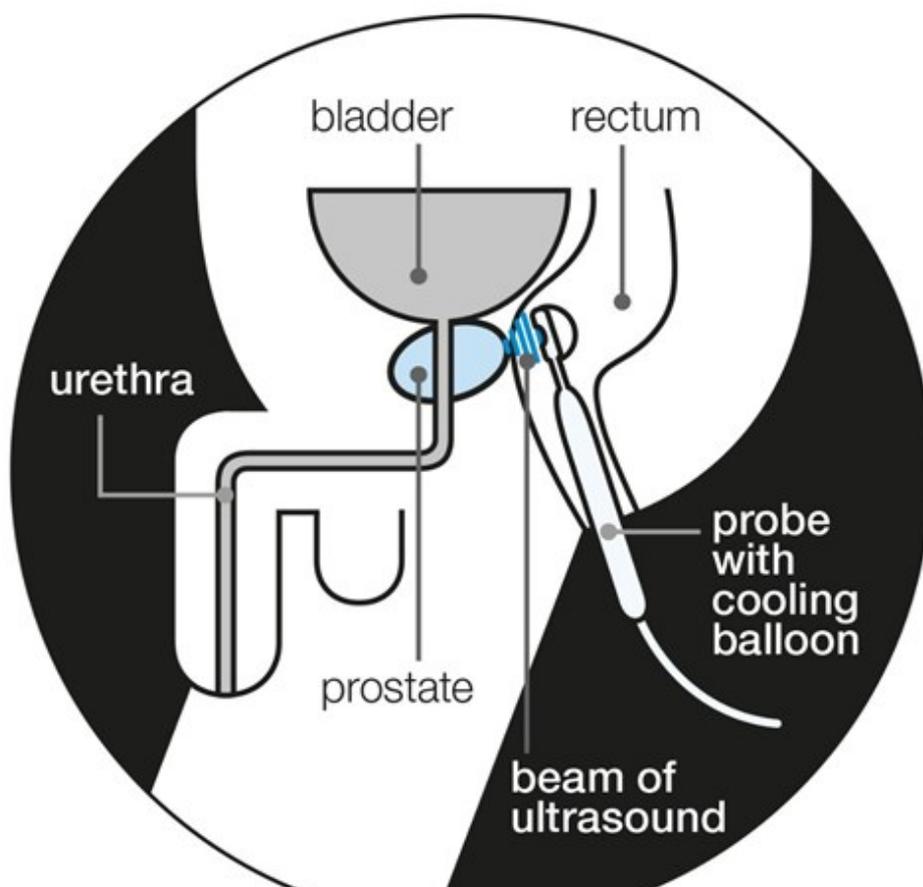


High-intensity focused ultrasound (HIFU)

What is HIFU?

High-intensity focused ultrasound (HIFU) uses high frequency ultrasound energy to heat and destroy cancer cells in the prostate. A beam of ultrasound energy travels into the prostate from a probe put into the back passage (rectum).





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Chapter 15. High intensity focused ultrasound

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- [What are the advantages and disadvantages?](#)
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This fact sheet is for men who are thinking about having high intensity focused ultrasound (HIFU) to treat cancer that is completely contained within the prostate (localised prostate cancer).

Partners and family members might also find this information helpful.

Each hospital will do things slightly differently, so use this fact sheet as a general guide to what to expect. Ask your doctor or nurse for more details about treatment and help that's available.

Who can have HIFU?

HIFU is one of the treatments that's used for prostate cancer which hasn't spread outside the prostate gland (localised prostate cancer).

HIFU is also used to treat cancer that has come back after radiotherapy (recurrent prostate cancer). This is called salvage HIFU. Read more about treatment options for recurrent prostate cancer in our booklet, **Recurrent prostate cancer: A guide to treatment and support**.

HIFU is newer than some of the other treatments for prostate cancer. We don't know as much about how well it works and about the risk of

High intensity focused ultrasound (HIFU)

This fact sheet is for men who are thinking about having high intensity focused ultrasound (HIFU) to treat their prostate cancer.

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Who can have HIFU?

HIFU might be suitable for you if your cancer is contained inside your prostate ([localised prostate cancer](#)).

It's sometimes an option if your prostate cancer has started to break out of your prostate, or has spread to the surrounding area ([locally advanced prostate cancer](#)).

