metastases."

It is important to realise that cancer is not a single disease with a single type of treatment. There are more than 200 different kinds of cancer, each with its own name and treatment.

## Types of cancer

### Carcinomas

The majority of cancers, about 85% (85 in a 100), are carcinomas. They start in the epithelium, which is the covering (or lining) of organs and of the body (the skin). The common forms of breast, lung, prostate and bowel cancer are all carcinomas.

Carcinomas are named after the type of epithelial cell that they started in and the part of the body that is affected. There are four different types of epithelial cells:

- squamous cells - that line different parts of the body, such as the mouth, gullet (oesophagus), and the airways
- adeno cells - form the lining of all the glands in the body and can be found in organs such as the stomach, ovaries, kidneys and prostate
- transitional cells - are only found in the lining of the bladder and parts of the urinary system
- basal cells - that are found in one of the layers of the skin.

A cancer that starts in squamous cells is called a squamous cell carcinoma. A cancer that starts in glandular cells is called an adenocarcinoma. Cancers that start in transitional cells are transitional cell carcinomas, and those that start in basal cells are basal cell carcinomas.

## **Leukaemias and lymphomas**

These occur in the tissues where white blood cells (which fight infection in the body) are formed, i.e. the bone marrow and lymphatic system. Leukaemia and lymphoma are quite rare and make up about 6.5% (6.5 in 100) of all cancers.

## **Sarcomas**

Sarcomas are very rare. They are a group of cancers that form in the connective or supportive tissues of the body such as muscle, bone and fatty tissue. They account for less than 1% (1 in 100) of cancers.

Sarcomas are split into two main types:

- bone sarcomas - that are found in the bones
- soft tissue sarcomas - that develop in the other supportive tissues of the body.

## **Others forms of cancer**

Brain tumours and other very rare forms of cancer make up the remainder of cancers.

## **Prostate cancer**

The information in this booklet covers three types of prostate cancer:

- Early (localised) prostate cancer
- Locally advanced prostate cancer
- Advanced (metastatic) prostate cancer

Prostate cancer generally affects men over 50, and is rarely found in younger men. It is the commonest type of cancer in men. Around 34,000 men in the UK are diagnosed with prostate cancer each year.

It differs from most other cancers in the body, in that small areas of cancer within the prostate are very common and may stay dormant (inactive) for many years.

Approximately one half of all men in their fifties have some cancer cells within their prostate and 8 out of 10 men (80%) over the age of 80 have a small area of prostate cancer. Most of these cancers grow extremely slowly and so, particularly in elderly men, will never cause any problems.

In a small proportion of men, the prostate cancer can grow more quickly and in some cases may spread to other parts of the body, particularly the bones.

## **Early (localised) prostate cancer**

Early cancer of the prostate gland (early prostate cancer) is when the cancer is only in the prostate and has not spread into the surrounding tissues or to other parts of the body. It is also called localised prostate cancer.

## **Locally advanced prostate cancer**

Locally advanced prostate cancer is cancer that has spread into the tissues around the prostate gland. Cancer that has spread to other parts of the body is called metastatic prostate cancer.

## **Advanced (metastatic) prostate cancer**

Advanced or metastatic cancer of the prostate gland is when the cancer has spread beyond the prostate gland to other parts of the body.

Prostate cancer is usually diagnosed in the early stages before it has begun to spread outside the prostate gland. In about 1 in 10 men (10%), the prostate cancer will be advanced when it is first diagnosed.

Advanced prostate cancer can also occur in men who have been treated for early or locally-advanced prostate cancer and whose cancer has come back (relapsed or recurred). You can find out more about the stages of prostate cancer.

Prostate cancer cells can sometimes spread beyond the prostate gland (the primary tumour) and travel around the body in the blood stream, or less commonly the lymphatic system. When these cells reach a new area of the body they may go on dividing and form a new tumour called a metastasis or secondary tumour.

The most common place that prostate cancer spreads to is bones such as the spine, pelvis, thigh bone (femur) and ribs.

Usually the cancer cells will spread to a number of different places in the bones rather than a single site. Sometimes prostate cancer can affect the bone marrow. This is the soft tissue in the centre of most bones and is where the blood cells are made. Prostate cancer can also spread to the lymph nodes and very occasionally may affect the lungs, the brain and the liver.

We have separate information about the different treatment options for each of the three types of prostate cancer.

## **Risk factors and causes of prostate cancer**

In the UK about 1 in 14 men are diagnosed with prostate cancer in their lifetime. In the USA the incidence is much higher. This is thought to be due to the fact that in the USA more men have tests to try to detect early prostate cancer.



The number of men being diagnosed with cancer of the prostate gland in the UK (and many other countries) has increased in recent years. However, the number of men dying from prostate cancer has not really changed over this time. It is thought that the incidence is increasing because more men are having tests that detect very early prostate cancers that would previously not have been found. It may also be because the number of older men in the population is growing.

Researchers are trying to find out more about the causes of prostate cancer. Although the causes of cancer of the prostate are still unknown, there are some factors that are known to increase a man's chance of developing the disease.

## **Age**

The strongest risk factor for prostate cancer is age. Men under 50 have a very low risk of prostate cancer, but their risk increases as they get older. It's estimated that around 80% of men in their 80s will have prostate cancer.

## **Ethnic group**

Some ethnic groups have a higher chance of developing prostate cancer than others. For example, black African and black Caribbean men are more likely to develop prostate cancer than white men. Asian men have a lower risk of developing it.

## **Family history**

Men who have close relatives (a father, brother, grandfather or uncle) who have had prostate cancer are slightly more likely to develop it themselves. It is thought that a man's risk of developing prostate cancer is more likely if:

- their father or brother developed prostate cancer at or under the age of 60
- more than one man on the same side of the family has had prostate cancer.

If this is the case in your family it may indicate that a faulty gene is present. However, a specific gene linked to prostate cancer has not yet been identified.

If several women in a family have had breast cancer (especially before the age of 40), it could also indicate that a faulty gene may be present. This gene may increase the risk of men in the family getting prostate cancer. Only a small number of prostate cancers (5-10% or less than 1 in 10 cases) are thought to be due to an inherited faulty gene in the family.

If you are worried about your family history see our booklet 'Are you worried about prostate cancer?'

## **Diet**

It is thought that a diet high in animal fat (including dairy products) and low in fresh fruit and vegetables may increase your risk of prostate cancer. A high intake of calcium (such as from dairy foods) may increase the risk of developing prostate cancer.

Tomatoes and tomato products (such as ketchup) may help to protect against prostate cancer. This may be because they contain high levels of a substance called lycopene.

## How common is the prostate cancer in India?

Prostate cancer is a common cancer among men from the Indian subcontinent, though not as common as it is among men from the developed western countries. The incidence (newly diagnosed cases of Cancer in a year) of Prostate Cancer for men from India is about 4 men per 1,00,000 population<sup>1</sup>.

In India, between the years 2001-2003, across five urban centers - Mumbai, Delhi, Chennai, Bhopal and Bangalore, – and one rural center - Barshi, a total of 2,215 cases of Prostate Cancer were registered (5.03% of all cancers) for male cancer patients, across all the age groups<sup>2</sup>.

The TATA Memorial Hospital (T.M.H.) in Mumbai, India registered a grand-total of 10,747 cases of all types of male cancer patients in the year 2006, out of which 261 men (close to 2.5% of the total male cases) were diagnosed with prostate cancer<sup>3</sup>.

Close to 30% of all Genito-urinary cancers among men in the year 2006 at the T.M.H. were attributable to Prostate cancer.

## Symptoms & diagnosis

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### Symptoms of prostate cancer

Cancer of the prostate is often slow-growing and symptoms may not occur for many years.

Men with early prostate cancer are unlikely to have any symptoms, as these only occur when the cancer is large enough to put pressure on the urethra (the tube that drains urine from the bladder). In men over the age of 50, the prostate gland often gets larger due to a non-cancerous condition called benign prostatic hyperplasia or hypertrophy (BPH).

The symptoms of both benign enlargement of the prostate gland and malignant tumours (cancer) are similar and can include any of the following:

- difficulty passing urine
- passing urine more frequently than usual, especially at night

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<sup>1</sup> Globocan 2008: Cancer incidence and mortality rates worldwide

<sup>2</sup> Population based cancer registry 2001-2003 Mumbai, Delhi, Chennai, Bhopal, Barshi and Bangalore, Indian Cancer Society.

<sup>3</sup> TATA Memorial Hospital Registry Data for 2006

- pain when passing urine
- blood in the urine (this is not common).

If you have any of these symptoms it's important to get them checked by your doctor. But remember, most enlargements of the prostate are not cancer.

## **Symptoms of advanced prostate cancer**

The symptoms of advanced prostate cancer include those symptoms mentioned above.

The symptoms due to secondary cancer will depend on which part of the body is affected, although there are a few general symptoms which some men have. These include being more tired than usual, generally feeling unwell, and having less of an appetite than usual.

## **Secondary cancer in the bones**

The first sign of a secondary cancer in the bones is usually a nagging ache in the affected bone. This can become painful, making it difficult to sleep at night, or to move around without taking painkillers. The pain is generally present both day and night, whereas pain from arthritis, for example, is often worse early in the morning and is not there all the time.

A secondary cancer in the bone may gradually make it weaker. Pain and weakness can make getting around difficult, and a bone that is very weak may break (fracture) more easily.

If the bones in the spine are affected this can sometimes lead to weakness and tingling or numbness in the legs, due to the cancer causing pressure on the spinal cord. This is known as malignant spinal cord compression. It's important to let your doctors know straight away if you have this symptom. We can send you information about spinal cord compression.

When bones are affected by cancer cells, extra calcium may be released into the blood. This is called hypercalcaemia. It can cause symptoms such as tiredness, feeling sick, constipation, thirst, poor appetite and confusion.

## **Secondary cancer in the bone marrow**

Sometimes prostate cancer can spread to the bone marrow. The bone marrow is the spongy material that fills the bones and produces blood cells. The different types of blood cells are:

- red cells, which carry oxygen around the body
- white cells, which help to fight infection
- platelets, which help the blood to clot and prevent bleeding.

If the bone marrow is unable to produce enough blood cells you may become anaemic. You may also be more likely to get infections or to have bruising or bleeding.

## Other symptoms

Occasionally prostate cancer can affect other parts of the body such as the lungs, lymph nodes, brain or liver.

If you notice any new symptoms that last for a couple of weeks or more you should discuss them with your specialist. It's important to remember that any of these symptoms can be caused by conditions other than cancer.

## PSA testing for prostate cancer

Prostate-specific antigen (PSA) is a protein produced by prostate cancer cells. A blood test, the PSA test, measures the level of PSA and may help to detect early prostate cancer.

Men in the UK are not routinely offered PSA tests to screen for prostate cancer. There are many reasons for this:

- The PSA test is not completely reliable. For every 100 men with a raised PSA level, only about 30 will have prostate cancer detected in a biopsy. This is called a false-positive result. Also, approximately 15% of men with a normal PSA level will have prostate cancer. This is known as a false negative result.
- The amount of PSA in the blood can be high for reasons other than prostate cancer.
- If the PSA level is high a man may need further tests such as a biopsy, which can be painful and lead to blood in the urine, the semen or bowel motions. In a few men the biopsy can lead to infection of the prostate gland, which can be difficult to get rid of. In 5-10% of men the biopsy will not show cancer even if it is present.
- Many small prostate cancers detected by PSA screening would never grow enough to cause any symptoms at all during a man's lifetime.
- Many prostate cancers grow very slowly and the side effects from treatment (radiotherapy or surgery) may be worse than the effects of the prostate cancer. If the tests show there is an early cancer it can be difficult to decide whether or not to have treatment.

Research hasn't yet shown whether finding and treating prostate cancer early gives an improvement in survival. This can make it difficult to decide whether to have a test. Your doctors and nurses will be aware of this difficulty and can discuss it with you.

Men who don't have symptoms but would like to have a PSA test should discuss it with their GP, who can give them all the necessary information and arrange the blood test if they would still like to have it.

In most men with advanced prostate cancer the PSA level will be raised. Once the cancer has been treated the level of PSA will fall.

## How prostate cancer is diagnosed

Men who have symptoms will usually begin by seeing their GP. They will examine you and ask you about your general health.

The first tests for diagnosing cancer of the prostate are a digital rectal examination (DRE) and a PSA blood test.

## Digital rectal examination (DRE)

The rectum (back passage) is close to the prostate gland, so your doctor can feel for any abnormalities in the prostate by inserting a gloved finger into the rectum. This may be uncomfortable but should not be painful.

If cancer is present in the prostate gland it may feel hard and knobby, whereas with benign prostatic hyperplasia (BPH - see symptoms) it's usually enlarged, firm and smooth. However, often the prostate may feel normal, even when cancer cells are present.

## PSA Test

A sample of blood is taken to check for PSA (prostate-specific antigen). PSA is a protein produced by the prostate and a small amount is normally found in the blood. Men with cancer of the prostate tend to have more PSA in their blood. However, the PSA test is not always reliable and some men who have prostate cancer will have a normal PSA. The PSA level can also be raised by:

- urine infections
- recent prostate biopsies
- having a urinary catheter (a tube to drain urine)
- prostate or bladder surgery
- prostatic massage.

The PSA level will also get higher as men get older.

- In men aged 50-59, a PSA of 3 nanograms per millilitre (ng/ml) of blood or lower is considered normal.
- In men aged 60-69, a PSA of 4 ng/ml or lower is considered normal.
- In men of 70 and over, a PSA of about 5 ng/ml is considered normal.

PSA levels higher than this could be due to a prostate cancer and a biopsy may be recommended. Men with levels of 5 ng/ml or above are usually referred for further tests.

