Permanent seed brachytherapy

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This fact sheet is for men who are thinking about having a type of internal radiotherapy called permanent seed brachytherapy to treat their prostate cancer. Partners and families of men with prostate cancer may also find it useful. We describe how prostate cancer is treated using radioactive seeds implanted in the prostate gland. You may also hear this treatment called low dose-rate brachytherapy.

Each hospital will do things slightly differently so use this fact sheet as a general guide to what to expect and ask your doctor or nurse for more details about the treatment available to you.

In this fact sheet we use the word brachytherapy to describe permanent seed brachytherapy. We are not describing external beam radiotherapy (EBRT) or another type of brachytherapy called temporary brachytherapy. For information on these treatments, read our other Tool Kit fact sheets or call our Specialist Nurses on our confidential helpline.

How does brachytherapy treat prostate cancer?

Permanent seed brachytherapy, also known as low dose-rate brachytherapy, involves having tiny radioactive seeds implanted in your prostate gland. Each radioactive seed is the size and shape of a small grain of rice. The seeds stay in the prostate and give a continuous dose of radiation over a few months.

The radiation damages the cells and stops them from dividing and growing. Cancer cells are not able to recover from this damage and die, but normal healthy cells can repair themselves more easily.

This type of radiation does not travel very far in the body, so the healthy tissue around the prostate gland gets a much smaller dose of radiation than the prostate itself. The seeds stay in your prostate permanently and will not be taken out. After around 8 to 10 months, almost all of the radiation has been released and the seeds are no longer active.

There is another type of brachytherapy called temporary or high dose-rate brachytherapy. It is
less common than permanent seed brachytherapy and is an option for men whose prostate cancer is beginning to spread to the area just outside the prostate (locally advanced prostate cancer). You can read more about this in our Tool Kit fact sheet, **Temporary brachytherapy.**

### Who can have brachytherapy?

Permanent seed brachytherapy is suitable for men whose cancer has not spread outside the prostate gland (localised prostate cancer). Men often have this treatment by itself, but if there is a higher risk of the cancer spreading it can be used together with another type of radiotherapy called external beam radiotherapy. You may also have brachytherapy together with hormone therapy.

Other treatment options may include:
- active surveillance
- watchful waiting
- surgery (radical prostatectomy)
- external beam radiotherapy, or
- temporary brachytherapy.

You may also be offered high intensity focused ultrasound (HIFU) or cryotherapy. They are not widely available in the UK and researchers are studying better ways of carrying out these treatments. They may be available in specialist centres or as part of a clinical trial.

You can read more about all of these in our **Tool Kit** fact sheets or call our Specialist Nurses on our confidential helpline for more information.

Brachytherapy is just as good at treating prostate cancer as other treatments, such as surgery (radical prostatectomy) or external beam radiotherapy. However, there is not enough good evidence to show it is any better than these other treatments.

If you are considering brachytherapy as a treatment option, your doctor or nurse will look at the following things to find out if you are suitable for the treatment.

### Stage and grade of the cancer

Brachytherapy is most suitable for men who have localised prostate cancer that is low risk. This is because the radiation from the radioactive seeds does not travel very far.

Your cancer may be described as low risk if:
- your PSA level is 10ng/ml or less, and
- your Gleason score is 6 or less, and
- the stage of your cancer is T1 to T2a.

Our **Tool Kit** fact sheet **How prostate cancer is diagnosed** explains the Gleason score and cancer staging in more detail.

If you have a PSA of between 10 and 20, and a Gleason score of 7, brachytherapy may still be an option for you as long as tests show that the cancer is unlikely to have spread outside of the prostate. Different treatment centres will have their own guidelines so check with your doctor or nurse.

If your PSA level is over 20, then brachytherapy alone will not be suitable because there is a chance that your prostate cancer has spread outside of the prostate, even if scans suggest that it has not. However, you may be able to have brachytherapy combined with external beam radiotherapy and hormone therapy.

### Size of the prostate gland

Brachytherapy may not be suitable for men with large prostate glands. If you have a large prostate then you may have hormone therapy for three months before treatment. This will shrink the prostate.

### Urinary problems

Brachytherapy may not be suitable for men who have severe problems passing urine such as those caused by an enlarged prostate. These include a weak urine flow or problems emptying the bladder. Brachytherapy can make these problems worse. Before you have treatment, your doctor or nurse will ask you about any urinary problems and you may have some tests. Your doctor will help you to manage any urinary problems you may have.
Transurethral resection of the prostate (TURP)
Transurethral resection of the prostate (TURP) is surgery to remove prostate tissue. You may have had a TURP in the past to relieve symptoms of an enlarged prostate. If you have recently had a TURP, you may have to wait three to six months before brachytherapy treatment can be considered. Some hospitals do not offer brachytherapy to men who have had a TURP.