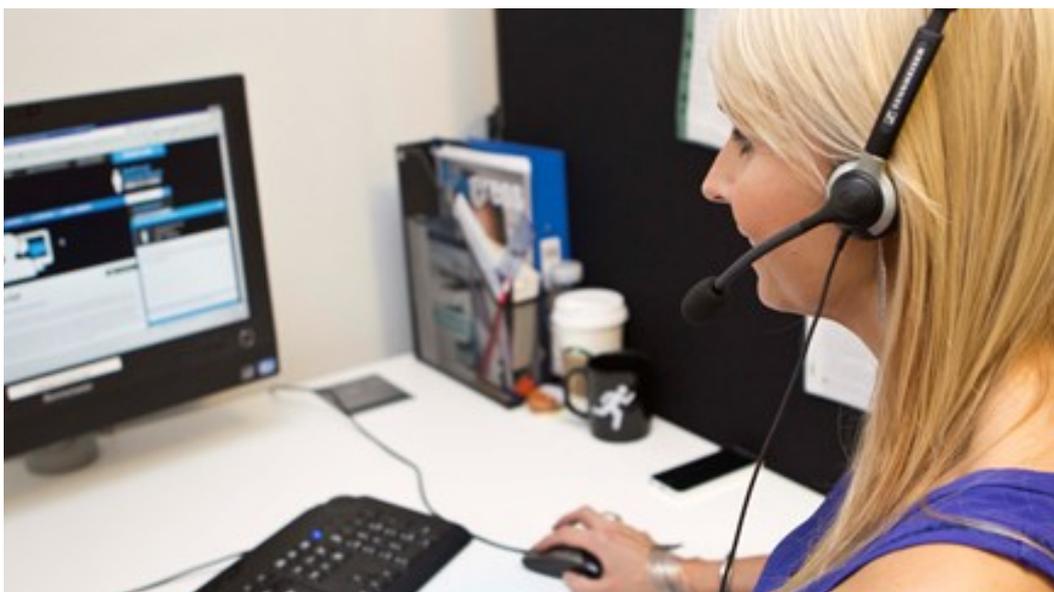
It's not an option if your cancer has spread outside your prostate to other parts of your body ([advanced prostate cancer](#)).

HIFU can also be used to treat cancer that has come back after radiotherapy (recurrent prostate cancer). This is called salvage HIFU.

HIFU is newer than some of the other treatments for prostate cancer, so we don't know as much about the risk of side effects or how well it works or in the long term (after 10 years). Because of this, it's only available in specialist centres in the UK or as part of a [clinical trial](#).

HIFU isn't available in every hospital. Talk to your doctor or nurse about whether it's available in your area.

[Read more about other treatment options for prostate cancer.](#)



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What are the advantages and disadvantages?

What may be an advantage for one person might not be an advantage for someone else. Talk to your doctor or nurse about your own situation. They can help you choose the right treatment for you.

Advantages

- You only need a short hospital stay – you can usually go home on the same day as your treatment.
- The recovery time is short – usually one or two weeks.
- HIFU doesn't involve any cuts to the skin or needles, apart from a needle in your hand to give the general anaesthetic.
- You may be able to have HIFU again if your cancer comes back after your first HIFU treatment. This isn't the case with all treatments.
- You may also be able to have other treatments after HIFU if your cancer comes back, such as [surgery](#) or [radiotherapy](#).

Disadvantages

- In the UK, HIFU is only available in specialist centres or as part of a [clinical trial](#). It might not be available in a hospital near you.
- Compared with other treatments, we don't know as much about the risk of side effects or how well it works in the longer term (after 10 years).
- As with other treatments, you may get side effects (see below).

What does HIFU involve?

There are two types of HIFU treatment. **Whole-prostate HIFU** treats the whole prostate. **Focal HIFU** treats a smaller area of the prostate. And ask your doctor or nurse which type of treatment might be suitable for you.

Before your treatment

If you have a large prostate, you might be offered other treatments before you have HIFU.

- **Hormone therapy** is sometimes given for two to three months before HIFU. This can make the prostate smaller, and make the cancer easier to treat.
- **Transurethral resection of the prostate (TURP)** is an operation to remove prostate tissue and improve the flow of urine. This operation is sometimes used before HIFU to reduce the risk of some urinary problems after the treatment.

As with all treatments, these can cause side effects.