As a general rule, the higher the level of PSA the more likely it is to be cancer. In most men with advanced prostate cancer the PSA level will be raised. Once the cancer has been treated, the level of PSA will fall. Measuring PSA levels can, therefore, be a helpful way of assessing the cancer and the effectiveness of treatment.

## At the hospital

The following tests can be used to help diagnose cancer of the prostate, but you may not need to have all of them. The advantages and disadvantages of each method should be explained to you before you agree to any of them. Your doctor will be able to tell you how and when you will get the results.

## **Trans-rectal ultrasound scan (TRUS)**

Ultrasound scans use sound waves to build up a picture of part of the inside of the body. To scan the prostate gland, a small probe is passed into the back passage and an image of the prostate appears on a screen. This type of scan is used to measure the size and density of the prostate.

A sample of cells (biopsy) can be taken at the same time for examination under the microscope by a pathologist (see below). The scan may be uncomfortable but it only takes a few minutes.

## **Biopsy**

If the initial tests (rectal examination, PSA or ultrasound) show that there is a possibility of cancer, you may be offered a biopsy, in which several samples of tissue (usually around 10) are taken from the prostate to be looked at under a microscope.

The biopsy is normally done at the same time as the ultrasound. A needle is passed through the wall of the back passage (rectum) and into the prostate. This test is often uncomfortable, and can sometimes be painful. You may be given a local anaesthetic to reduce the discomfort, and antibiotics are given to reduce the risk of infection.

In the 24 hours following this test it is important to drink plenty of fluids. For up to a few weeks you may notice bleeding when passing water, opening your bowels or in your semen after sex. This is quite normal.

Unfortunately, even if there is cancer in the prostate it may not be found by biopsy. This will happen in approximately 1 in 10-20 men tested (5–10%). If a biopsy is negative it may need to be repeated (this may detect a cancer that was missed first time). Sometimes the PSA may be measured again after a few months and the biopsy repeated if the PSA level starts to rise.

## **How advanced prostate cancer is diagnosed**

If you have previously been diagnosed with early or locally advanced prostate cancer you may be attending the hospital or your GP for regular check-ups and blood tests. If you develop new symptoms, you will have tests to see if the cancer has spread. These will usually include a PSA test and a bone scan.

Other tests will depend on your symptoms. Some men are found to have prostate cancer after being investigated for bone pain. If you have bone pain but no other symptoms, your GP may first arrange for you to have an x-ray or scan of the painful area. This may be an x-ray, isotope bone scan, CT scan or MRI scan.

If these suggest a secondary cancer in the bones, further tests will be done to find where the cancer started.



## Further tests for prostate cancer

If the biopsy shows that a cancer is present, further tests may be needed to check whether the disease has spread beyond the prostate gland. These may include the following:

### **Isotope bone scan**

The bone is the most common place for prostate cancer to spread to. A bone scan can show abnormal areas of bone. A very small amount of a mildly radioactive liquid is injected into a vein, usually in your arm.

A scan is then taken of the whole body. Abnormal bone absorbs more of the radioactive substance than normal bone and shows up on the scan as highlighted areas (known as 'hot spots').

After the injection you will have to wait for up to three hours before the scan can be taken, so it is a good idea to take a book or magazine with you.

The level of radioactivity that is used is very small and does not cause any harm. This scan can also detect other conditions affecting the bones, such as arthritis. This means that further tests, such as an x-ray of the abnormal area, may be necessary to confirm whether or not it is cancer.

### **X-rays**

A chest x-ray and x-rays of the bones are sometimes taken to check your general health and see if there has been any spread of the cancer to other parts of the body.

### **MRI (magnetic resonance imaging) scan**

An MRI scan uses magnetism to build up cross-sectional pictures of your body. An MRI scan may show whether the cancer has spread into the tissues around the prostate gland or into the lymph nodes near the prostate.

Before the scan you may be asked to complete and sign a checklist. This is to make sure that it's safe for you to have an MRI scan, because the scanner is a powerful magnet. The checklist asks about any metal implants you may have, for example a pacemaker, surgical clips, bone pins etc.

You should also tell your doctor if you have ever worked with metal or in the metal industry as very tiny fragments of metal can sometimes lodge in the body. If you do have any metal in your body it's likely that you won't be able to have an MRI scan. In this situation another type of scan can be used.

Before having the scan, you'll be asked to remove any metal belongings including jewellery. Some people are given an injection of dye into a vein in the arm, which doesn't usually cause discomfort. This is called a contrast medium and can help the images from the scan to show up more clearly.

During the test you will lie very still on a couch inside a long cylinder (tube) for about 30 minutes. It's painless but can be slightly uncomfortable, and some people feel a bit claustrophobic during the scan. It's also noisy, but you'll be given earplugs or headphones. You can hear, and speak to, the person operating the scanner.



CT (computerised tomography) scan

A CT scan may be used as an alternative to an MRI scan.

The scan takes a series of x-rays, which builds up a three-dimensional picture of the inside of the body. The scan is painless but takes 10-30 minutes. CT scans use a small amount of radiation, which is very unlikely to harm you and will not harm anyone you come into contact with. You'll be asked not to eat or drink for at least four hours before the scan.

You may be given a drink or injection of a dye which allows particular areas to be seen more clearly. For a few minutes, this may make you feel hot all over. If you are allergic to iodine or have asthma you could have a more serious reaction to the injection, so it is important to let your doctor know beforehand.

You will probably be able to go home as soon as the scan is over.

### **Waiting for your test results**

It can take from a few days to a couple of weeks for the results of the tests to be ready. The results will show the grade and the stage of the prostate cancer. This information will be used by the doctors to decide on the best treatment for you.

Waiting for the results can be a difficult time and you may need support from your family or a helpful organisation.

## Grading and staging of prostate cancer

### Grading

Grading refers to the appearance of the cancer cells when the biopsy sample is looked at under the microscope. The grade gives an idea of how quickly the cancer may develop.

There are several grading systems, but the **Gleason system** is the most commonly used. This system looks at the pattern of cancer cells within the prostate. There are 5 patterns, graded 1-5 (1 being the least aggressive and 5 being the most aggressive). The biopsy samples are each graded and then the two most commonly occurring patterns are added together to get a Gleason score of between 2 and 10. The lower the Gleason score, the lower the grade of the cancer.

With prostate biopsies, the samples are usually too small to show grades 1 and 2, so it is most common to get scores from 6-10.

Low-grade cancers (6 or less) are usually slow-growing and less likely to spread. A score of 7 is a moderate grade. High-grade tumours (8-10) are likely to grow more quickly and are more likely to spread.

### Staging

The stage of a cancer is a term used to describe its size and whether it has spread beyond its original area of the body.

Knowing the stage of the cancer and the grade helps the doctors decide on the most appropriate treatment. There are a few different staging systems for prostate cancer, and one is described below:

- **T1** – the tumour is within the prostate gland and is too small to be detected during a rectal examination, but may be detected through tests such as a PSA test, a biopsy or a transurethral resection of the prostate gland (TURP). TURP is an operation to make passing urine easier, by removing a part of the prostate gland. At T1 stage there are generally no symptoms.
- **T2** – the tumour is still within the prostate gland but is large enough to be felt during a digital rectal examination or show up on ultrasound. At T2 stage there are often no symptoms. **T1** and **T2** tumours are known as **early (localised) prostate cancer**.
- **T3/T4** – the cancer has spread beyond the prostate gland into the surrounding tissues. **T3** and **T4** are known as **locally-advanced prostate cancer**.

If the cancer has spread to other parts of the body this is known as **metastatic, secondary, or advanced prostate cancer**.

# Treatment for early prostate cancer

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## Overview of Treatments

The treatment options for early prostate cancer include active surveillance (active monitoring), surgery (removal of the prostate gland) and radiotherapy (external beam or brachytherapy).

Sometimes, hormonal therapy may be given before and/or after surgery or radiotherapy.

## Choosing treatment

Deciding on the best treatment is not always straightforward and a number of factors have to be taken into account. The most important of these are:

- your general health
- the grade of the prostate cancer
- the size of the cancer
- your PSA level
- the likely side effects of treatment
- your views about the possible side effects of treatment and how much you are willing to risk side effects for the possible benefits in controlling the cancer
- whether you have had treatment before
- your age.

The possible treatments for your situation are likely to be discussed by a group of doctors working together. This is known as a **multidisciplinary team** and includes a surgeon (urologist) and doctors who are specialists in radiotherapy, hormonal therapy and chemotherapy treatments (clinical oncologists).

The team may also include specialist nurses, social workers, and physiotherapists. It is common to see a surgeon, an oncologist and a specialist nurse to help you to make the decision.

## Treatment choices

If the cancer is likely to develop very slowly you may be offered active surveillance. Men who have a moderate to high-grade cancer are more likely to be offered surgical removal of the prostate gland (**radical prostatectomy**) or radiotherapy to the prostate. These treatments aim to get rid of all of the cancer cells and cure the cancer.

For some men these treatments will cure the cancer, but for other men some of the cancer cells may be left after the treatment. In some men the treatment may seem to get rid of all the cancer cells for a period of time, but the cancer may come back in the future.

In men with early prostate cancer, surgical removal of the prostate (prostatectomy) or radiotherapy to the prostate seem to be equally effective at treating the cancer. The

radiotherapy can be given from an external machine or directly into the prostate gland as brachytherapy.

Hormone therapy may be used for some men as well as prostatectomy or radiotherapy. **Cryotherapy** (also known as cryosurgery) or high intensity focussed ultrasound (**HIFU**) treatment may be offered to some men.

You may be offered a choice of treatment. Each of the treatments has different benefits and side effects.

### **Treatment or not?**

You may be advised not to have treatment immediately but to be monitored. This is known as active surveillance.

Blood tests and biopsies can now find cancer at a very early stage, but it is not possible to tell whether the cancer is going to grow enough to cause any symptoms. Many prostate cancers grow extremely slowly and a small, early-stage prostate cancer may never cause any problems within a man's lifetime.

The treatments for prostate cancer can cause side effects such as erection problems or incontinence, which for some men may be worse than the effects of the cancer. Your doctors may advise waiting to see whether the cancer is the sort that can cause problems, rather than giving treatment straight away.

### **Second opinion**

Some people find it helpful to have another medical opinion to help them to decide about their treatment. Doctors can refer you to another specialist for a second opinion if you feel that this would be helpful.

### **Consent to treatment**

Before you have any treatment, your doctor will explain its aims of to you. They will usually ask you to sign a form saying that you give your permission (consent) for the hospital staff to give you the treatment. No medical treatment can be given without your consent, and before you are asked to sign the form you should have been given full information about:

- the type and extent of the treatment you are advised to have
- the advantages and disadvantages of the treatment
- any other treatments that may be available
- any significant risks or side effects of the treatment.

If you do not understand what you have been told, let the staff know straight away so that they can explain again. Some cancer treatments are complex, so it is not unusual for people to need repeated explanations.

It is often a good idea to have a friend or relative with you when the treatment is explained, to help you remember the discussion more fully. You may also find it useful to write down a list of questions before you go to your appointment.

You may feel that the hospital staff are too busy to answer your questions, but it is important for you to be aware of how the treatment is likely to affect you. The staff should be willing to make time for you to ask questions.

You can always ask for more time to decide about the treatment if you feel that you can't make a decision when it is first explained to you.

You are also free to choose not to have the treatment. The staff can explain what may happen if you do not have it. It is essential to tell a doctor, or the nurse in charge, so that they can record your decision in your medical notes.

You do not have to give a reason for not wanting to have treatment, but it can be helpful to let the staff know your concerns so that they can give you the best advice.

## Benefits and disadvantages of treatments for early prostate cancer

Your doctor will explain the benefits and possible disadvantages and side effects of the treatments to you. You can then decide which is best for your particular situation. The benefits and disadvantages of the treatments for early prostate cancer are outlined in the following pages. Before you have any treatment it is important that you are fully aware of them.

It is not possible for doctors to predict accurately who is going to be affected by the side effects of each treatment. So, you need to be given full information about the risks beforehand and have plenty of opportunity to discuss them. Remember, there are often choices to be made about which treatment you should have, or even whether to have treatment. You can take as large or small a part in those choices as you wish.

### **Active surveillance**

Most early-stage prostate cancers may be very slow-growing and may never cause any symptoms. For this reason, some men and their specialists decide to wait and see whether the cancer is getting bigger (progressing) before starting any treatment. The active surveillance approach involves regular check-ups with PSA tests, rectal examination of the prostate and possibly repeat biopsies.

**Benefits:** Many men who choose active surveillance will avoid the complications of surgery, radiotherapy, or hormonal therapy.

**Risks:** Some men find it difficult just to wait and see if their cancer progresses before starting any therapy. Some men will need surgery, radiotherapy or hormonal therapy if their cancer shows signs of developing.



## Radical prostatectomy

A major surgical operation to remove the whole prostate gland.

**Benefits:** Removing the whole prostate gland may stop an early cancer from spreading and may result in a cure. Radical prostatectomy appears to prolong life for some men with more fast growing cancer, but for men with small, slow-growing cancers the benefits are unclear, and probably only apply to younger men. In two out of five men, the cancer cells are not fully removed, and therefore the operation may not result in a cure.

**Risks:** One in 200 men over 65, and one in 1000 men under 65, may die from problems caused by surgery. For every 100 men who have a radical prostatectomy up to 20 will develop slight leaking of urine; around 5 will have incontinence of urine; and about 70 will have problems getting an erection.

## External beam radiotherapy

High-energy rays are used to destroy cancer cells.

**Benefits:** Radiotherapy may lead to a cure in early prostate cancer, but as with prostatectomy, the benefits in small, slow-growing cancers are uncertain. A complete course takes up to seven weeks. Giving hormone therapy before and during the radiotherapy may improve the results.

