

How prostate cancer is diagnosed

This fact sheet is for anyone who would like to know more about how prostate cancer is diagnosed. It describes the tests used to diagnose prostate cancer and explains what the results may show. It also suggests some questions to ask your specialist team and gives details of where to get more information about the tests. It briefly describes the PSA test but more information on this is given in our booklet about PSA testing.

Prostate cancer and other prostate problems can cause similar symptoms but are treated differently so it is important to get an accurate diagnosis. However, most men with early prostate cancer have no symptoms at all. Call our confidential Helpline on 0800 074 8383 for more information on risk factors and symptoms of prostate problems. If you are worried about any symptoms or you think you may be at greater risk of getting prostate cancer, your GP will be able to help you decide what course of action to take.

In order to find out what is causing your prostate problem, your GP will ask you about any symptoms and may carry out some tests. The results of these tests will tell you and your doctor more about what, if anything, is wrong.

The tests that your GP can do are:

- First, a urine test to rule out infection, and if this is negative, then a blood test to measure the PSA (Prostate Specific Antigen) level in your blood
- A physical examination called a DRE (Digital Rectal Examination)

Hospital tests that you may have are:

- TRUS (Trans-Rectal Ultra Sound) guided biopsy
- CT scan
- MRI scan
- Bone scan with or without X-rays

The TRUS guided biopsy will tell you if prostate cancer has been found, while the rest of the scans are usually done to 'stage' a cancer once it has been found. Some of these tests may not be carried out if the diagnosis is clear without them.

Tests done by the GP

PSA test

If you or your GP are concerned that you might have a prostate problem, your GP will ask for a blood sample from you. This blood sample should only be taken after you have had a urine test to check that you do not have a urinary infection.

The PSA test is not a test specifically for cancer, but can show that there is a problem with the prostate. It should be used together with other tests for diagnosing prostate cancer. Your GP should talk to you about the advantages and disadvantages of having the test and answer any questions you may have before you decide whether to have the test or not.

If you would like more information about the PSA test call our confidential Helpline on 0800 074 8383.

If you decide to go ahead, your blood sample will be sent to a laboratory to test for PSA (Prostate Specific Antigen). PSA is a protein that is only produced by the prostate gland. Its job is to keep the fluid that carries sperm (semen) in a liquid form. All men have some PSA in their blood, and the PSA level can be affected by:

Age

PSA rises with age. The accepted normal PSA test result is up to 2.5 ng/ml for men in their forties, and up to 6.5 ng/ml for men in their seventies.

Infection

A urine infection can cause the PSA to rise. You will have a simple urine test to rule out infection before having a PSA test.

BPH (Benign Prostatic Hyperplasia)

BPH is a common condition that mainly affects men over the age of 50. It is a non cancerous enlargement of the prostate. The increase in size may cause the prostate gland to produce more PSA. Read our leaflet on **BPH** for more information.

Prostatitis

This is inflammation of the prostate gland. The inflammation allows more PSA to move from the prostate into the blood and causes the PSA level to rise. Ask for our leaflet on **Prostatitis** for more information.

Prostate cancer

Prostate cancer may cause the PSA level in the blood to rise. However, some men with early prostate cancer may not have a raised PSA.

Vigorous exercise

It is not clear whether exercise such as cycling affects the PSA level. You may be advised to avoid vigorous exercise in the 48 hours before a PSA test.

Ejaculation

Ejaculation in the 48 hours before a PSA test may affect the results, especially in younger men.

Digital rectal examination

There is disagreement over whether a DRE

will affect the PSA result. If possible, the PSA test should be done before a DRE.

Biopsy

If you have had a biopsy in the last six weeks before a PSA test, this can affect the PSA result.

It can take between one and two weeks to get the test results. If the PSA result is abnormally high for your age, your doctor will either repeat the test, or arrange for you to have further tests. The PSA result alone cannot tell you whether or not you have prostate cancer. A high PSA level in the blood can commonly be caused by other conditions as described above. The higher the level of PSA, the greater the risk that prostate cancer is the underlying cause. A normal PSA does not completely rule out prostate cancer.