If you're having **focal HIFU**, you will usually go to a screening appointment first. You'll have a **magnetic resonance imaging (MRI) scan**, which produces detailed images of the prostate and shows the location of the cancer. You may also have a **prostate biopsy**, which shows the location of the cancer and how likely the cancer is to grow and spread outside the prostate. These tests will help your surgeon target the area of the prostate that needs to be treated.

During your treatment

On the morning of your HIFU treatment, you'll be given an enema to empty your bowels. This is a liquid that is put inside your back passage (rectum). You'll also be asked not to eat or drink for around six hours before your HIFU.

You will have a general anaesthetic so that you're asleep during the treatment. If you aren't able to have a general anaesthetic for health reasons, you may be able to have a spinal (epidural) anaesthetic so that you can't feel anything in your lower body. With this, you will also be given some medicine (a sedative) to make you sleepy.

During your treatment, you will either lie on your back with your legs apart or on your side with your knees brought up towards your chest. Ask your doctor or nurse which position you will be in.

You may have a catheter put in at the start of the treatment to drain urine out of your bladder. A catheter is a thin tube that is passed into your bladder, either through the penis or through the wall of your abdomen (stomach area).

Your surgeon will place a probe inside your back passage (rectum). The probe gives out a beam of high-intensity ultrasound energy, which travels through the wall of the back passage into the prostate. The beam treats one small area of the prostate at a time – the size of a grain of rice. Your surgeon will move the beam around so that it heats and destroys the cancer cells.

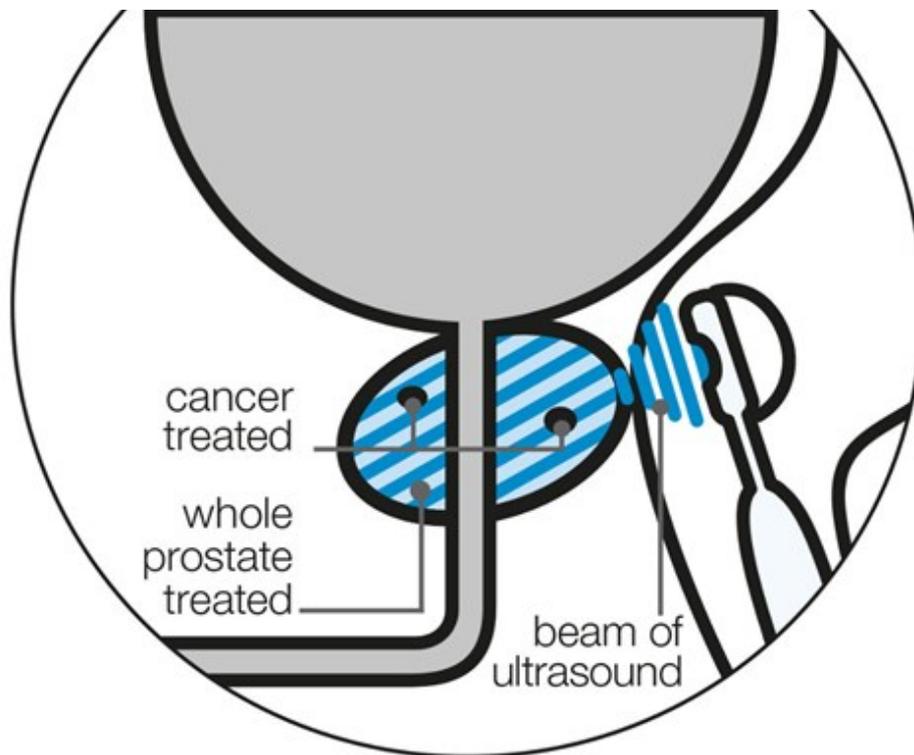
The probe also uses ultrasound to create images of the prostate while your surgeon is treating it. This helps the surgeon target the cancer so that less of the healthy tissue is damaged.

The probe is surrounded by a cooling balloon so that the heat doesn't damage your back passage.

Whole prostate HIFU

Whole-prostate HIFU treats the whole of the prostate and takes about three hours. It may be suitable for men who have prostate cancer that needs treating in more than one area of their prostate.