**Risks:** For every 100 men who have external beam radiotherapy: up to 30 will develop occasional bleeding from the rectum (back passage); about 10 may have bleeding, a change in bowel habit and some discomfort; and up to 70 will develop erection problems (though this depends on age). Rarely, some men may have leakage of urine or incontinence of urine.

## Brachytherapy

A new type of radiotherapy, which uses radioactive 'seeds' inserted into the prostate.

**Benefits:** Same as for external beam therapy. A simpler procedure than external beam radiotherapy, as it usually only involves one planning session and one treatment session (under general anaesthetic) during a stay in hospital of one or two days.

**Risks:** Side effects to the bladder, such as inflammation (cystitis) may be more severe than external beam radiotherapy, but bowel problems (diarrhoea) and impotence are expected to be less common. Scar tissue may cause gradual narrowing of the urethra which may need to be treated.

## Hormonal therapy

Lowers the levels of testosterone in the body, by removing the testes or using tablets or injections. Hormonal therapy may be used on its own or given with radiotherapy treatment.

**Benefits:** Can slow or stop the growth of cancer cells for many years. Does not involve surgery or radiation so there is little risk of bowel or bladder problems.

**Risks:** It will not get rid of all the cancer cells if it is the only treatment given and can cause a range of side effects that include breast swelling and hot flushes, impotence and lowered sex drive.

### **Active surveillance for early (localised) prostate cancer**

Active surveillance means that your doctors will keep a close eye on you to see if the cancer is growing significantly. You will usually have blood tests every 1-3 months to monitor your PSA levels and frequent digital rectal examinations, and will be asked if you have developed any new symptoms. You may also have prostate biopsies every few years.

If these regular tests show that the cancer is starting to grow your doctors will then recommend treatment intended to cure the cancer, such as surgery or radiotherapy. If your cancer is not growing or developing, it is safe to continue with active surveillance.

## **Surgery for early prostate cancer**

Surgery to remove the prostate gland may be a treatment option for you. This operation is known as a **radical prostatectomy**.

Before any operation, make sure that you have discussed it fully with your doctor. It is important that you understand what it involves, including the chances of success, the likely side effects, and whether there are other treatment options that may be more appropriate to your particular circumstances. Your doctor may suggest that you have hormonal therapy before or after your surgery.

### **Radical prostatectomy**

A radical prostatectomy is carried out by specialist surgeons. The whole prostate gland is surgically removed either through a cut made in the abdomen or through a cut made between the scrotum and the back passage. This aims to get rid of all of the cancer cells. This operation is done only when the cancer is thought not to have spread beyond the prostate and usually in men under 70.

The operation often causes impotence - the inability to have and maintain an erection. It can also cause problems with control of passing urine (urinary incontinence). Sometimes it is possible to do a special type of operation, called a **nerve-sparing prostatectomy**, which reduces the risk of erection problems.

As doctors cannot predict which men will be affected by these side effects it is important that you are fully aware of these risks beforehand. Your doctor will discuss the operation, its possible side effects and other possible treatment options with you.

Although prostatectomy can get rid of the cancer cells completely for many men, in about 1 in 3 men (33%) the cancer cells may come back in the area of the prostate a while after the operation. If this happens, external radiotherapy may be given to the prostate area. The treatment is given over a larger area, which can cause more side effects.

## Laparoscopic prostatectomy

With a laparoscopic prostatectomy your surgeon doesn't need to make a large opening but can take out your prostate gland using only 4 or 5 small cuts (about 1cm each) in your tummy area (abdomen). The surgeon uses specially designed instruments that can be put through these small cuts. This type of surgery is also known as keyhole surgery.

After making the small cuts the surgeon uses carbon dioxide gas to fill (inflate) the abdomen. A tiny video camera gives a magnified view of the prostate gland onto a video screen. The prostate gland is then cut away from surrounding tissues and removed through one of the cuts in the abdomen.

Sometimes, laparoscopic prostatectomy can be carried out using a machine (**robotic assisted laparoscopic prostatectomy**). Instead of the surgeon and assistant moving the camera and instruments, they are attached to robotic arms. The robotic arms can move very delicately, steadily and precisely. The machine used in robotic laparoscopic prostatectomy is called a da Vinci® machine - so this type of surgery is sometimes called the **da Vinci prostatectomy**. Only a few surgeons in the UK are trained in these techniques and there are only a few robot-assisted systems such as da Vinci®, so this treatment is not yet widely available. Your specialist will be able to tell you if it might be appropriate for you and whether it may be available to you.

Most studies have shown that laparoscopic surgery and robotic-assisted laparoscopic surgery are as successful at treating prostate cancer as open surgery. Your surgeon can discuss with you the potential risks and benefits. These types of surgery are only carried out by surgeons with specialised training and experience in the techniques involved.

## After your operation

After prostatectomy you will have a drip (intravenous infusion) into a vein in your arm and a tube (catheter) to drain urine from the bladder. If the operation is done through the abdomen you will also have an abdominal wound. You may have a small tube in the wound to drain any excess fluid that is produced. After your operation you may have some pain or discomfort which may continue for a few weeks, particularly when you walk. Regular painkillers should help to ease this, so let the staff on the ward know if you are still in pain.

You will probably be ready to go home from a week to ten days after your operation. Your catheter will probably stay in for 1-3 weeks to allow the urethra to heal. Arrangements can be made for a district nurse to visit you at home, and if you have any problems you should contact your doctor as soon as possible.

## Side effects of radical prostatectomy

Surgery to the prostate can cause problems in getting an erection (sexual impotence) and in controlling the bladder (incontinence). Erection problems are caused by a reduction in the blood

flow to the penis due to damage to the arteries or nerves. Often the need to remove all of the cancer cells makes it impossible to avoid nerve damage. In men aged under 60 who have had nerve-sparing prostatectomy, the risk of erection problems after total prostatectomy may be 1 in 2 (50%) or higher. The risk increases to about 4 in 5 (80%) or more in men over the age of 70 and may be higher if nerve-sparing techniques are not used. Our section on side effects discuss ways of coping with erection problems.

Problems with controlling the bladder as a result of radical prostatectomy are less common. Most men have some incontinence when the catheter is first removed, but this usually improves with time. About one year after the operation up to 20% of men will leak an occasional drop of urine. Some men may need to wear an incontinence pad, but it is very rare to be completely incontinent and need to have a permanent catheter. Another less common effect of surgery is scarring of the bladder which can make it difficult to pass urine. This is fairly easily treated with minor surgery (known as a bladder neck dilation).

Some men may find that they have diarrhea or constipation for a few months after prostatectomy.

### **Care after an operation**

If you think that you might have any difficulties coping at home after your surgery, let your nurse or social worker know when you are admitted to hospital so that help can be arranged.

As well as being able to offer practical advice, many social workers are also trained counsellors who can offer valuable support to you and your family, both in hospital and at home. If you would like to talk to a social worker, ask your nurse or doctor to arrange it for you.

Before you leave hospital you will be given an appointment to attend an outpatient clinic for your post-operative check-up. This is a good time to discuss any problems you may have.

## **Radiotherapy for early prostate cancer**

Radiotherapy treats cancer by using high-energy x-rays to destroy the cancer cells, while doing as little harm as possible to normal cells. Radiotherapy for cancer of the prostate is usually given from an external machine (**external beam radiotherapy**), but for some men with early prostate cancer it can be given by inserting small radioactive seeds into the tumour (**brachytherapy**). External radiotherapy and brachytherapy both appear to be equally effective in curing prostate cancer. Your doctor may suggest that you have hormonal therapy before or after your radiotherapy.

### **When radiotherapy is used**

In early prostate cancer, the radiotherapy is given to the prostate gland. The aim is to destroy the cancer cells, while doing as little harm as possible to normal tissues in the surrounding area such as the bladder or back passage (rectum). This is known as **radical radiotherapy**.

## **External radiotherapy**

Radiotherapy is given in the hospital radiotherapy department, usually as daily sessions from Monday to Friday, with a rest at the weekend. For early prostate cancer, the course of treatment may continue from 4-7 weeks.

## **Planning radiotherapy**

Planning is a very important part of radiotherapy and may take one or two visits. The treatment has to be carefully planned to make sure that it is as effective as possible. You will be asked to have a CT scan or lie under a machine called a simulator, which takes x-rays of the area to be treated. The treatment is planned by a cancer specialist (**clinical oncologist**).

Marks are usually drawn on your skin to help the radiographer (who gives you your treatment) to position you accurately and to show where the rays will be directed. These marks must stay in place throughout your treatment, and permanent marks (like tiny tattoos) may be used. These are tiny, and will only be done with your permission. You may feel a little uncomfortable while it is being done.

## **Treatment sessions**

At the beginning of each session of radiotherapy, the radiographer will position you carefully on the couch, and make sure you are comfortable. During your treatment you will be left alone in the room but you will be able to talk to the radiographer who will be watching you. Radiotherapy is not painful but you have to lie still for a few minutes while the treatment is being given.

## **Conformal radiotherapy and IMRT**

Conformal radiotherapy (CRT) or intensity modulated radiotherapy (IMRT) are usually used.

In conformal radiotherapy, a special attachment to the radiotherapy machine carefully shapes the radiation beams to match the shape of the prostate gland. Shaping the radiotherapy beams reduces the radiation received by the healthy cells in nearby organs such as the bladder and rectum. This reduces the side effects of radiotherapy treatment and may allow higher doses to be given, which could be more effective.

IMRT is a newer, more complex type of conformal radiotherapy and allows the radiotherapist to vary the dose of radiation given to different parts of the tumour and surrounding tissue. It is not yet known whether IMRT is better than conformal radiotherapy.

## **Short-term side effects**

Radiotherapy to the prostate can make it more difficult to have an erection. There are various treatments which can help.

Radiotherapy to the prostate area may irritate the rectum, and cause discomfort and diarrhoea. It may cause soreness around the anus. Your doctor can prescribe medicines to reduce this and you may be advised to change your diet.

The radiotherapy may also cause cystitis, which can make you want to pass urine more often or cause a burning feeling when you pass urine. Your doctor can prescribe medicines to reduce this. These effects usually disappear gradually a few weeks after the treatment has ended. Rarely, if you have difficulty in passing urine, it may be necessary to have a urinary catheter put in.

Radiotherapy can also cause general side effects such as tiredness, which are mild for some men and more troublesome for others. The radiographer will be able to advise you what to expect. Try to balance rest with regular, gentle exercise, especially if you have to travel a long way for treatment each day.

The radiotherapy may make some of your pubic hair fall out. When you have finished the course of treatment, the hair will grow back. However, the hair may be thinner or finer than it was before.

Most side effects of radiotherapy gradually disappear once the treatment has ended. However, others may continue for some months and some may even be permanent. If you have any problems during your treatment, talk to the radiotherapy staff as they will be able to help you.

Radiotherapy does not make you radioactive and it is perfectly safe for you to be with other people, including children, throughout your treatment.

Our general information section on radiotherapy gives more details about this treatment and its side effects.

Although radiotherapy can get rid of the cancer cells completely for many men, in about 1 in 3 men (33%) the cancer cells may come back in the area of the prostate at some time after the treatment. In this situation, surgery can very occasionally be done to remove the prostate gland. This type of surgery is known as **salvage surgery**.

### **Possible long-term side effects**

Radiotherapy to the prostate area can sometimes lead to long-term problems.

Radiotherapy for prostate cancer can cause an inability to have an erection (impotence) in about 3-5 in 10 (30-50%) of the men who have this treatment; this may develop over a period of 2-5 years.

This side effect of treatment can be very difficult to deal with and can affect your sex life and your relationship with your partner. You may find it helpful to read our section on sexuality. Many organisations offer counselling for sexual or relationship problems.

In a number of men, the bowel or bladder may be permanently affected by the radiotherapy. The blood vessels in the bowel and bladder can become more fragile and this can make blood appear in the urine or when you pass bowel motions. This can take many months or years to occur. If you notice any bleeding, it is important to let your doctor know so that tests can be carried out and appropriate treatment given. Occasionally bowel movements may be more urgent after radiotherapy and, rarely, there may be some difficulty in controlling the bowels.

Often, radiotherapy can help to improve problems with passing urine, but for some men radiotherapy can lead to leakage of urine due to damage to the nerves that control the bladder muscles (urinary incontinence). This is unlikely unless you have had a TURP or prostatectomy as well. If this happens it is important to discuss it with your doctor, who can arrange for you to see a specialist continence nurse. You may also find it helpful to contact the Continence Foundation.

If radiotherapy has been given to the lymph glands in the pelvic area as well as to the prostate, it can cause some swelling of the legs, known as lymphoedema.

We have a booklet about the long-term side effects of pelvic radiotherapy.

## **Brachytherapy**

This type of radiotherapy is available in some hospitals in the UK. It is also sometimes called **internal radiotherapy, implant therapy or seed implantation**. It can be carried out under a general anaesthetic or a spinal anaesthetic (epidural). Small radioactive metal 'seeds' are inserted into the tumour so that radiation is released slowly over a period of time. The seeds are not removed but the radiation gradually fades away over about six months. There is no risk of it affecting other people.

Before the seeds are put into the prostate, a study of the prostate gland will be done (known as a volume study). This is to confirm the exact size and position of the prostate gland. For 24 hours before the volume study you will need to follow a special diet to make sure that your bowel is empty. You will also be given an enema to empty your bowel, so that the ultrasound picture is as clear as possible. The volume study is done in the operating theatre and you will need to have an anaesthetic for a short time.

A trans-rectal ultrasound is used to take pictures of the prostate. These provide a three-dimensional model which is then used to decide the number of seeds needed for treatment, and exactly where they should be put.

The implant procedure takes about one hour. An ultrasound probe is inserted into the rectum to show the prostate. Around 80-100 radioactive seeds are then inserted through the skin between the prostate and the anus, and guided into the prostate gland. As the procedure may cause some swelling of the prostate, which can lead to blockage of the urethra, a catheter is sometimes inserted into the bladder to drain urine. This may be removed after a couple of hours or left in place overnight.