DRE

A common way of diagnosing a prostate problem is for the doctor to feel the prostate gland through the wall of the back passage (rectum). This is called a DRE (Digital Rectal Examination).

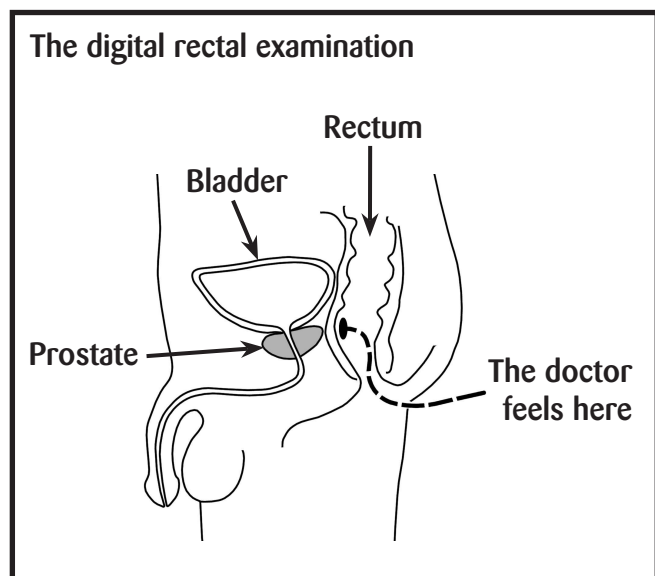
The DRE may be carried out by your GP and will be repeated by the hospital specialist, if your GP thinks you should see one. If you have a prostate problem, the DRE will become a familiar examination.

You will be asked to lie on your left side, on an examination table with your knees brought up towards your chest. If you find it easier, you can stand and lean over the back of a chair or across the examination table instead.

The doctor will put on a thin vinyl or rubber glove, lubricate their gloved forefinger with gel and slide it gently into your back passage. You may find this uncomfortable or embarrassing, but it should not be painful.

The doctor feels the back surface of the prostate gland for any hard or irregular areas and to estimate its size. If the prostate gland is larger than expected this could be a sign of BPH. A prostate gland with hard bumpy areas may suggest prostate cancer. If the DRE result gives cause for concern, you will

be referred to a hospital specialist. This will usually be a urologist.



Hospital tests

The urologist may decide to repeat some of the tests that you were given by your GP. After examining you, they may be able to reassure you and your GP that there is nothing to worry about, or offer you another PSA test in the near future to check that your PSA is not rising. However, if they are still concerned that you may have prostate cancer, they may need to carry out a further test, called a TRUS biopsy.

TRUS (Trans-Rectal Ultra Sound)

Guided Biopsy

The decision to have a biopsy is something you have a say in. Talk to your doctor about the advantages and disadvantages of having a biopsy.

Having a high PSA level alone does not necessarily mean you must have a biopsy as prostate cancer is also found in men with a normal PSA level.

The aim of a prostate biopsy is to detect prostate cancer that has the potential to cause disruptions to your life style and/or life expectancy.

If your PSA is very high the cancer may have already spread to the bones and therefore there may be no need to do a biopsy at all. Your specialist will advise you on this and whether you will need a biopsy or not by using other tests together with your medical

history and other risk factors such as your age and ethnicity.

The prostate needle biopsy involves taking a number of small pieces of prostate tissue to be looked at more closely under the microscope.

You may be given an appointment to come back to the hospital to have the biopsy taken, or you may be offered a biopsy there and then. You will be asked to stop taking certain medicines (particularly ones which thin the blood) before the appointment. Your hospital will give you advice on this.

The biopsy will be taken either in the X-ray department or in the prostate clinic. You should be given a local anaesthetic injection into the prostate to help reduce any discomfort when the biopsy samples are taken. It is all over within about 10-15 minutes and you will be able to go home soon after.