Anaesthetics
Anaesthetics are used during brachytherapy so that you do not feel any pain or move during the procedure. Brachytherapy will only be an option for you if you are fit and healthy enough to have anaesthetics.

Planning a family?
Brachytherapy can have an effect on your ability to father a child (fertility). If you are planning to have children, ask your GP or doctor or nurse about this. See page 8 for more information.

Unsure about your diagnosis and treatment options?
If you have any questions about your diagnosis ask your doctor or nurse. They will be happy to explain your test results and talk with you about your treatment options. It is important you feel you have enough time and all the information you need before making a decision about treatment. We have more information about diagnosis and treatment in our Tool Kit. You can also speak to one of our Specialist Nurses by calling our confidential helpline.

What are the advantages and disadvantages?
Advantages
- You will be in hospital for just one or two days for the treatment.
- Recovery is quick so most men can return to their normal activities a couple of days after treatment.
- You will have a shorter period of anaesthetic with brachytherapy compared with surgery as the procedure is quicker. This means you may recover more quickly from the anaesthetic.
- The radiation is inside the prostate gland and does not travel far, so there may be less damage to the surrounding areas.
- There may also be less damage to the blood vessels and nerves that control erections than after other prostate cancer treatments.

Disadvantages
- Brachytherapy can cause side effects such as urinary, bowel and erection problems.
- It requires one or two anaesthetics, depending on the method used. Anaesthetic can have side effects.
- It may be some time before you will know whether the treatment has been successful (see page 6).

What might be an advantage for one person may not be for someone else. You can talk to your doctor or nurse about your own situation.

What does treatment involve?
If you decide to have brachytherapy, you will be referred to a specialist who treats cancer with radiotherapy, known as a clinical oncologist. The treatment itself may be planned and carried out by other specialists including therapy radiographers, urologists, physicists and sometimes a specialist nurse.
You will have the treatment during one or two hospital visits. If your treatment is planned for just one visit, you will have a planning session and your treatment under the same anaesthetic on the same day (one-stage procedure). You may not need to stay in hospital overnight.

If your treatment is spread over two visits, you will have the planning session on your first visit and the radioactive seeds will be implanted two to four weeks later (two-stage procedure).

At some hospitals you may have planning at the same time as seed insertion. This is not available everywhere so ask your doctor if it will be an option for you. Sometimes, this is referred to as 4D brachytherapy.

There are two types of brachytherapy seeds – loose or stranded. Stranded seeds are seeds that are linked together by string-like material. You may be given either type of seeds or both.

**Planning session**

The aim of the planning session, known as a ‘volume study’, is to measure the size and position of your prostate to work out how many radioactive seeds you need. The planning session is also a final check that the treatment is suitable for you. Very occasionally, the specialist may find that treatment isn’t technically possible because of the position of your pelvic bones in relation to your prostate gland. If this happens, your specialist will discuss other treatment options with you.

Before the planning session, let your specialist know if you are taking any medication, especially medicines that can thin your blood such as aspirin and warfarin. Do not stop taking any medicines without speaking to your doctor or nurse. You may also need to take a laxative the day before the planning session to empty your bowels.

You may have a general anaesthetic so that you are asleep during the procedure, or you could have a spinal or epidural anaesthetic, so that you are awake but cannot feel anything. The doctor or nurse will discuss the different options with you.

The specialist will gently insert an ultrasound probe into your back passage (rectum). This is attached to a monitor that displays a three dimensional image of the prostate. The doctor uses this image to work out how many brachytherapy seeds you need and where to place them. The process usually takes about half an hour, and you can go home the same day if you are not having the implant straight away.

Ask a friend or family member to take you home, as you will not be able to drive for 24 hours after a general anaesthetic.

**Implanting the radioactive seeds**

Most treatment centres will give you information about how full or empty your bladder and bowel should be before treatment. You may need to take another laxative at home the day before to clear your bowels or the nurse may give you some medication (an enema) on the day. An enema is a liquid medication which is inserted directly into your back passage (rectum).

When you are under anaesthetic, before the seeds are implanted, the specialist may pass a thin tube (catheter) through the penis into the bladder. This shows the position of the urethra within the prostate gland on ultrasound. Once the catheter is in position, the specialist places an ultrasound probe into the back passage (rectum) so that they can see the prostate and where the seeds will be placed. The catheter drains urine from the body during the procedure.