Antibiotics are given after the implant, to prevent infection. Most men go home the day after the implant, but some leave hospital as soon as they have recovered from the anaesthetic and are able to pass urine normally. After the implant it is best to avoid heavy lifting or strenuous physical activity for two or three days.

All the radioactivity is absorbed within the prostate and so it is completely safe for you to be with other people. However, women who are (or could be) pregnant and children should not stay very close to you for long periods of time. You should not let children sit on your lap, but can hold or cuddle them for a few minutes each day and it is safe for them to be in the same room.

The seeds stay permanently embedded in the prostate gland, but there is a tiny chance of a single seed being passed in the semen during sexual activity. So it is advisable to use a condom for the first few weeks after the implant. During this time the semen may be coloured black or brown - this is normal and is due to bleeding that may have occurred during the procedure. Condoms should be disposed of in the dustbin and should be double-wrapped.

### Side effects of brachytherapy

Brachytherapy causes similar side effects to external beam radiotherapy. It is also common to feel mild soreness, and to have some bruising and discoloration between the legs for a few days after the procedure. Your doctor can prescribe painkillers to relieve this.

You may also notice some blood in the urine. This is quite normal but if it becomes severe or there are large clots present you should let your doctor know immediately. It is important to drink plenty of water to help prevent blood clots and flush the bladder.

As with external radiotherapy, erection problems develop in 3-5 in 10 (30–50%) of men some years after the treatment.

Brachytherapy may be less likely to affect the bowel than external beam radiotherapy, although the risk of urinary problems (such as narrowing of the urethra) is higher. Up to one in seven men may not be able to pass urine immediately after the procedure and may need to have a catheter inserted for a while. Some men may develop narrowing of the urethra some time later, which may cause problems with passing urine.

The risk of leakage of urine is about 1 in 100 (1%). Some men find that they have pain or discomfort on passing urine, need to pass urine more often or have a weaker urine stream. This is usually due to the radiation from the seeds in the prostate and improves over 3-12 months as the seeds lose some of their radioactivity. Drinking plenty of fluids and avoiding caffeine may help to reduce these effects.

## Hormonal therapy for early prostate cancer

Hormonal therapy may be given in addition to surgery or radiotherapy - this is known as **adjuvant therapy**. The aim is to reduce the chance of the cancer coming back.

Hormones control the growth and activity of normal cells. In order to grow, prostate cancer depends on the hormone **testosterone** produced by the testicles. Hormonal therapies reduce the amount of testosterone in the body. They can be given as injections or tablets.

### Injections

Some drugs 'switch off' the production of male hormones from the testicles by reducing the levels of a hormone produced by the pituitary gland. These drugs are called **pituitary down-regulators** or **gonadotrophin releasing hormone analogues (GnRH analogues)**. They include goserelin (Zoladex®), leuprorelin (Prostap®) and triptorelin (Decapeptyl®).



They are usually given as a pellet injected under the skin of the abdomen (goserelin), or as a liquid injected under the skin or into a muscle (leuprorelin or triptorelin). Injections are given either monthly or every three months.

## Tablets

Other hormonal therapy drugs work by attaching themselves to proteins (receptors) on the surface of the cancer cells. This blocks the testosterone from going into the cancer cells. The drugs are called **anti-androgens** and are often given as tablets. Commonly used anti-androgens are flutamide (Chimax®, Drogenil®), bicalutamide (Casodex®) and cyproterone acetate (Cyprostat®).

Anti-androgen tablets are also usually given for two weeks before the first injection of a pituitary down-regulator. This prevents tumour flare, which is where symptoms get worse after the first dose of treatment.

Research trials are being carried out to find out:

- whether it is better to start the hormonal therapy before or after the surgery or radiotherapy
- how long to give the treatment for (it can range from two months to two years).

## Side effects

Unfortunately most hormonal therapies usually cause erection difficulties and loss of sexual desire for as long as the treatment is given. If the treatment is stopped, the problem may disappear. Some types of anti-androgens are less likely to cause impotence than others.

In about half the men who have hormonal therapies the side effects that cause them the greatest problem are hot flushes and sweating. Flushes stop if the treatment is stopped. In the meantime some medicines can help. We can send you information about this.

Hormonal treatment can also make you put on weight and feel constantly tired, both physically and mentally. Some drugs (most commonly flutamide and bicalutamide) may also cause breast swelling and tenderness. Some hormonal therapy, particularly GnRH therapy, may increase your risk of developing diabetes or heart disease.

However the benefits of hormonal treatment generally outweigh the possible risks. You can discuss the possible side effects with your doctor before you start treatment. Being warned about possible side effects can make them easier to cope with.

We have sections about individual hormonal therapies, with more information about how the drugs work and tips on coping with possible side effects.

## Newer treatments for early prostate cancer

The following treatments are sometimes used for early stage prostate cancer; however they are not widely available. If you think that one of the treatments may be suitable for you it is best to

discuss this with your cancer specialist. They can advise whether the treatment could be helpful in your particular case.

## **Cryotherapy**

Cryotherapy is available as a treatment for early prostate cancer in some hospitals in the UK. It may be as effective as the other standard treatments for prostate cancer.

Cryotherapy is carried out under general or spinal anaesthetic. A number of metal probes are put through the skin and into the affected area of the prostate gland. The probes contain liquid nitrogen, which freezes and destroys the cancer cells. Local anaesthetic is used to numb the treatment area, but even so the treatment can cause pain. Painkillers may be necessary for a few days after the treatment. Men who have had cryotherapy treatment can have radiotherapy or surgery if their cancer comes back.

After the cryotherapy procedure, a tube (catheter) is inserted into the bladder through the skin of the abdomen to drain urine. The catheter is left in place for 1-2 weeks.

The possible side effects include erection problems in approximately 8 out of 10 men (80%), and urine leakage (incontinence) in less than 1 in 10 men (10%). However, the long-term side effects are not yet known. It is only suitable for very small prostate cancers and cannot be used for cancers near the outer edge of the prostate.

## **High intensity focused ultrasound (HIFU) treatment**

High Intensity focused ultrasound (HIFU) is sometimes used as a treatment for early prostate cancer. This treatment may be as effective as surgery or radiotherapy for early prostate cancer.

HIFU treatment is given under a general or spinal anaesthetic. A probe is inserted into the back passage (rectum). The probe produces a high-energy beam of ultrasound. This heats the affected area of the prostate gland, destroying the cancer. The probe is surrounded by a cooling balloon to protect the normal prostate tissue from damage.

The side effects can include urine infections, leakage of urine, erection difficulties and, rarely, damage to the bowel wall, which may need to be repaired by surgery. The long-term side effects of this treatment are not yet known.

# **Treatments for locally-advanced prostate cancer**

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## **Overview of Treatments**

The treatment options for locally-advanced prostate cancer include radiotherapy, hormonal therapy, watchful waiting (observation) and surgery.

Sometimes a combination of treatments will be given.

## Choosing treatment

Deciding on the best treatment is not always straightforward and a number of factors have to be taken into account. The most important of these are:

- your general health
- the grade of the prostate cancer
- the size of the cancer
- your PSA level
- the likely side effects of treatment
- your views about the possible side effects of treatment and how much you are willing to risk side effects for the possible benefits in controlling the cancer
- whether you have had treatment before
- your age.

The possible treatments for your situation are likely to be discussed by a group of doctors working together. This is known as a **multidisciplinary team** and includes a surgeon (urologist) and doctors who are specialists in radiotherapy, hormonal therapy and chemotherapy treatments (clinical oncologists).

The team may also include specialist nurses, social workers, and physiotherapists. It is common to see a surgeon, an oncologist and a specialist nurse to help you to make the decision.

## Treatment choices

Many men with locally-advanced prostate cancer are offered **radiotherapy** to the prostate. Hormonal therapy is often given with radiotherapy and can be started before the radiotherapy begins and continued after it is finished.

Some men are offered **hormonal therapy** as a treatment on its own. It is also used to treat men who aren't able to have radiotherapy, or those who can't have surgery because they aren't able to have a general anaesthetic, or because of other medical problems they may have.

In elderly men who have no symptoms from the cancer, or who have other medical problems, it may be best to give no treatment (but continue regular monitoring with PSA tests) and control any symptoms that occur. This is known as **watchful waiting** and is a common way of dealing with locally-advanced prostate cancer. It is used because the growth of the cancer may be so slow that it is not worth risking the side effects that may be caused by treatment.

**Surgery** to remove the prostate gland (a prostatectomy) may be possible for a small number of men. Hormonal therapy may be given before or after surgery. Sometimes radiotherapy is given after surgery. Surgery to relieve problems with passing urine, known as a TURP, may be suitable for some men.

You may be offered a choice of treatment. Each of the treatments has different benefits and side effects.

## **Second opinion**

Some people find it helpful to have another medical opinion to help them to decide about their treatment. Doctors can refer you to another specialist for a second opinion if you feel that this would be helpful

## **Treatment or not?**

You may be advised to be monitored instead of having treatment immediately. This is known as watchful waiting. Many locally-advanced prostate cancers grow extremely slowly and may cause very few problems within a man's lifetime. However, it's not possible to tell from blood tests and biopsies how quickly the cancer is going to grow.

The treatments for prostate cancer can cause side effects such as erection problems or incontinence, which for some men may be worse than the effects of the cancer. Your doctors may advise waiting to see whether the cancer is likely to cause problems, rather than having treatment straight away.

## **Consent to treatment**

Before you have any treatment, your doctor will explain its aims to you. They will usually ask you to sign a form saying that you give your permission (consent) for the hospital staff to give you the treatment. No medical treatment can be given without your consent, and before you are asked to sign the form you should have been given full information about:

- the type and extent of the treatment you are advised to have
- the advantages and disadvantages of the treatment
- any other treatments that may be available
- any significant risks or side effects of the treatment.

If you do not understand what you have been told, let the staff know straight away so that they can explain again. Some cancer treatments are complex, so it is not unusual for people to need repeated explanations.

It is often a good idea to have a friend or relative with you when the treatment is explained, to help you remember the discussion more fully. You may also find it useful to write down a list of questions before you go to your appointment.

You may feel that the hospital staff are too busy to answer your questions, but it is important for you to be aware of how the treatment is likely to affect you. The staff should be willing to make time for you to ask questions.

You can always ask for more time to decide about the treatment if you feel that you can't make a decision when it is first explained to you.

You are also free to choose not to have the treatment. The staff can explain what may happen if you do not have it. It is essential to tell a doctor or the nurse in charge, so that they can record your decision in your medical notes. You do not have to give a reason for not wanting to have treatment, but it can be helpful to let the staff know your concerns so that they can give you the best advice.

## Benefits and disadvantages of treatments for locally-advanced prostate cancer

Your doctor will explain the benefits and possible disadvantages and side effects of the treatments to you. You can then decide which is best for your particular situation. The benefits and disadvantages of the treatments for locally-advanced prostate cancer are outlined in the following pages. Before you have any treatment it is important that you are fully aware of them.

It is not possible for doctors to predict accurately who is going to be affected by the side effects of each treatment. For this reason you need to be given full information about the risks beforehand and have plenty of opportunity to discuss them. Remember, there are often choices to be made about which treatment you have, or even whether to have treatment. You can take as large or small a part in those choices as you wish.

### External beam radiotherapy

This is the use of high-energy rays to destroy cancer cells.

**Benefits:** Radiotherapy can help to control locally-advanced prostate cancer for many years and may lead to a cure in some situations. The benefits in small, slow-growing cancers are uncertain. A complete course takes up to seven weeks. Giving hormonal therapy before and during the radiotherapy may improve the results.

**Risks:** For every 100 men who have external beam radiotherapy: up to 30 will develop occasional bleeding from the rectum (back passage); about 10 may have bleeding, a change in bowel habit and some discomfort; and up to 70 will develop erection problems (though this depends on age). Rarely, some men may have leakage or incontinence of urine.

### Hormonal therapy

This lowers the levels of testosterone in the body, using tablets or injections, or by surgical removal of the testes. Hormonal therapy may be used on its own or given with radiotherapy or surgery.

**Benefits:** Can slow or stop the growth of cancer cells for many years. Does not involve surgery or radiation so there is little risk of bowel or bladder problems.

**Risks:** It will not get rid of all the cancer cells if it is the only treatment given. It can cause a range of side effects that include breast swelling and hot flushes, impotence and lowered sex drive.

## Watchful waiting

Some locally-advanced prostate cancers are very slow-growing and may never cause any symptoms. For this reason, some men and their specialists decide to wait and see whether the cancer is getting bigger (progressing) before starting any treatment. The watchful waiting approach involves regular check-ups with PSA tests and digital rectal examinations.

**Benefits:** Many men who choose watchful waiting will avoid the side effects of treatments like radiotherapy or hormonal therapy.

**Risks:** Some men find it difficult just to wait and see if their cancer progresses before starting any therapy. Some men will need treatment with radiotherapy or hormonal therapy if their cancer shows signs of developing.

## Surgery

Surgery can be used to remove the whole prostate gland (prostatectomy), or to relieve symptoms of urinary obstruction (Trans-urethral resection of the prostate – TURP).

**Benefits of a prostatectomy:** Removing the whole prostate gland may stop the cancer from spreading and may result in a cure. Radical prostatectomy appears to prolong life for some men with a higher grade cancer (see page 00), but isn't suitable for many men with locally-advanced prostate cancer.

**Risks of a prostatectomy:** Over half of men who have a prostatectomy for locally-advanced prostate cancer will have a recurrence of their cancer and need further treatment, with either radiotherapy or hormonal therapy.