How does TRUS work?

Trans Rectal Ultrasound Scans use sound waves to make an image of the prostate. This is shown on a screen similar to a small television. The scan allows the specialist to measure the size of the prostate and helps them to guide the biopsy needles.

What happens at the biopsy appointment?

The biopsy will be taken either by the urologist, a radiologist, or a specialist nurse who is trained in the use of ultrasound. The ultrasound probe is lubricated with gel and passed into your back passage (rectum). The probe is the size of a very fat finger and should not feel any more uncomfortable than the DRE. The needle is then placed down the shaft of the probe and is passed through the wall of the back passage into the prostate gland, under the guidance of the ultrasound image.

You may feel a short sharp sensation as the needle goes in. Each man is different and while some describe the biopsy as painful, others have only slight discomfort.

Depending on the preference of your specialist, you may have six, eight, ten, or twelve samples taken. If you have a bigger

The Gleason grade gives the doctor an idea about how aggressive the cancer is likely to be and how quickly it is likely to spread outside of the prostate.

The cancer cells within the prostate may be at different stages of development, with some behaving more aggressively than others. The doctor takes this into account by looking at the most common types of cancer cell patterns in the biopsy sample.

Each of these patterns is then given a Gleason grade between 1 to 5, with 1 being the least aggressive and 5 being the most aggressive. The grades for each of the two most common types of cell are then added together to give the Gleason score. For example, if most of the cancer cells in the sample are grade 3, and the second most common pattern is grade 4, the Gleason will be 3 + 4, and the Gleason will be 7.

A Gleason of 4 + 3 also gives a Gleason score of 7, but shows that the cancer is slightly more aggressive. This is because the most common pattern made by the cancer cells is graded first, so a Gleason of 3 + 4 has more cells that are graded as 3, whereas a Gleason of 4 + 3 has more cells that have the higher grade of 4.

The Gleason system uses a scale running from 2 to 10. However very few patients have Gleason scores of less than 6, because the lower scores are now thought not to be cancerous. Because of this a Gleason score of 6 is the lowest that you will normally see on a biopsy.

- If your Gleason score is 6 (or less) any cancer cells are less likely to spread. The cells may be described as being 'well differentiated', which means they look similar to normal prostate cells.
- Cancer that has a Gleason score of 7 is 'moderately differentiated', which means cells look less like normal prostate cells and are more likely to spread.
- Cancer that has a Gleason score of between 8 and 10 is the most aggressive and most likely to spread. The cells are 'poorly differentiated', which means they look abnormal under the microscope.

It can take up to two weeks for the results of the biopsy to come back. You may wish to take a family member or friend with you for support when you get the results. If cancer is found, this is likely to be a big shock and you may not remember everything that the doctor tells you.

You may find it helpful to take a tape recorder with you and ask your doctor's permission to tape your consultation so you can take it home afterwards and listen to what was said as often as you need. You may find that it also helps to talk to friends and family or a counsellor about how you are feeling.

A personal experience

"I first shared my diagnosis with my partner. It helped to take a little time to come to terms with it before I told other family members and friends".

Support groups can help you to share experiences and advice with other men who have been diagnosed with prostate cancer. Ask your specialist team if there is a support group in your area, or call our confidential Helpline on 0800 074 8383.

See page 11 for more sources of support and information.

If you are diagnosed with prostate cancer, you may need more tests to find out whether it is likely to have spread outside the prostate. The results should help you and your doctor decide on your best treatment options. You may not need to have these tests if your PSA is low and your Gleason score shows that the cancer is unlikely to have spread.

CT Scan

A CT (Computerised Tomography) scan can show whether the cancer has spread to the lymph nodes near the prostate. You may have this scan if there is a risk of your cancer spreading and you are considering active treatment options such as radiotherapy or radical prostatectomy.