The specialist then puts thin needles into the prostate through the perineum, which is the area between the testicles and the opening of the back passage (anus). The specialist passes the seeds through the needles into the prostate. The needles are then taken out, leaving the seeds behind.

Depending upon the size of your prostate between 60 and 120 seeds are implanted into the prostate using around 20 to 25 needles.
Where the seeds go in the prostate

The seed implant takes 30 to 45 minutes if you have already had your planning session (two-stage method) or one to one and a half hours if you are having the planning session at the same time (one-stage method).

After the procedure
If you had a general anaesthetic you will wake up from the anaesthetic in the recovery room, before going back to the ward or discharge area. If you have one in place, the nurse may remove your catheter before you wake up, or it may be left in for a few hours and taken out before you go home. Having the catheter removed should not be painful.

Many people feel fine after the anaesthetic but some people may have side effects such as feeling sick or dizzy. Some men find it difficult to pass urine after anaesthesia. You can go home when you have recovered from the anaesthetic and are passing urine normally. This may be on the same day as treatment or you may need to stay in hospital overnight.

Your doctor or nurse will give you any medicines that you will need at home. These may include drugs to help prevent urinary problems (such as tamsulosin) and antibiotics to prevent infection. You may have some discomfort or bleeding from the perineum where the needles were put in so your doctor may give you some pain-relieving drugs.

What happens afterwards?

Precautions to take
It is safe for you to be near other people but as a precaution, you should avoid sitting very close to pregnant women or children for long periods of time during the first two months after treatment. You should also avoid letting young children sit on your lap or holding them for more than a few minutes each day. Your doctor or nurse will discuss this in more detail with you.

It is possible, but rare, for you to pass a seed in your urine. Ask your doctor or nurse what to do if this happens. Some hospitals advise you to flush the toilet twice if you think you have passed a seed. Never pick up a seed directly with your fingers but use something with a long handle such as a spoon and place it in a sealed container. You should then contact your hospital who will provide advice for disposing of it safely. Always let your doctor or nurse know if you think you have passed a seed. It does not mean your treatment will stop working because the amount of radiation left in the prostate will still be enough to treat your cancer.

Although brachytherapy seeds usually stay in the prostate gland, there is a risk that one of the seeds could move into your bloodstream and to another part of your body. This will only happen with loose seeds (see page 4). There is no evidence to suggest that this will do any harm and often will be picked up when you have a scan at your follow-up appointment. If you have symptoms that are bothering you, speak to your doctor or nurse.

Some men may decide against having brachytherapy because of personal or religious beliefs. This is because if a man dies soon after treatment, for whatever reason, the radioactive seeds mean that cremation may not be undertaken for up to two years after brachytherapy. Please speak to your doctor or nurse if you are worried about this.
Going back to normal activities and work
You should be able to return to your normal activities within a few days. You can go back to work as soon as you feel able, and this will depend on how much physical effort your work involves. Speak to your doctor or nurse about when to return to physical activity such as cycling. See page 7 for information about when you can have sex.

Travel
Your doctor or nurse may give you an advice card which states that you have had treatment with internal radiation. Take this card with you whenever you travel, especially by air, as the radiation in the brachytherapy seeds can set off the airport security scanners. Ask your doctor or nurse if you have any concerns about holidays and travel plans.

Your follow-up appointment
You will have a computerised tomography (CT) or magnetic resonance imaging (MRI) scan four to six weeks after the treatment to check the position of the seeds.

PSA monitoring
You will have your PSA level checked regularly after your treatment to monitor how well the brachytherapy has worked. You will also be asked about any side effects that you may have. In most centres, your specialist will check your PSA level six to twelve weeks after your treatment has finished. You will then have it checked at least every six months for two years and at least once a year after that. Follow-up will vary between different centres. Your doctor or nurse will tell you how often your PSA level will be measured.

If your treatment has been successful, your PSA level should drop. However, how quickly this happens, and how low the PSA level falls, varies between men. Your PSA level may start to rise again after brachytherapy because your prostate will still produce some PSA.

However, a significant rise in your PSA level or a continuous rise over repeat PSA tests may be a sign that your cancer has returned and you may need further treatment. If your PSA level does start to rise, talk to your doctor or nurse about what treatment might be suitable for you. You may be offered hormone therapy or surgery. Cryotherapy or HIFU can also be options though these treatments are not widely available in the UK.

You can find more about treatment options after brachytherapy in our booklet, Recurrent prostate cancer, or call our Specialist Nurses on our confidential helpline.