For every 100 men who have a radical prostatectomy: up to 20 will develop slight leaking of urine; around 5 will have incontinence of urine; and around 70 will have problems getting an erection. One in 200 men over 65, and one in 1000 men under 65, may die from problems caused by the surgery.

**Benefits of a TURP:** Can help to relieve symptoms with passing urine.

**Risks of a TURP:** It will not get rid of the cancer cells. There a risk of urinary incontinence. Some men have problems getting an erection after a TURP.

## Radiotherapy for locally-advanced prostate cancer

Radiotherapy treats cancer by using high-energy x-rays to destroy the cancer cells, while doing as little harm as possible to normal cells in the surrounding area such as the bladder or back passage (rectum). Radiotherapy for locally-advanced prostate cancer usually uses a machine

similar to a high-powered x-ray machine (**external beam radiotherapy**). Your doctor may suggest that you have hormonal therapy before or after your radiotherapy.

The treatment is given in the hospital radiotherapy department, usually as daily sessions from Monday to Friday, with a rest at the weekend. For locally-advanced prostate cancer, radiotherapy will be given for 4-7 weeks.

### **Planning radiotherapy**

Planning is a very important part of radiotherapy and may take one or two visits. The treatment has to be carefully planned to make sure that it is as effective as possible. You will be asked to have a CT scan or lie under a machine called a simulator, which takes x-rays of the area to be treated. The treatment is planned by a cancer specialist (**clinical oncologist**).

Marks are usually drawn on your skin to help the radiographer (who gives you your treatment) to position you accurately and to show where the rays will be directed. These marks must stay in place throughout your treatment. Permanent marks (like tiny tattoos) may also be used. These are very small and will only be done with your permission. You may feel a little discomfort while they are being done.

### **Treatment sessions**

At the beginning of each session of radiotherapy, the radiographer will position you carefully on the couch and make sure you are comfortable. During your treatment you will be left alone in the room, but you will be able to talk to the radiographer who will be watching you. Radiotherapy is not painful, but you have to lie still for a few minutes while the treatment is being given.

### **Conformal radiotherapy and intensity modulated radiotherapy**

Conformal radiotherapy (CRT) or intensity modulated radiotherapy (IMRT) are increasingly being used, although these are not available at all hospitals.

In **conformal radiotherapy (CRT)**, a special attachment to the radiotherapy machine carefully shapes the radiation beams to match the shape of the prostate gland. Shaping the radiotherapy beams reduces the radiation received by the healthy cells in nearby organs such as the bladder and rectum. This reduces the side effects of radiotherapy and may allow higher doses to be given, which could be more effective.

**Intensity modulated radiotherapy (IMRT)** is a newer, more complex type of conformal radiotherapy that allows the radiotherapist to vary the dose of radiation given to different parts of the tumour and surrounding tissue. It is not yet known whether IMRT is better than conformal radiotherapy.

### **Short-term side effects**

Radiotherapy to the prostate can make it more difficult to have an erection. There are various treatments which can help (see dealing with side-effects).

Radiotherapy to the prostate area may irritate the rectum, and cause discomfort and diarrhoea. It may cause soreness around the anus. Your doctor can prescribe medicines to reduce this and you may be advised to change your diet.

The radiotherapy may also cause cystitis, which can make you want to pass urine more often or cause a burning feeling when you pass urine. Your doctor can prescribe medicines to reduce this. These effects usually disappear gradually a few weeks after the treatment has ended. Rarely, if you have difficulty in passing urine, it may be necessary to have a urinary catheter put in.

Radiotherapy can also cause general side effects such as tiredness, which are mild for some men and more troublesome for others. The radiographer will be able to advise you what to expect. Try to balance rest with regular, gentle exercise, especially if you have to travel a long way for treatment each day.

The radiotherapy may make some of your pubic hair fall out. When you have finished the course of treatment, the hair will grow back. However, the hair may be thinner or finer than it was before.

Most side effects of radiotherapy gradually disappear once the treatment has ended. However, others may continue for some months and some may even be permanent. If you have any problems during your treatment, talk to the radiotherapy staff as they will be able to help you.

Radiotherapy does not make you radioactive and it is perfectly safe for you to be with other people, including children, throughout your treatment.

Our general booklet on radiotherapy gives more details about this treatment and its side effects.

### **Possible long-term side effects**

Radiotherapy to the prostate area can sometimes lead to long-term problems.

Radiotherapy for prostate cancer can cause an inability to have an erection (impotence) in about 3-5 in 10 (30–50%) of the men who have this treatment; this may develop over a period of 2–5 years. Our page on dealing with side effects discuss ways of coping with erection problems. This side effect of treatment can be very difficult to deal with and can affect your sex life and your relationship with your partner. You may find it helpful to read our section on sexuality. Many organisations offer counselling for sexual or relationship problems.

In a number of men, the bowel or bladder may be permanently affected by the radiotherapy. The blood vessels in the bowel and bladder can become more fragile and this can make blood appear in the urine or when you pass bowel motions. This can take many months or years to occur. If you notice any bleeding, it is important to let your doctor know so that tests can be carried out and appropriate treatment given. Occasionally bowel movements may be more urgent after radiotherapy and, rarely, there may be some difficulty in controlling the bowels.

Often, radiotherapy can help to improve problems with passing urine, but for some men radiotherapy can lead to leakage of urine due to damage to the nerves that control the bladder muscles (urinary incontinence). This is unlikely unless you have had a TURP or prostatectomy



as well. If this happens it is important to discuss it with your doctor, who can arrange for you to see a specialist continence nurse. You may also find it helpful to contact the Continence Foundation.

If radiotherapy has been given to the lymph glands in the pelvic area as well as to the prostate, it can cause some swelling of the legs, known as lymphoedema.

We have further information about the long-term side effects of pelvic radiotherapy.

## Hormonal therapy for locally-advanced prostate cancer

Hormonal therapy may be given before radiotherapy, and sometimes before surgery - this is known as **neo-adjuvant therapy**. It is also sometimes given after either radiotherapy or surgery, which is known as **adjuvant therapy**. The aim is to reduce the chance of the cancer coming back.

Hormonal therapy can also be given as a treatment on its own, and has been shown to improve survival.

Hormones control the growth and activity of cells. In order to grow, prostate cancer depends on the hormone **testosterone** produced by the testicles. Hormonal therapies reduce the amount of testosterone in the body. They can be given as injections or tablets, and occasionally an operation ( **subcapsular orchidectomy** ) will be done to remove the part of the testicles that produces testosterone.

### Injections

Some drugs 'switch off' the production of male hormones from the testicles by reducing the levels of a hormone produced by the pituitary gland. These drugs are called **pituitary down-regulators** or **gonadotrophin releasing hormone analogues (GnRH analogues)**. They include goserelin (Zoladex®), leuprorelin (Prostap®) and triptorelin (Decapeptyl®).

They are usually given as a pellet injected under the skin of the abdomen (goserelin), or as a liquid injected under the skin or into a muscle (leuprorelin or triptorelin). Injections are given either monthly or every three months.

### Tablets

Other hormonal therapy drugs work by attaching themselves to proteins (receptors) on the surface of the cancer cells. This blocks the testosterone from going into the cancer cells. The drugs are called anti-androgens and are often given as tablets. Commonly used **anti-androgens** are flutamide (Chimax®, Drogenil®), bicalutamide (Casodex®) and cyproterone acetate (Cyprostat®).

Anti-androgen tablets are also usually given for two weeks before the first injection of a pituitary down-regulator. This prevents tumour flare, which is where symptoms get worse after the first dose of treatment.

## Side effects

Unfortunately most hormonal therapies usually cause erection difficulties and loss of sexual desire for as long as the treatment is given. If the treatment is stopped, the problem may disappear. Some types of anti-androgens are less likely to cause impotence than others.

In about half the men who have hormonal therapies, the side effects that cause them the greatest problem are hot flushes and sweating. Flushes stop if the treatment is stopped. Some medicines can help while you are having treatment.

Hormonal treatment can also make you put on weight and feel constantly tired, both physically and mentally. Some drugs (most commonly flutamide and bicalutamide) may also cause breast swelling and tenderness. Some hormonal therapy, particularly GnRH therapy, may increase your risk of developing diabetes or heart disease.

However, the benefits of hormonal treatment generally outweigh the possible risks. You can discuss the possible side effects with your doctor before you start treatment. Being warned about possible side effects can make them easier to cope with.

We have factsheets about individual hormonal therapies , with more information about how the drugs work and tips on coping with possible side effects.

## Subcapsular orchidectomy (removal of testicles)

Subcapsular orchidectomy is a simple operation. A small cut is made in the scrotum (the sac that holds the testicles), and the part of the testicles that produces testosterone is removed. The scrotum will be smaller than before. The operation can be done as a day patient under a local or general anaesthetic. Sometimes both testicles are completely removed.

Some men find the idea of this operation very distressing and feel that it makes them less of a man. However, others do not find this a problem. Orchidectomy can be effective in controlling the cancer and reducing symptoms in up to 90% of men (9 in 10).

After the immediate effects - some pain, and often swelling and bruising of the scrotum - the side effects of hot flushes and sexual impotence are similar to those of hormonal therapy drugs. Subcapsular orchidectomy avoids the use of drugs and some of the possible side effects such as breast enlargement and tenderness.

Subcapsular orchidectomy and other hormonal treatments are equally effective.

## Watchful waiting for locally-advanced prostate cancer

Watchful waiting means that your doctors will keep a close eye on you to see if the cancer is growing significantly. You will usually have blood tests every 1-3 months to monitor your PSA levels, frequent digital rectal examinations, and will be asked if you have developed any new symptoms. You may also have prostate biopsies every one or two years.

If these regular tests show that the cancer is starting to grow, or if you develop more symptoms, your doctors will then discuss treatment options intended to control the cancer and improve the

symptoms, such as hormone therapy. If your cancer is not growing or developing, it is safe to continue with watchful waiting.

## Surgery for locally-advanced prostate cancer

Surgery may be a treatment option for you. Before any operation, make sure that you have discussed it fully with your doctor. It is important that you understand what it involves, the chances of success, the likely side effects, and whether there are other treatment options that may be more appropriate to your particular circumstances. Your doctor may suggest that you have hormonal therapy before or after your surgery.

There are three types of surgery used to treat locally-advanced prostate cancer:

### **Radical prostatectomy**

A radical prostatectomy is carried out by specialist surgeons. The whole prostate gland is surgically removed either through a cut made in the tummy area (abdomen) or through a cut made between the scrotum and the back passage. This aims to get rid of all of the cancer cells. This operation is only suitable for a small number of men with locally-advanced prostate cancer. You can discuss with your specialist whether a prostatectomy would be suitable for you.

The operation often causes impotence - the inability to have and maintain an erection. In a few men it can also cause problems with control of passing urine (urinary incontinence). Sometimes it is possible to do a special type of operation, called a **nerve-sparing prostatectomy**, which can reduce the risk of erection problems.

As doctors cannot predict which men will be affected by these side effects it is important that you are fully aware of these risks beforehand. Your doctor will discuss the operation, its possible side effects and other possible treatment options with you.

Although prostatectomy can get rid of the cancer cells completely for some men, the cancer cells may come back in the area of the prostate a while after the operation. If this happens, external radiotherapy may be given to the prostate area. The treatment is given over a larger area, which can cause more side effects.

### **Laparoscopic prostatectomy**

With a laparoscopic prostatectomy your surgeon doesn't need to make a large opening but can take out your prostate gland using only four or five small cuts (about 1cm each) in your tummy area (abdomen). The surgeon uses specially designed instruments that can be put through these small cuts. This type of surgery is also known as keyhole surgery.

After making the small cuts the surgeon uses carbon dioxide gas to fill (inflate) the abdomen. A tiny video camera gives a magnified view of the prostate gland onto a video screen. The prostate gland is then cut away from surrounding tissues and removed through one of the cuts in the abdomen.

Most studies have shown that laparoscopic surgery is as successful at treating prostate cancer as open surgery. Your surgeon can discuss with you the potential risks and benefits. This type of surgery is only carried out by surgeons with specialised training and experience in the technique.

### **After your operation**

After prostatectomy you will have a drip (intravenous infusion) into a vein in your arm and a tube (catheter) to drain urine from the bladder. If the operation is done through the abdomen you will also have an abdominal wound. You may have a small tube in the wound to drain any excess fluid that is produced. After your operation you may have some pain or discomfort which may continue for a few weeks, particularly when you walk. Regular painkillers should help to ease this, so let the staff on the ward know if you are still in pain.

You will probably be ready to go home a week to ten days after your operation. Your catheter will probably stay in for one to three weeks to allow the urethra to heal. Arrangements can be made for a district nurse to visit you at home, and if you have any problems you should contact your doctor as soon as possible.

### **Side effects of radical prostatectomy**

Surgery to the prostate can cause problems in getting an erection (sexual impotence) and in controlling the bladder (incontinence). Erection problems are caused by a reduction in the blood flow to the penis due to damage to the arteries or nerves. Often the need to remove all of the cancer cells makes it impossible to avoid nerve damage. In men aged under 60 who have had nerve-sparing prostatectomy, the risk of erection problems after total prostatectomy may be 1 in 2 (50%) or higher. The risk increases to about 4 in 5 (80%) or more in men over the age of 70 and may be higher if nerve-sparing techniques are not used.

Problems with controlling the bladder as a result of radical prostatectomy are less common. Most men have some incontinence when the catheter is first removed, but this usually improves with time. About one year after the operation up to one in five (20%) of men will leak an occasional drop of urine. Some men may need to wear an incontinence pad, but it is very rare to be completely incontinent and need to have a permanent catheter. Another less common effect of surgery is scarring of the bladder which can make it difficult to pass urine. This is fairly easily treated with minor surgery (known as a bladder neck dilation).

Some men may find that they have diarrhea or constipation for a few months after prostatectomy.