The scanner takes X-rays of your pelvis, which are fed into a computer to create an

image of the prostate and the surrounding tissues, including the lymph nodes. The doctor can then look more closely for possible signs of spread.

Your hospital will give you information on what will happen at your appointment and may ask you not to eat or drink for a few hours before the scan. When you arrive at the radiology department, you will be given an injection of a dye (contrast medium). This can give you a warm feeling and you may feel that you need to go to the toilet. The dye is not radioactive but helps the doctor see the prostate and surrounding organs on the scan.

You should let the X-ray department know well in advance of your scan appointment if you:

- know you are allergic to the dye (contrast medium)
- have any other allergies
- are taking metformin for diabetes.

After one to two hours, the scan will begin. You will be asked to take off any metal jewellery, as this can interfere with the machine. The CT scanner is shaped like a large doughnut. You will be asked to lie on a sliding table, which moves through the hole in the middle of the machine. The radiographer will leave the room but you will be able to speak to them through an intercom and they can see you at all times. You will need to keep still and may be asked to hold your breath for short periods of time. The scan itself takes 10-20 minutes, and you will be able to go home afterwards. It can take up to two weeks for all of the pictures taken by the scanner to be put together and looked at by the radiologist and your specialist team.

MRI Scan

MRI (Magnetic Resonance Imaging) uses magnets rather than X-rays to create a detailed picture of your prostate and surrounding tissues. You may have an MRI if there is a risk of your cancer spreading and you are considering active treatment options such as radiotherapy or radical prostatectomy.

You will need to take off any jewellery or metal items that could be attracted to the

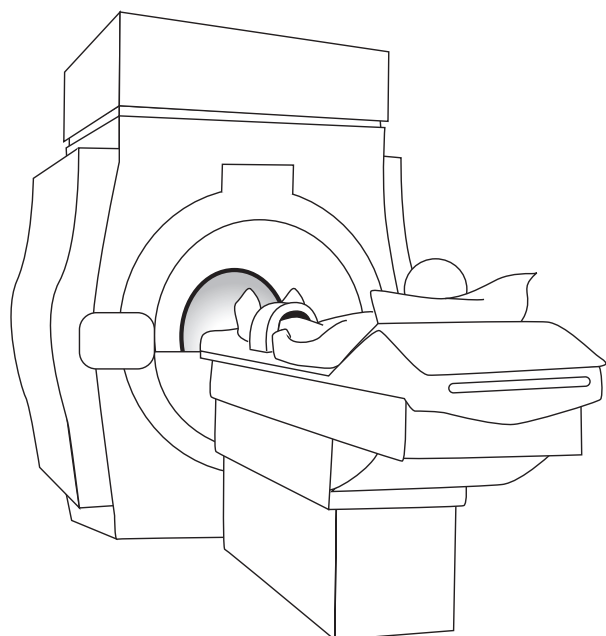
magnet. You will also be asked questions about your health and whether you have any implants, such as a heart pacemaker, to make sure the scan does not harm you.

Some MRI scanners are doughnut-shaped like a CT scanner. Other MRI scanners are shaped like a long tunnel so much more of the machine covers your body than in a CT scanner. Ask which type of machine is used at your hospital so you know what to expect. If you suffer from a fear of enclosed spaces (claustrophobia), you should let the scanning department know as soon as possible.

You will be asked to lie on a table which passes into the tunnel and you may feel totally enclosed. Some people can find this claustrophobic but the staff are aware of this and will help you if you become uncomfortable during the scan. The radiographer may decide to give you an injection of a dye during the scan, if they think that this will help improve the pictures taken by the scanner.

The scan takes between 30 and 40 minutes. The machine is very noisy but you will not feel anything. You can speak to the staff through a microphone and you may be able to listen to music. You can take a friend or family member into the room with you while you have the scan if you would like.

An example of an MRI machine



A personal experience

'The MRI was a bit claustrophobic and hot and the machine was very noisy. I took a CD of 'Proms in the Park' but for quite a bit of the 40 minutes I was in the machine, the noises were louder than the music'.