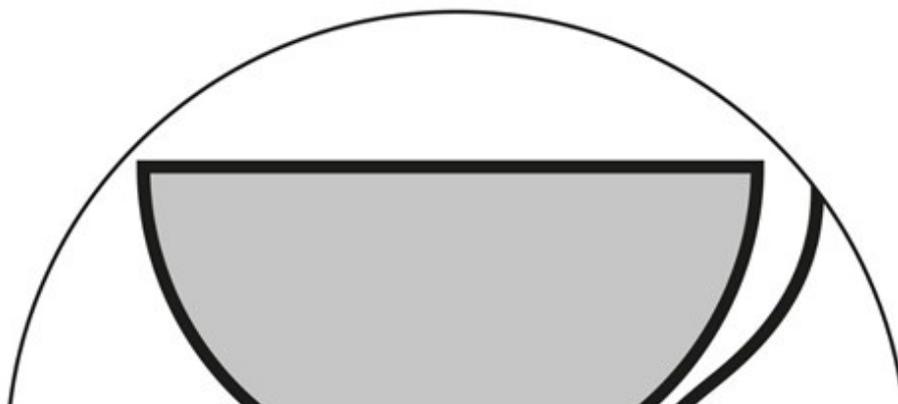


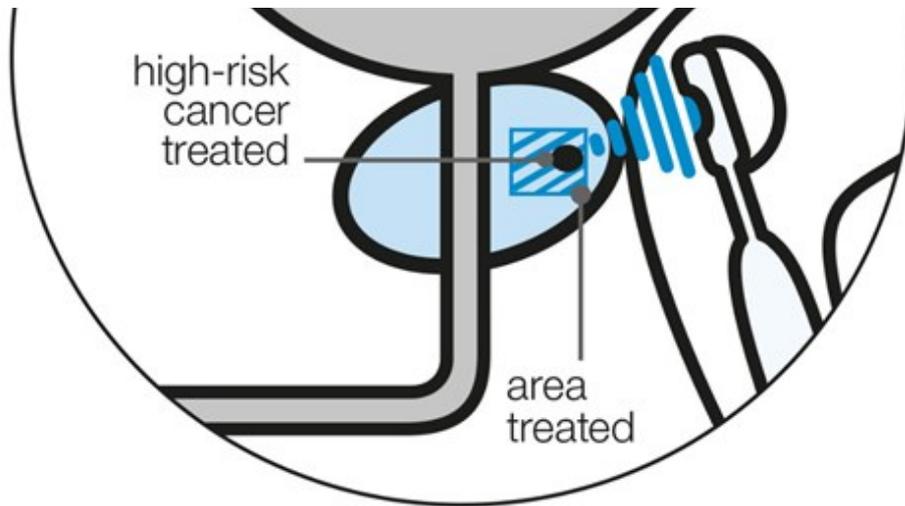
Focal HIFU

Focal HIFU treats a smaller area of the prostate and takes one to two hours. It may be suitable for men who have cancer that needs treating in only one area of their prostate.

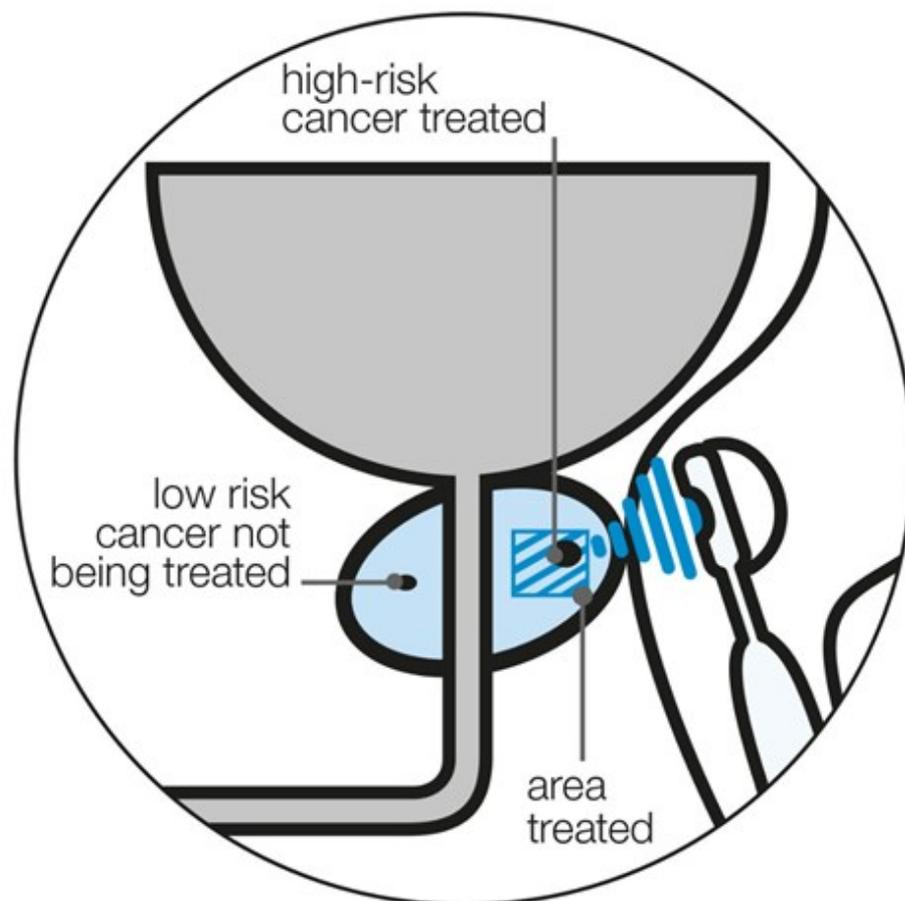
Your surgeon will treat the areas of cancer that need treating and a small area around them. So less of the healthy tissue is damaged during focal HIFU compared to whole-prostate HIFU.