What are the side effects?
Like all treatments, brachytherapy can cause side effects. These will affect each man differently, and you may not get all of the side effects.

You may not have any side effects for several days until the radiation from the seeds begins to take effect. Side effects are generally at their worst a few weeks or months after treatment, when the radiation dose is strongest, but should then improve over the following months as the seeds lose their radiation.

Some men who have had brachytherapy and external beam radiotherapy together may find that they have worse side effects.

You might also get more side effects if you had problems before the procedure. For example, if you already had urinary, erection or bowel problems, these may be worse after treatment.

After the procedure you may have these side effects.
• Some men have blood-stained urine or discoloured semen for a few days or weeks.
• You may have bruising and pain in the area between your testicles and back passage which can spread to your inner thighs and penis. This will disappear in a week or two.
• Some men have discomfort when they pass urine and need to pass urine more often, especially at night.

Some side effects may take several weeks to develop and may last for a while longer. These may include problems passing urine, erection problems, bowel problems and tiredness.

Problems passing urine
Brachytherapy causes the prostate gland to swell. This can make the urethra narrow (stricture) and may irritate your bladder. This may cause symptoms such as:
• needing to pass urine often
• feeling like you need to pass urine urgently
• hesitating before starting to pass urine
• a weak flow of urine, or
• discomfort or burning sensation when you pass urine.

These problems may be worse in the first few weeks after brachytherapy but usually start to improve after a few months. However, stricture can also develop later and might need treatment.

Medicines called alpha blockers and non-steroidal anti-inflammatory drugs (NSAIDs) may help ease problems with passing urine. You can help yourself by drinking enough liquid (two litres or three to four pints a day) and by cutting down on drinks that may irritate the bladder such as fizzy drinks, caffeine based drinks (tea, coffee and cola) and alcohol.

Some men will have a sudden and painful inability to pass urine (acute urinary retention) after brachytherapy. If this happens you should contact your doctor or nurse straight away or visit your hospital's accident and emergency (A&E) department as soon as possible. You may be more likely to get urinary retention if your prostate is large or if you had symptoms of it before treatment. Ask your doctor or nurse about your risk.

Men may find that they leak urine (urinary incontinence) after brachytherapy but some studies have suggested that the risk of this is low. If you have previously had a transurethral resection of the prostate (TURP) then you may be more likely to have problems with leaking urine. Ask your doctor or nurse about your risk of getting urinary incontinence. Problems with leaking urine may improve with time.

Read our Tool Kit fact sheets, Urinary problems after prostate cancer treatment, for more information about ways to manage urinary problems.

Erection problems
Brachytherapy can damage the blood vessels and nerves that control erections, which may make it difficult for you to get and keep an erection (erectile dysfunction). Erectile problems may not happen immediately after treatment but take some time to develop.

The risk of long-term erection problems after brachytherapy varies from man to man. Your risk will increase if you already had problems with erections before treatment or if you are also having hormone therapy or external beam radiotherapy.

There are treatments available for erection problems. Ask your doctor or nurse for more information about these and read our Tool Kit fact sheet, Sex and prostate cancer.

Sexual activity and fertility
Some men find that they do not want to have sex for some time after treatment. It may be because they feel tired and have some pain or swelling in the area where they had treatment. Or they may have some of the side effects discussed above, which affect their desire to have sex.

It is rare for men to pass any implanted seeds when they ejaculate but as a precaution, you should use a condom during sex for the first two months after treatment.
You may find that you ejaculate less fluid than before the treatment. This is a permanent side effect of brachytherapy. However, you still might be able to make someone pregnant. Changes to your sperm as a result of radiation during brachytherapy could affect any children you may conceive during this time but the risk of this happening is very low. You should avoid fathering a child during treatment and for up to a year after having treatment, for example by using a condom or other form of contraception.

If you are planning on having children you may be able to store your sperm before you start treatment so that you can use it later for fertility treatment. If this is important to you, ask your doctor or nurse whether sperm storage is available locally.

**Bowel problems**
Brachytherapy can cause the lining of the bowel to become inflamed (proctitis). If you are also having external beam radiotherapy, you are more likely to experience bowel problems. You may have symptoms such as loose and watery stools (diarrhoea), bleeding in the back passage (proctitis), passing more wind, needing to go to the toilet more often, or having to rush to the toilet (rectal urgency). Some men feel the need to have a bowel movement but then find that they are unable to go.

Most of these bowel problems tend to be mild and affect less than one in five men (20 per cent) in the first year after brachytherapy. You may find that you get bowel problems as late as two to three years after treatment.