Bone scan

A bone scan may show whether any cancer cells have spread from the prostate to bone. If prostate cancer does spread to other parts of the body, bone is one of the most likely places to find it.

If your doctor has any concerns that the cancer may have spread outside the prostate, or wants to be sure that it has not spread, then they may want to do a bone scan. If you are concerned about why you are having a bone scan, do ask the doctor to explain what they are expecting to find. If you have any arthritis or have had a previous bone injury or fracture, please mention this to your doctor, as it will help them to interpret the scan results correctly.

The bone scan is done in the X-ray or nuclear medicine department of the hospital. A small amount of a safe radioactive dye is injected into a vein in your arm. This travels around your body in your bloodstream and collects in areas where bone cells are active. This process takes around two to three hours. You will be free to go for a walk outside the hospital during this time, or you may like to take a book along with you.

After two to three hours, the scan will begin. You will be asked to lie on a table while the machine moves down your body, taking pictures. This takes around half an hour. The camera will pick up 'hot spots' where the radioactive substance has collected. These hot spots can show where the cancer has spread to the bone, but they also show any areas of arthritis and other bone damage such as old fractures.

The doctor will look at the results of the scan carefully to see whether any cancer is present. You may need to have X-rays of

any 'hot spots' to help your doctor to identify the difference between changes to the bone caused by cancer and changes caused by other damage such as arthritis or old fractures. If there is still doubt, you may need to have an MRI of these areas of the bone.

After the tests

Your doctor will tell you how long it will take for the results of all the tests to come back. It usually takes around two weeks. Once all of the results are gathered together and have been discussed by your specialist team, your doctor will 'stage' the cancer.

Staging

Staging is a way of recording how far the cancer may have spread. The most common method is the TNM (Tumour-Nodes-Metastases) system. This will allow your doctor to describe how far the cancer may have spread and will help your specialist team decide what the best treatment options are. This system separately assesses the tumour (T), lymph nodes (N) and secondary cancer or metastases (M).

T = Tumour

How far the cancer has spread in the prostate gland and nearby tissues. This is measured by a Digital Rectal Examination (DRE).

N = Nodes

Whether the cancer has spread to the lymph nodes. This is measured using an MRI or CT scan. This stage may not be measured if it does not affect your treatment options.

M = Metastases

Whether the cancer has spread to other parts of the body, such as the bone. This is measured using a bone scan. This stage may not be measured if it does not affect your treatment options.

Numbers are used together with each of the letters to describe where the cancer is in the body. The lower numbers show that the cancer is smaller and has not spread.

T stage

- T1** The tumour cannot be felt – localised disease
- T2** The tumour can be felt but it is contained within the prostate gland – localised disease
- T3** The tumour can be felt breaking through the capsule of the prostate – locally advanced disease
- T4** The tumour has spread to nearby organs, such as the bladder neck, back passage or pelvic wall – advanced disease

N stage

- NX** The lymph nodes were not measured
- N0** The lymph nodes do not contain cancer cells
- N1** The lymph nodes contain cancer cells

M stage

- MX** The spread of the cancer was not measured
- M0** The cancer has not spread to other parts of the body
- M1** The cancer has spread to other parts of the body

Therefore a cancer described as T3 N1 M0 would be a cancer that has broken through the capsule of the prostate, has spread to the lymph nodes, and has not spread to other parts of the body.

Getting the results

Your test results will be studied by a Multi-Disciplinary Team (MDT) made up of oncologists, radiotherapists, urologists, pathologists and specialist nurses. The outcome of this meeting will help your doctor to discuss the best course of treatment with you. Ask your doctor to explain anything you have not understood as this will be important when you consider your next steps. Take a notepad with you to help you remember any important points. Some questions that you may like to ask are suggested at the end of this fact sheet, with space to write down your doctor's replies. You may find it helpful to take a family member or friend with you, or ask the doctor if you can tape record the consultation.