### **Trans-urethral resection of the prostate (TURP)**

A TURP is carried out if it is necessary to remove the part of the tumour that is blocking the urethra (the tube that drains urine from the bladder). A tube which contains a miniature camera is passed through the urethra, into the prostate. A cutting instrument attached to the tube is then used to shave off the inner area of the prostate to remove the blockage.

This can be done under a general anaesthetic or an epidural. With an epidural, the lower body is numbed temporarily by injecting an anaesthetic into the spine so that you can't feel anything even though you are awake.

A TURP can't remove all of the cancer cells. It is used to relieve problems with passing urine.

### **After your TURP**

After your operation you will probably be up and about the next morning. You will usually have a drip, giving fluid into your vein. This will be taken out as soon as you are drinking normally. A tube (catheter) will drain fluid from your bladder into a collecting bag. It is usual for the urine to contain blood.

To stop blood clots from blocking the catheter, **bladder irrigation** may be used. This means that fluid is passed into the bladder and drained out through the catheter. The blood will gradually clear from your urine and the catheter can be taken out. At first you may find it difficult to pass urine without the catheter, but this should improve. Some men find that they have some urinary incontinence following this procedure. It can also cause some long-term difficulty in passing urine.

Most men are able to go home after three or four days. Occasionally it is necessary to keep the catheter in for a while after you go home. Before you leave hospital the nurse will show you how to look after your catheter and arrangements can be made for a district nurse to visit you at home to help with any problems.

You may have pain and discomfort for a few days after your operation, for which you will be given painkillers. These are usually very effective, but if you continue to have pain it is important to let the doctor or nurse looking after you know as soon as possible so that a more effective painkiller can be found.

Following a TURP about 1 in 5 (20%) men may have retrograde ejaculation. This means that, during ejaculation, semen goes backward into the bladder instead of through the urethra, so your urine may look cloudy after sex. This is harmless.

### **Orchidectomy (removal of testicles)**

Although this is an operation, the aim of removing the testicles is to reduce the levels of testosterone (male hormone) in the body, so it is discussed in the section about hormonal therapies. As there are many hormonal therapy drugs available now, orchidectomy is not used very often.

### **Care after an operation**

If you think that you might have any difficulties coping at home after your surgery, let your nurse or social worker know when you are admitted to hospital so that help can be arranged.

As well as being able to offer practical advice, many social workers are also trained counsellors who can offer valuable support to you and your family, both in hospital and at home. If you would like to talk to a social worker, ask your nurse or doctor to arrange it for you.

Before you leave hospital you will be given an appointment to attend an outpatient clinic for your post-operative check-up. This is a good time to discuss any problems you may have.

## Newer treatments for locally-advanced prostate cancer

The following are sometimes used for locally-advanced prostate cancer; however they are not widely available. If you think that one of the treatments may be suitable for you, it is best to discuss this with your cancer specialist. They can advise whether the treatment could be helpful in your particular case.

### **Brachytherapy**

Brachytherapy is a type of radiotherapy that uses radioactive 'seeds' inserted into the prostate. It is available in some hospitals in the UK. It is sometimes called **internal radiotherapy**, **implant therapy** or **seed implantation**. It can be carried out under a general anaesthetic or a spinal anaesthetic (epidural).

Brachytherapy is only suitable for a small number of men with locally-advanced prostate cancer and is usually given in combination with external beam radiotherapy.

There are two ways of giving brachytherapy:

**Standard brachytherapy** uses small radioactive metal 'seeds' that are inserted into the tumour so that radiation is released slowly over a period of time. The seeds are not removed but the radiation gradually fades away over about six months. There is no risk of it affecting other people.

**Temporary HDR (high dose rate) brachytherapy** involves placing tiny plastic tubes (catheters) into the prostate gland. Radioactive seeds are inserted into the catheters for a set period of time, and then withdrawn. After the treatment, the catheters are easily removed and no radioactive material is left in the prostate gland.

Brachytherapy may cause some swelling of the prostate, which can lead to blockage of the urethra, so a further catheter is sometimes inserted into the bladder to drain urine. This may be removed after a couple of hours or left in place overnight.

Antibiotics are given after the implant, to prevent infection. Most men go home the day after the implant, but some leave hospital as soon as they have recovered from the anaesthetic and are able to pass urine normally. After the implant it is best to avoid heavy lifting or strenuous physical activity for two or three days.

# Treatment for advanced prostate cancer

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## Overview of Treatments

The treatment options for advanced prostate cancer include hormonal therapy, surgery (to relieve symptoms), chemotherapy, radiotherapy (to relieve bone pain) and controlling symptoms.

### Choosing treatment

Deciding on the best treatment is not always straightforward and a number of factors have to be taken into account. The most important of these are:

- your general health
- your age
- where the cancer is and the symptoms it's causing
- the likely side effects of treatment
- your views about the possible side effects of treatment, and how much you are willing to risk side effects for the possible benefits in controlling the cancer
- which treatments, if any, you have had before.

The possible treatments for your situation are likely to be discussed by a group of doctors working together. This is known as a **multidisciplinary team** and includes a doctor who specialises in treating conditions of the prostate (urologist), and doctors who are specialists in radiotherapy, hormonal therapy and chemotherapy treatments (clinical oncologists). The team may also include specialist nurses, social workers, and physiotherapists. It is common to see a surgeon, an oncologist and a specialist nurse to help you to make a decision about treatment.

### Second opinion

Some people find it helpful to have another medical opinion to help them to decide about their treatment. Doctors can refer you to another specialist for a second opinion if you feel that this would be helpful

### Treatment choices

When prostate cancer has spread beyond the prostate gland and is affecting other parts of the body, it can no longer be cured. However, treatment can usually be given to control the cancer for as long as possible, relieve any symptoms and improve quality of life.

Most men with advanced prostate cancer are recommended to have hormonal therapy. A range of hormonal therapies are available.

Surgery to remove the prostate gland is not suitable for men with advanced prostate cancer, but occasionally a trans-urethral resection of the prostate (TURP) can be useful to relieve problems with passing urine.

Chemotherapy may be used if hormone therapy is no longer able to control the cancer. Radiotherapy is sometimes used to treat bone pain.

Treatments to relieve symptoms may also be given, such as painkillers. Each of the treatments has different benefits and side effects.

### **Consent to treatment**

Before you have any treatment, your doctor will explain its aims to you. They will usually ask you to sign a form saying that you give your permission (consent) for the hospital staff to give you the treatment. No medical treatment can be given without your consent, and before you are asked to sign the form you should have been given full information about:

- the type and extent of the treatment you are advised to have
- the advantages and disadvantages of the treatment
- any other treatments that may be available
- any significant risks or side effects of the treatment.

If you do not understand what you have been told, let the staff know straight away so that they can explain again. Some cancer treatments are complex, so it is not unusual for people to need repeated explanations.

It is often a good idea to have a friend or relative with you when the treatment is explained, to help you remember the discussion more fully. You may also find it useful to write down a list of questions before you go to your appointment.

You may feel that the hospital staff are too busy to answer your questions, but it is important for you to be aware of how the treatment is likely to affect you. The staff should be willing to make time for you to ask questions.

You can always ask for more time to decide about the treatment if you feel that you can't make a decision when it is first explained to you.

You are also free to choose not to have treatment. The staff can explain what may happen if you do not have it. It is essential to tell a doctor, or the nurse in charge, so that they can record your decision in your medical notes. You do not have to give a reason for not wanting to have treatment, but it can be helpful to let the staff know your concerns so that they can give you the best advice.

## **Benefits and disadvantages of treatments for advanced prostate cancer**

Your doctor will explain the benefits, possible disadvantages and side effects of the treatments to you. You can then decide what is best for your particular situation. The benefits and disadvantages of the treatments for advanced prostate cancer are outlined in the following pages. Before you have any treatment it is important that you are fully aware of them.



It is not possible for doctors to predict accurately who is going to be affected by the side effects of each treatment, so you need to be given full information about the risks beforehand and have plenty of opportunity to discuss them. Remember, there are often choices to be made about which treatment you should have, or even whether to have treatment. You can take as large or small a part in those choices as you wish.

## **Hormonal therapy**

Hormonal therapy lowers the level of testosterone in the body, either by using tablets or injections, or by removing the testes.

**Benefits:** Can shrink the cancer and delay its growth, and relieve symptoms for many months or years.

**Risks:** It can cause a range of side effects that include breast swelling, hot flushes, impotence and lowered sex drive.

## **Chemotherapy**

This is the use of anti-cancer (cytotoxic) drugs to kill cancer cells. Chemotherapy for prostate cancer is usually given as injections and drips (infusions) into a vein (intravenously).

**Benefits:** Can help to control the cancer and relieve symptoms if hormonal therapies are no longer working.

**Risks:** Chemotherapy can cause side effects, such as sickness, fatigue and hair loss.

## **Surgery**

Surgery can be used to relieve symptoms of urinary obstruction (trans-urethral resection of the prostate - TURP).

**Benefits:** Can help relieve symptoms that occur when passing urine.

**Risks of a TURP:** There a very small risk of urinary incontinence. Some men have problems getting an erection after a TURP.

## **Radiotherapy**

Radiotherapy uses high-energy rays to destroy cancer cells. It can be used to relieve symptoms of bone pain. This usually involves one or two treatment sessions given to the affected bone.

**Benefits:** Can help to relieve bone pain and strengthen a weakened bone. Usually has very few side effects - these are generally mild.

**Risks:** It can take 7-10 days for the radiotherapy to start reducing the pain and may take up to six weeks before the full effect is felt. Pain may become slightly worse before it gets better.

## Hormonal therapy for advanced prostate cancer

### About hormonal therapy

Hormonal therapy is the main treatment for men with advanced prostate cancer. It can shrink the cancer, delay its growth, and reduce symptoms. In order to grow, prostate cancer depends on the hormone **testosterone** produced by the testicles. Hormonal therapies reduce the amount or activity of testosterone in the body.

There are a range of hormonal therapies that can be used to treat advanced prostate cancer. If you have already had hormone treatment you may be advised to change to a different type. Hormonal therapies can be given as injections or tablets, or occasionally an operation (subcapsular orchidectomy) may be done to remove the part of the testicles that produces testosterone.

Hormonal treatment works well for most men with advanced prostate cancer, and the cancer can often be controlled for some time. Your doctor will monitor the cancer's response to the hormonal therapy by assessing any symptoms and examining you. Your PSA level will also be measured as this is usually a very good guide to the effectiveness of the treatment. If the cancer starts to grow again, your doctor may suggest you change to a different hormone therapy.

Although there are different medicines that can be used, at some point the cancer will stop responding to hormonal therapy. This is known as **hormone-refractory prostate cancer**. If hormonal therapy is no longer working, your doctor may suggest chemotherapy as an alternative treatment, or other palliative treatments to relieve symptoms.

### Injections

Some drugs 'switch off' the production of hormones from the testicles by reducing the levels of a hormone produced by the pituitary gland. These drugs are called **pituitary downregulators** or **gonadotrophin releasing hormone analogues (GnRH analogues)**. They include goserelin (Zoladex®), leuprorelin (Prostap®) and triptorelin (Decapeptyl®).

They are usually given as a pellet injected under the skin of the abdomen (goserelin), or as a liquid injected under the skin or into a muscle (leuprorelin or triptorelin). Injections are given either monthly or every three months.

### Tablets

Other hormonal therapy drugs work by attaching themselves to proteins (receptors) in the cancer cells. This blocks the testosterone from acting on the cancer cells. The drugs are called **anti-androgens** and are given as tablets. Commonly used antiandrogens are flutamide (Chimax®), Drogenil®), bicalutamide (Casodex®) and cyproterone acetate (Cyprostat®).

Anti-androgen tablets are also usually given for two weeks along with the first injection of a pituitary down-regulator. This prevents tumour flare, which is where symptoms can get worse after the first dose of treatment.

### **Anti-androgen withdrawal response**

If hormonal therapy with an anti-androgen drug has been given for some months or years and the cancer begins to grow again despite the treatment, stopping the anti-androgen may make the cancer shrink for a while. This is known as an **anti-androgen withdrawal response** and occurs in up to one-quarter (25%) of men who stop anti-androgen therapy.

### **Side effects**

Unfortunately most hormonal therapies can cause erection difficulties and loss of sexual desire for as long as the treatment is given. If the treatment is stopped, the problem may disappear. Some types of anti-androgens are less likely to cause impotence than others.

In some men who have hormonal therapies, the side effects that cause them the greatest problem are hot flushes and sweating. These stop if the treatment is stopped and the testosterone levels recover. In the meantime some medicines can help.

Hormonal treatment can also make you put on weight and feel tired, both physically and mentally. Some drugs (most commonly flutamide and bicalutamide) may also cause your breasts to swell and make them more tender. Your doctors may advise a short course of low-dose radiotherapy to your breasts before you start the drugs, to try to prevent swelling. If breast-swelling does occur then a tablet called tamoxifen may help ease this.

Some hormonal therapy, particularly GnRH therapy or removing the testicles, may increase your risk of developing diabetes or heart disease.

However, the benefits of hormonal treatment generally outweigh the possible risks. You can discuss the possible side effects with your doctor before you start treatment. Being warned about possible side effects can make them easier to cope with.

We have factsheets about individual hormonal therapies , with more information about how the drugs work and tips on coping with possible side effects.

### **Subcapsular orchidectomy (removal of testicles)**

Subcapsular orchidectomy is a simple operation. A small cut is made in the scrotum (the sac that holds the testicles), and the part of the testicles that produces testosterone is removed. The scrotum will be smaller than before. The operation can be done under a local anaesthetic without the need to stay in hospital overnight. Sometimes both testicles are completely removed.