Bleeding from the back passage is a rare side effect of brachytherapy, but it can be a sign of other bowel conditions such as bowel cancer so it is important to tell your nurse or GP about any symptoms. They will also be able to tell you about treatments that can help with this side effect.

**Tiredness**
The effect of radiation on the body can make some men tired. If you are getting up a lot during the night to pass urine, this can also make you feel tired in the day. It is important to let your doctor or nurse know how tiredness is affecting you so that they can help you find ways to manage it.

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**Where can I get support?**
As well as getting medical help to treat your cancer, you may find that it helps to talk to family or friends about how you are feeling. Sharing concerns can make any decisions about your treatment easier to deal with. You could also speak to your doctor or nurse or call our Specialist Nurses on our confidential helpline Partners and family also often worry about their loved one, and may find it helpful to talk to your doctor or nurse.

Some people find that it helps to talk to other men who have had brachytherapy. There are prostate cancer support groups throughout the country. You can ask your doctor or nurse for details, or you can find a list of support groups on our website at prostatecanceruk.org

We can also arrange for someone who has experience of brachytherapy to speak to you through our one-to-one support service. Call our Specialist Nurses on our confidential helpline for more information. If you have access to the internet, you can join our online community where you can share your views and experiences with other men and their families. Our website address is prostatecanceruk.org

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**When to call your doctor or nurse**
Your doctor or nurse will give you a telephone number to call if you have any questions or worries. Contact them or visit your hospital’s accident and emergency (A&E) department if any of the following things happen:

- If your urine is very bloody, has clots in it or you are suddenly not able to pass urine this could mean that you have bleeding in your prostate or acute urinary retention. This will need treatment as soon as possible.
- If you have a high temperature (more than 38°C or 101°F) with or without chills this may be a sign of infection.
Questions to ask your doctor or nurse

You may find it helpful to keep a note of any questions you have to take to your next appointment.

Will I have a one-stage or two-stage procedure?

Will I have external beam radiotherapy as well as brachytherapy?

What are the chances of side effects such as urinary problems, erection problems and bowel problems?

How will I know if the treatment has worked?

What should my PSA level be after treatment and how often will you measure it?

If my PSA continues to rise, what other treatments are available?
More information

Bladder and Bowel Foundation
www.bladderandbowelfoundation.org
Continence nurse helpline 0845 345 0165
Provides information and support for all types of bladder and bowel problems.

CancerHelp UK
cancerhelp.cancerresearchuk.org
Freephone helpline: 0808 800 4040 (Mon-Fri, 9am–5pm)
CancerHelp UK is the patient information website of Cancer Research UK. It contains information on brachytherapy and living with cancer.

Health talk online
www.healthtalkonline.org
Watch, listen to, or read personal experiences of cancer diagnosis and treatment.

Macmillan Cancer Support
www.macmillan.org.uk
Freephone: 0808 808 0000 (Mon-Fri, 9am-8pm)
Information on coping with cancer and treatment as well as financial support for people with cancer, family and friends.

Maggie's Cancer Caring Centres
www.maggiescentres.org
Telephone: 0300 123 1801
Provide information and support to anyone affected by cancer. Their website holds a list of centres across the UK and has an online support group.

Prostate Brachytherapy Advisory Group
www.prostatebrachytherapyinfo.net
This website is written by health professionals and provides information about brachytherapy treatment.

Sexual Advice Association
www.sda.uk.net
Helpline 020 7486 7262 (Mon, Wed & Fri 9am-5pm)
Provides a helpline service for advice and information about sexual problems including erectile dysfunction.

UK Prostate Link
www.prostate-link.org.uk
UK Prostate Link helps you find and compare reliable information about all aspects of prostate cancer.

About us

Prostate Cancer UK fights to help more men survive prostate cancer and enjoy a better life.

This fact sheet is part of the Tool Kit. You can order more Tool Kit fact sheets, including an A-Z of medical words, which explains some of the words and phrases used in this fact sheet.

All of our publications are available to download and order from the website. You can also order printed copies by calling 0800 074 8383 or emailing literature@prostatecanceruk.org.

At Prostate Cancer UK, we take great care to provide up-to-date, unbiased and accurate facts about prostate cancer. We hope these will add to the medical advice you have had and help you to make decisions. Our services are not intended to replace advice from your doctor.

References to sources of information used in the production of this fact sheet are available at prostatecanceruk.org.

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There are many other ways to support us. For more details please visit: prostatecanceruk.org/get-involved

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