You can also speak to a specialist nurse about your treatment options by calling our confidential Helpline on 0800 074 8383.

If you are diagnosed with prostate cancer, you may find that travelling to the hospital is emotionally and physically tiring. Is there anyone who could drive you to your appointments or travel with you? Can you get extra time off work if you need it? For advice on what help is available for the cost of travelling to the hospital for treatment, call Macmillan CancerLine on freephone 0808 808 2020 or your local Citizens Advice service (see your phone book for contact details).

Questions to ask your specialist team

- What is my PSA level?
- What are the Gleason grades and Gleason score of my cancer?
- What is the stage of my cancer? What does this mean?
- Where is the cancer located in my body?
- Will I need an MRI, CT or Bone scan?
- Will I see a surgeon and a radiotherapist/oncologist?
- How much time can I take before deciding which treatment to have?

Notes

More information

The Prostate Cancer Charity

This fact sheet is part of the Tool Kit. Call our Helpline on 0800 074 8383 or visit our website at www.prostate-cancer.org.uk for more Tool Kit fact sheets, including a Glossary which explains some of the words and phrases used in this sheet.

British Association of Counselling and Psychotherapy (BACP)

www.bacp.co.uk

Telephone 01455 883300

15 St Johns Business Park, Lutterworth, Leicestershire, LE17 4HB

This organisation will help you find counsellors who work to clearly defined standards of good practice.

Cancer Backup

www.cancerbackup.org.uk

Freephone 0808 800 1234, Mon-Fri 9am-8pm

3 Bath Place, Rivington St, London EC2A 3JR

Information on all cancers, including leaflets on talking about cancer and the emotional effects of diagnosis.

Cancer Counselling Trust

www.cancercounselling.org.uk

Telephone: 020 7704 1137

1 Noel Road, London N1 8HQ

Provides a UK wide telephone counselling service and a face to face service at their London office.

Citizens Advice

See your phone book for contact details of your local service

www.adviceguide.org.uk

Information and advice on getting financial help with the costs of cancer including travel and prescriptions.

Dipex

www.dipex.org.uk

Watch, listen to, or read personal experiences of prostate cancer and other medical conditions.

'Going for a' website

www.goingfora.com

Virtual hospital from the Royal College of Radiologists. Interactive information on cancer treatment and scans. Includes descriptions from both staff and patients.

Macmillan

www.macmillan.org.uk

Freephone Cancerline 0808 808 2020

Mon-Fri 9am-10pm.

Macmillan Cancer Relief,

89 Albert Embankment, London SE1 7UQ

Leaflets on men and cancer, close relationships and cancer, and talking to children when an adult has cancer. Information on benefits and grants to help with the costs associated with cancer.

The Prostate Cancer Charity makes every effort to make sure that its services provide up-to-date, unbiased and accurate facts about prostate cancer. We hope that these will add to the medical advice you have already been given and will help you to make any decisions you may face. Please do continue to talk to your doctor if you are worried about any medical issues.

The Prostate Cancer Charity funds research into the causes of, and treatments for, prostate cancer. We also provide support and information to anyone concerned about prostate cancer. We rely on charitable donations to continue this work. If you would like to make a donation, please call us on 020 8222 7666.

The Prostate Cancer Charity
First floor, Cambridge House,
100 Cambridge Grove, London W6 0LE

- **Email:** info@prostate-cancer.org.uk
- **Website:** www.prostate-cancer.org.uk
- **Telephone:** 020 8222 7622
- **Fax:** 020 8222 7639

- **Confidential Helpline:** 0800 074 8383
Mon-Fri 10am-4pm, Wed 7pm-9pm

Calls are free of charge from UK landlines.
Mobile phone charges may vary.

- **Email:** helpline@prostate-cancer.org.uk

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References to sources of information used in the production of this fact sheet are available on our website.

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THE
PROSTATE
CANCER CHARITY