Some men find the idea of this operation very distressing and feel that it makes them less of a man. However, others do not find it a problem. Orchidectomy is as effective as pituitary down regulators and avoids the need for regular injections.

After the immediate effects - some pain, and often swelling and bruising of the scrotum - the side effects of hot flushes and sexual impotence are similar to those of hormonal therapy drugs.

## Surgery for advanced prostate cancer

Surgery may be a treatment option for you. If you have advanced prostate cancer it's not beneficial to completely remove the prostate gland, but your doctors may suggest an operation called a TURP to relieve problems passing urine.

Some men may have surgery to remove their testicles (an orchidectomy). The aim of removing the testicles is to reduce the levels of testosterone in the body, so it is discussed in the section about hormonal therapies.

Make sure that you have discussed any operation fully with your doctor beforehand. It is important that you understand what it involves, including the chances of success, the likely side effects, and whether there are other treatment options that may be more appropriate to your particular circumstances.

### **Trans-urethral resection of the prostate (TURP)**

A TURP is carried out if it is necessary to remove the part of the tumour that is blocking the urethra (the tube that drains urine from the bladder). A tube which contains a miniature microscope is passed through the urethra, into the prostate. A cutting instrument attached to the tube is then used to shave the inner area of the prostate to remove the blockage.

This can be done under a general anaesthetic or an epidural. With an epidural the lower body is numbed temporarily by injecting an anaesthetic into the spine so that you can't feel anything even though you are awake.

A TURP can't remove all of the cancer cells and is only used to relieve problems with passing urine.

### **After your TURP**

After your operation you will probably be up and about the next morning. You will usually have a drip giving fluid into your vein. This will be taken out as soon as you are drinking normally. A tube (catheter) will drain fluid from your bladder into a collecting bag. It is usual for the urine to contain blood.

To stop blood clots from blocking the catheter, **bladder irrigation** may be used. This means that fluid is passed into the bladder and drained out through the catheter. The blood will gradually clear from your urine and the catheter can be taken out. At first you may find it difficult to pass urine without the catheter, but this should become easier. Some men find that they have some incontinence of urine following this procedure. It can also cause some long-term difficulty in passing urine.

Most men are able to go home after three or four days. Occasionally it is necessary to keep the catheter in for a while after you go home. If this is the case, the nurse will show you how to look after your catheter before you leave hospital, and arrangements can be made for a district nurse to visit you at home to help with any problems.

You may have pain and discomfort for a few days after your operation, for which you will be given painkillers. These are usually very effective, but if you continue to have pain it is important to let the doctor or nurse looking after you know as soon as possible so that a more effective painkiller can be found.

Following a TURP about 1 in 5 (20%) men may have retrograde ejaculation. This means that during ejaculation semen goes backward into the bladder, instead of forward through the urethra, so your urine may look cloudy after sex. This is harmless.

### **Care after an operation**

If you think that you might have any difficulties coping at home after your surgery, let your nurse or social worker know when you are admitted to hospital so that help can be arranged. As well as being able to offer practical advice, many social workers are also trained counsellors who can offer valuable support to you and your family, both in hospital and at home. If you would like to talk to a social worker, ask your nurse or doctor to arrange it for you.

Before you leave hospital you will be given an appointment to attend an outpatient clinic for your post-operative check-up. This is a good time to discuss any problems you may have.

## **Chemotherapy for advanced prostate cancer**

Chemotherapy is the use of anti-cancer (cytotoxic) drugs to destroy cancer cells. Although it is often used to treat cancer, it is less commonly used to treat cancer of the prostate.

### **When it is used**

Chemotherapy is mainly used to treat advanced prostate cancer that is no longer being controlled by hormonal therapy (**hormone-refractory prostate cancer**). It is used in this situation to try to shrink and control the cancer and relieve symptoms, with the aim of prolonging a good quality of life. The chemotherapy drugs are usually given by injection into a vein (intravenously).

Two of the drugs used are docetaxel (Taxotere®) and mitoxantrone.

Sometimes, steroids (such as prednisolone) may be given alongside the chemotherapy.

## **Side effects**

Chemotherapy drugs can cause side effects, but these can usually be well controlled with medicines. The doctors will look carefully at the possible advantages and disadvantages of chemotherapy treatment for your situation.

Each person's reaction to chemotherapy is different. Some people have very few side effects, while others experience more. The main side effects are described here, along with some of the ways they can be reduced.

Our section on chemotherapy discusses the treatment and its side effects in more detail. Information on individual drugs and their particular side effects is also available.

### **Lowered resistance to infection**

Chemotherapy can reduce the production of white blood cells by the bone marrow, making you more prone to infection. Contact your doctor or the hospital straightaway if:

- your temperature goes above 38°C (100.5°F).
- you suddenly feel ill (even with a normal temperature).

You will have a blood test before having more chemotherapy, to make sure that your cells have recovered. Occasionally your treatment may have to be delayed if your blood count is still low.

### **Bruising or bleeding**

Chemotherapy can reduce the production of platelets, which help the blood to clot. Let your doctor know if you have any unexplained bruising or bleeding, such as nosebleeds, blood spots or rashes on the skin, and bleeding gums.

### **Anaemia (low number of red blood cells)**

You may become anaemic. This may make you feel tired and breathless.

### **Nausea and vomiting**

Some chemotherapy drugs can make you feel sick or even be sick. This can be helped by taking antisickness drugs (anti-emetics), which your doctor can prescribe.

### **Sore mouth**

Some chemotherapy drugs can make your mouth sore and may cause small ulcers. Regular mouthwashes are important and the nurses will show you how to do these properly.

## Poor appetite

If you don't feel like eating during treatment, you could try replacing some meals with nutritious drinks or a soft diet.

## Hair loss

Hair loss is a common side effect of some chemotherapy drugs. This can be very distressing for some people. However, there are many ways of covering up hair loss, including wigs, hats or scarves. You may be entitled to a free wig from the NHS. Your doctor or the nurse looking after you will be able to arrange for a wig specialist to visit you. If you do lose your hair, it should start to grow back within about 3-6 months of the end of treatment.

## Tiredness

Chemotherapy affects people in different ways. Some people find they are able to lead a fairly normal life during their treatment, but many find they become very tired and have to take things much more slowly. Just do as much as you feel like and try not to overdo it.

**Although they may be hard to deal with at the time, these side effects will gradually disappear once your treatment is over. Your doctor will tell you what to expect from your treatment.**

## Radiotherapy for advanced prostate cancer

Radiotherapy may be given if the cancer has spread to other parts of the body, such as the bones. In this situation the treatment can't get rid of all the cancer cells and cure the cancer, but it can reduce symptoms such as pain, and make you more comfortable. This is known as **palliative radiotherapy**.

### Palliative radiotherapy

If cancer of the prostate has spread to the bones, radiotherapy can be given to relieve pain. Treatment is given to the affected bone or area. It may be given as a single treatment, or may be divided into a series of smaller treatments. Many men notice that the pain eases within a couple of days, while others may have to wait three or four weeks. Painkilling drugs can still be taken if necessary.

The radiotherapy staff will explain your treatment and the possible side effects to you beforehand.

Occasionally, if there are cancer cells in more than one area of bone you may be given treatment known as **hemibody irradiation**. Treatment is given over a large area, either the top or the bottom half of the body. This type of radiotherapy normally gives good pain relief within a few days. However, the side effects of treatment are likely to be greater than with local radiotherapy to a given area. Your doctor will prescribe antisickness drugs for you and you may

have a short stay in hospital. If necessary the other half of your body can be treated later, once the side-effects of treatment have worn off.

We have a booklet on secondary cancer in the bone which gives more detail about the possible treatments.

### **Strontium 89**

This treatment for secondary cancer in the bone uses a radioactive material (isotope) called strontium 89, which is taken up by the affected areas of bone. It is particularly useful if several areas of bone are affected and are causing pain. The isotope is given as an injection into a vein in the arm; this can usually be done in the outpatients department. After the injection, a small amount of radioactivity is present in the urine, so men are advised to use flush toilets instead of urinals to reduce the risk of anyone else being exposed to the radiation.

The hospital staff will discuss any special precautions with you before you go home. The amount of radioactivity is very small and it is safe for you to be with other people, including children. Most men feel some effect from the treatment within a few weeks, although occasionally the pain may get slightly worse before it gets better.

## **Controlling symptoms of advanced prostate cancer**

Advanced prostate cancer may cause unpleasant symptoms. The symptoms can be relieved by treating the cancer itself. Sometimes treatments work very quickly and you may notice an improvement within a few days. At other times treatments may take longer to work and it can be a couple of weeks before you begin to feel their full benefits.

Apart from treating the actual cancer there are many other ways to help relieve symptoms. This section gives ideas on what maybe helpful.

### **Pain**

There are many different types of painkillers. They vary both in their strength and in the way they work. Some painkillers are better for certain types of pain and some suit certain men better than others. If you are taking painkillers, it is better to take them regularly, even if you are not in pain when the next dose is due. This is because painkillers not only relieve pain at the time, but work to prevent it from coming back. Painkillers can be taken as tablets, liquids or as suppositories (by insertion into the back passage). Some are also given as injections under the skin.

It is important to tell your doctor or nurse if the painkillers you are taking aren't easing your pain. Your doctor can either change the dose or change the painkillers to one that will be more effective for you.

Pain caused by advanced prostate cancer cells in a bone can be severe. Radiotherapy is very good at easing this type of pain, but can take a few weeks to work. Often, drugs containing



**morphine** are needed while the treatment is being planned or while you are waiting for the radiotherapy to work.

Some men find that morphine makes them feel drowsy when they first start taking it, but this usually only lasts for a day or so. Taking morphine may also make some men feel sick at first, and they may need an anti-sickness tablet (anti-emetic) prescribed by the doctor for the first few doses. It may also cause constipation.

A number of other drugs can be helpful in relieving pain. If pain is due to prostate cancer cells in a bone, **non-steroidal anti-inflammatory drugs (NSAIDs)** can help. These drugs have few side effects other than sometimes irritating the lining of the stomach.

Drugs called bisphosphonates can also help to relieve bone pain. They may be given into a vein (intravenously) in the outpatient department every 3-4 weeks or be taken as tablets. Some of the tablets must be taken on an empty stomach an hour or so before food and may cause stomach upsets.

Bisphosphonates can help to strengthen bones and lower the risk of fractures. They can also reduce high levels of calcium in the blood (hypercalcaemia) as well as reducing pain. Bisphosphonates that may be used include clodronate (Bonefos® or Loron®), ibandronate and zoledronic acid (Zometa®).

Your doctor can also prescribe sleeping tablets, or a mild relaxant, which may be particularly helpful if you are having trouble sleeping because of the pain. Anxiety and lack of sleep can make pain worse. For this reason some men also find that practising relaxation techniques helps them feel more comfortable.

Heat and gentle massage can also help ease aches and pains. A good long soak in a warm bath, a well protected hot-water bottle, and some baby oil or lotion massaged into the skin can often make a difference.

Being in pain can make you feel very low and it is important to let your doctor know if the drugs prescribed aren't working. It is also important to keep in mind that there are many different ways to control pain. There are also special NHS pain clinics run by doctors and nurses expert in treating pain. You can ask your doctor to refer you to a pain clinic if your pain is not controlled by any of the above methods.

## **Weakness and numbness in the legs**

If the bones in the spine are affected this can sometimes lead to weakness and tingling or numbness in the legs (due to pressure on the spinal nerves). If this is not treated the nerves may be permanently damaged. Treatment can often prevent damage, so if you develop any feelings of weakness, numbness or pins and needles in the legs, it is important to contact your cancer specialist immediately. Cancer in the spinal bones causing pressure on the spinal cord is known as malignant spinal cord compression.

## **Tiredness**

You may find that you easily become very tired and that your body is no longer as strong and reliable as it once was, either because of the cancer, or because of the side effects of treatment.

You may feel as though you have no strength and everything is more of an effort.

It can be difficult to adjust if tiredness makes it difficult for you to drive or take part in sports, or if you have to walk more slowly than before. It will take time for you to get used to these changes and to accept having to rest, or not being able to do activities that you once took for granted.

If you have little energy, save it for the things you really want to do. Very often, re-organising your daily activities can be helpful - for example, by setting aside a time to rest every day. Practical aids such as wheelchairs can also be useful. You may feel that by using a walking stick, frame or wheelchair you are 'giving in' to your illness, but they can greatly improve your life, allowing you to move around more easily.

Sometimes the cancer or the treatment can cause anaemia, which can lead to tiredness. If this happens you may be given a blood transfusion, which can often give you more energy and reduce the tiredness.

## **Constipation**

Constipation can be caused by strong painkillers, or if there is too much calcium in your blood (caused by prostate cancer cells affecting a bone). Constipation can also occur if you lose your appetite and you are not eating as much as before.

Having fibre in your diet, drinking plenty of fluids and walking will help, but you may also need to take a medicine to stimulate the bowel (a laxative). Your doctor will be able to prescribe a suitable one for you. Your nurses can also advise you on ways to prevent or relieve constipation.

## **Difficulty sleeping**

Even though you may feel tired it is not uncommon for men with advanced prostate cancer to have difficulty sleeping. There can be many reasons for this, not least that you probably have a lot on your mind.

Sleeping tablets can be helpful, and the newer types are less likely to make you feel drowsy the following day. You can also try some natural remedies for sleeplessness - malted milk drinks before bed, a glass of brandy or whisky in the evening, warm baths with soothing bath oils, or a relaxing body massage to relieve muscle tension.

## **High levels of calcium in the blood (hypercalcaemia)**

Prostate cancer cells affecting a bone may make extra calcium pass out of the damaged bone and into the blood. High levels of calcium in the blood can make you feel extremely tired and thirsty, and pass lots of urine. Hypercalcaemia can also make you feel sick and some people

become irritable and confused. Depending on your calcium level, you may be able to have treatment as an outpatient or you may need to spend a few days in hospital.

Your doctor will give you drugs known as bisphosphonates. These drugs are given as a drip. Each treatment takes between 15 minutes and one hour, and can be repeated every few weeks. They are usually effective at getting the calcium levels back to normal. Your doctor may also ask you to start drinking plenty of water. Sometimes it may be necessary to use a 'drip' to give extra fluids into a vein in your arm (an intravenous infusion).

### **Strengthening a weakened bone**

If prostate cancer cells have weakened a bone so much that there is a risk of it breaking, you may need an operation. This is done under a general anaesthetic. The surgeon will put a metal pin into the centre of the bone and may also fix a metal plate to the bone. This holds the bone firm so that it will not break. The pin and plate can stay in permanently to protect the bone. This is mainly used for the long bones in the legs but is sometimes used for secondaries in other bones, such as the spine. If your hip is affected, the hip joint may be replaced.

You will need to stay in hospital for a week, or longer, after the operation so that you can recover fully. However, most men are able to get up and start walking a couple of days after the surgery.

This sort of operation may be done before radiotherapy is given, if there is a chance the bone may break before the radiotherapy has treated the cancer cells.

If the doctors feel the bone is not likely to fracture, bisphosphonates may be used to help strengthen the bone and prevent it breaking.

### **Complementary therapies**

Some men find that complementary therapies or practices can help them to feel stronger and more confident in dealing with advanced prostate cancer. They can usually be used alongside conventional treatments and medicines.

Complementary therapies can help to improve quality of life and wellbeing, and can sometimes help to reduce symptoms. Some complementary therapies, such as meditation or visualisation can be done by the person with cancer themselves and can reduce anxiety. Other therapies, such as gentle massage, can be carried out by relatives or carers and can help them to support the person.

Physical contact and touch can be among the most powerful forms of support for people who are faced with uncertainty, fear or pain, whether emotional or physical.

Many hospices and hospitals offer complementary therapies alongside conventional care. These may include: aromatherapy, colour and sound therapy, massage relaxation, visualisation or guided imagery techniques and acupuncture.

## Clinical trials

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### Research - clinical trials for prostate cancer

Cancer research trials are carried out to try to find new and better treatments for cancer. Trials that are carried out on patients are known as clinical trials.

Clinical trials may be carried out to:

- test new treatments, such as new chemotherapy drugs, gene therapy or cancer vaccines
- look at new combinations of existing treatments, or change the way they are given, to make them more effective or to reduce side effects
- compare the effectiveness of drugs used to control symptoms
- find out how cancer treatments work
- see which treatments are the most cost-effective.

Trials are the only reliable way to find out if a different type of operation, chemotherapy, radiotherapy, or other treatment is better than what is already available.

### Taking part in a trial

You may be asked to take part in a treatment research trial. Trials help to improve knowledge about cancer and develop new treatments. You will be carefully monitored during and after the study.

Usually, several hospitals around the country take part in these trials. It's important to bear in mind that some treatments that look promising at first are often later found to be not as good as existing treatments, or to have side effects that outweigh the benefits.

If you decide not to take part in a trial your decision will be respected and you do not have to give a reason. There will be no change in the way you're treated by the hospital staff and you will be offered the standard treatment for your situation.

### Blood and tumour samples

Many blood samples and tumour biopsies may be taken to help make the right diagnosis. You may be asked for permission to use some of your samples for research into cancer. If you're taking part in a trial you may also be asked to give other samples which may be frozen and stored for future use, when new research techniques become available. These samples will have your name removed so you can't be identified.

The research may be carried out at the hospital where you are treated, or it may be at another hospital. The samples will be used to increase knowledge about the causes of cancer and its treatment, which could improve the outlook for future patients. This type of research takes a long time, and results may not be available for many years.

Our information about current research explains the trials looking at treatment for prostate cancer.

## Current research into treatments for prostate cancer

There are several trials looking at the treatment of prostate cancer.

### Early prostate cancer

#### Photodynamic therapy (PDT)

PDT is being tried in a few hospitals as a treatment for cancer that has come back in the prostate after initial treatment. A light-sensitive drug is given by injection into a vein.

There is a delay between the drug being given and the next stage of treatment. This allows time for the drug to concentrate in the cancer cells. In the second stage of treatment, a laser light is shone directly on to the cancer. The light activates the drug and the cancer cells are killed. After the treatment, patients are sensitive to light for up to three weeks and need to stay in dim light. It is not yet known how effective PDT is for prostate cancer.

#### Combination treatments

If you have prostate cancer that has spread to the bones, and is no longer responding to hormonal therapy, you may be able to take part in a trial looking at the benefits of combining the chemotherapy drug docetaxel (Taxotere®) with a new drug called ZD4054.

This new drug is a type of biological therapy. It works by blocking growth receptors on cancer cells called endothelin receptors, and is given as a tablet. Half of the men in the trial will be given docetaxel and ZD4054 and the other half will be given docetaxel with a dummy drug (a placebo).

If prostate cancer spreads to the bones, you may receive treatment with a bisphosphonate, such as zoledronic acid (Zometa®), the chemotherapy drug docetaxel (Taxotere®) and a type of radiotherapy called strontium 89. The treatments are usually given on their own. A trial is looking at different combinations of these treatments to see which combination works best.

#### Bisphosphonates

A trial is under way to see whether the bisphosphonate ibandronate could be used instead of radiotherapy to control pain from bone secondaries. Other trials are researching whether bisphosphonates can help to prevent or delay the spread of prostate cancer to the bones. Bisphosphonates that may be used include clodronate (Bonefos® or Loron®), ibandronate and zoledronic acid (Zometa®).

## Abiraterone

A new type of hormonal therapy called abiraterone acetate is being researched as a possible treatment for men with advanced prostate cancer where hormonal therapy is no longer working. It is currently only available to men in the UK who take part in a clinical trial.

The male hormone testosterone stimulates prostate cancer cells to grow and hormonal therapies can help to slow down the growth. Most hormonal therapies either stop the production of testosterone in the testicles or block it from connecting with the cancer cells. Abiraterone works in a different way. To produce testosterone the body needs an enzyme called cytochrome P17.

Abiraterone works by blocking the enzyme so that testosterone can't be produced. Results from small research trials have shown that abiraterone can reduce the PSA level for a while in some men with advanced prostate cancer. Results from other research trials are expected soon. There is a large trial looking at using abiraterone in combination with a steroid called prednisolone. This stopped recruiting new participants in April 2009, and it will be a few years before the results are known.

## Living with prostate cancer

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### Follow-up after treatment for prostate cancer

After your treatment has finished, you will have regular checkups, usually involving a PSA test. These will probably continue for many years.

Many people find that for a while they get very anxious before the appointments. This is natural and it may help to get support from family, friends or one of the useful organisations we have listed.

If you have any problems, or notice any new symptoms between check-ups, let your doctor know as soon as possible.

People whose treatment is over apart from regular check-ups might find our booklet about adjusting to life after cancer helpful.

### Dealing with side effects of treatment for prostate cancer

Unfortunately, treatment for cancer of the prostate can cause unpleasant and distressing side effects, both short and long-term.

## Sexual problems/erection difficulties

Any prostate cancer treatment can make you less interested in sex. This is known as loss of libido and is common to many illnesses, not just cancer. Erection difficulties (impotence) are also a fairly common side effect of prostate cancer treatment.

Many men find it difficult to talk about such personal subjects as erection problems, particularly with their doctor or other medical staff. The problems may not be permanent and can sometimes be caused by anxiety rather than the treatment. Some men also find it difficult to talk to their partner for fear of rejection, but these fears are often unfounded. Sexual relationships are built on many things, such as love, trust and common experiences. You may find it helpful to read our information about relationships and communication.

If you find the effect on your sex life difficult to deal with you could discuss this with your doctor. Although you may worry that this will be embarrassing, doctors who deal with prostate cancer are very used to talking about these issues and will be able to give you advice. There are practical ways to help overcome impotence and your doctor will be able to give you further information about them. Most hospitals also have specialist nurses who can discuss the issues with you.

## Medicines

If you have problems getting or maintaining an erection there are many options to help. They may give you a hard penis but won't necessarily increase your feelings of arousal.

The tablets sildenafil, vardenafil and tadalafil have similar benefits and risks. They all require sexual stimulation in order to achieve an erection and can all cause erections that last a long time. If the erection goes on for more than two hours it can damage the tissues of the penis, so if this happens you should get medical help as soon as possible. The tablets shouldn't be taken if you are taking some types of heart medicines (nitrates).

**Sildenafil** (Viagra®) tablets can help produce an erection by increasing the blood supply in the penis. They are usually taken an hour before lovemaking, and an erection then occurs following direct sexual stimulation. These tablets should be prescribed by your GP. They can cause side effects for some men, which include heartburn, headaches, dizziness and visual changes.

**Vardenafil** (Levitra®) tablets are similar to sildenafil. They normally work within 25-60 minutes. The most common side effects are headaches and flushing of the face.

**Tadalafil** (Cialis®) tablets can be taken up to 24 hours before lovemaking. Your doctor may be able to prescribe them on the NHS. Tadalafil works by increasing the blood supply to the penis.

## Injections

Injections of **alprostadil** (Caverject®, Viridal®) or **papaverine** directly into the penis, using a small needle, can cause an instant erection. The drugs restrict blood flow and trap blood in the penis. Experimentation is often needed at first to get the dose right. One of the possible side effects is that if too much of the drug is given the erection stays for too long and there is a

danger of damaging the tissues. If the erection lasts longer than two hours you should get medical help as soon as possible.

Some men who use these injections say that the head of the penis doesn't get as hard as the shaft.

The injections are prescribed by your GP. Usually this method is recommended to be used not more than once a week, which may not be enough for some men.

Pellets of **alprostadil** (MUSE®) can be inserted into the penis. The pellets melt into the urethra, and, after some rubbing to distribute it into the nearby tissues, produces an erection. Some men find that the pellet is uncomfortable at first.

## **Pumps**

Vacuum pumps can also be used to produce an erection. They are sometimes called vacuum constriction devices.

The pump is a simple device with a hollow tube that you put your penis into. The pump makes the penis fill with blood by creating a vacuum. A rubber ring is then put around the base of the penis to give an erection.

The erection can be maintained for about 30 minutes. Once you have finished making love the ring is taken off and the blood flows normally again. The advantage of this device is that it doesn't involve inserting anything into the penis or taking any drugs, but it can take a few tries to get used to using it. It's particularly helpful for people who are not able to take other medicines.

Your partner may find your penis slightly colder than usual. The ring should only be worn for half an hour at a time.

Pumps can be used as often as you want, as long as you allow half an hour between each use. They are available on the NHS.

Most men who have erection problems after prostatectomy or radiotherapy will probably gain some benefit from the treatments described above, but everyone is different. Specialist advice and counselling is available and can be useful for many men. You can ask your doctor to refer you.

Any medical treatment for sexual problems caused by prostate cancer is available on the NHS.

Our booklet on sexuality and cancer discusses all of the above methods in detail. It also discusses the effect that sexual problems may have on your relationship.

## **Urinary incontinence**

Losing control of your bladder may be caused by the cancer itself, by surgery, or rarely by radiotherapy. A lot of progress has recently been made in dealing with incontinence, and there are several different ways of coping with the problem. You can discuss any worries with your



doctor or nurse. Some hospitals have specific medical staff who can give advice about incontinence. The Bladder and Bowel Foundation can also offer useful information.

It's important to recognise that these problems don't affect all men. You can ask your doctor, or specialist nurse about your treatment and its possible side effects. Then you'll be better prepared to cope if problems arise.

## **Infertility**

Most treatments for cancer of the prostate are likely to cause infertility, which means that you will no longer be able to father a child. This can be very distressing if you want to have children. Your doctor or radiotherapist can talk to you about this before you start treatment and if you have a partner you may wish to discuss the issue with them. It is sometimes possible to store sperm before treatment starts. The sperm may then be used later as part of fertility treatment.

We have information on ways of preserving fertility.

## **Breast swelling**

If your doctors recommend hormone treatment that may cause breast swelling, they may advise a short course of low-dose radiotherapy to your breasts, before you start the drugs. This will very often prevent any breast swelling, and causes very few side effects or none at all. Alternatively, taking a low dose of another hormonal drug called tamoxifen may prevent breast swelling.

## **Living with and after cancer**

Cancer can affect many areas of your life such as your finances, work, your emotions and relationships. Find information and advice about what the effects might be, how to deal with them and how we can help.

### **Emotional effects**

Information on the emotions you might experience as a result of your cancer diagnosis, ways that you might manage them and other sources of support.

### **Relationships and communication**

Advice on how to talk to other people, talking to children, relationships and sexuality.

***NOTE: JASCAP has booklets on the above subjects.***

## Questions you might like to ask your doctor or surgeon

You can fill this in before you see the doctor or surgeon, and then use it to remind yourself of the questions you want to ask, and the answers you receive.

1. \_\_\_\_\_

Answer \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

Answer \_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

Answer \_\_\_\_\_

\_\_\_\_\_

4. \_\_\_\_\_

Answer \_\_\_\_\_

\_\_\_\_\_

5. \_\_\_\_\_

Answer \_\_\_\_\_

\_\_\_\_\_

## **JASCAP : We need your help**

We hope that you found this booklet useful.

To help other patients and their families we need and intend to extend our Patient Information Services in many ways.

Our Trust depends on voluntary donations. Please send your donation by Cheque or D/D payable in Mumbai in favour of "JASCAP".

### **Note for Reader**

This JASCAP booklet is not designed to provide medical advice or professional services and is intended to be for educational use only. The information provided through JASCAP is not a substitute for professional care and should not be used for diagnosing or treating a health problem or a disease. If you have, or suspect you may have, a health problem you should consult your doctor.

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