Some men who have focal HIFU have only one area of cancer in their prostate.





Other men have another area of cancer in their prostate that is not treated on purpose. This cancer is not treated because it is less likely to spread (low-risk cancer) and it may not cause any problems. These men will have regular tests to keep an eye on the cancer that is not treated.



With focal HIFU, there is a small risk that some areas of cancer that do need treating may be missed because it doesn't treat the whole prostate. If this happens, there are further treatments that you can have which aim to get rid of or control the cancer.

After your treatment

You should be able to go home on the same day as your treatment. Your doctor or nurse will check that you've recovered from the anaesthetic and are fit to go home.

You may have pain in the area between your testicles and back passage, but you'll be given pain-relieving drugs to take at home.

You will also get antibiotics to prevent any possible infection and may be given a medicine called a laxative to help you empty your bowels.

HIFU usually causes the prostate to swell to begin with, which can make it difficult to urinate. You'll have a catheter to drain urine from your bladder until the swelling has gone, usually for up to a week after treatment.

Before you go home your doctor or nurse will show you how to look after your catheter. They'll also give you an appointment to have your catheter removed.



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What are the side effects?

Like all treatments, HIFU can cause side effects. These will affect each man differently, and you might not get all of them.

The most common side effects are urinary problems and difficulty getting or keeping an erection (erectile dysfunction).

You're more likely to get side effects if you have more than one HIFU treatment or if you've had other treatments for prostate cancer before HIFU. This is because your first treatment may have already damaged the area around your prostate.

Less of the healthy tissue is damaged during focal HIFU than whole-prostate HIFU so some experts believe it may cause fewer side effects than whole-prostate HIFU. But we need more research before we know if there is a difference in the risk of side effects.

If you have [hormone therapy](#) or a [TURP](#) before you have HIFU, these can also cause side effects.

Short-term side effects

These can develop soon after your treatment and may include:

- [blood or tissue in your urine](#)
- [erection problems](#)

- urine infections
- urinary problems
- testicle infections.

Blood or tissue in your urine

You might see some blood in your urine while the catheter is in place. You might also see some small pieces of prostate tissue in your urine for six to eight weeks after HIFU. This is normal. If you are worried or see signs of an infection (see below), speak to your doctor or nurse straight away.

Erection problems

Some men have problems getting or keeping an erection (erectile dysfunction) after HIFU. This is because it can damage the blood vessels and nerves that control erections. For some men this will improve, but for others this will be a longer-term side effect of the treatment (see below). There are treatments that can help with erection problems.

Urine infections

Some men get a urine infection after HIFU. Signs of a possible urine infection include:

- a fever (high temperature)
- a burning sensation when you urinate
- dark or cloudy urine with a strong smell
- needing to urinate more often than usual.

Tell your doctor or nurse if you have any signs of a urine infection. They'll usually give you antibiotics to treat the infection.

Urinary problems

Some men find it hard to empty their bladder properly after their catheter is removed – this is called urine retention. This is because HIFU can cause

the prostate to swell and block the urethra, which is the tube you urinate through. If your flow of urine is weak or slow after your catheter is taken out, speak to your doctor or nurse.

If you can't urinate at all, call your doctor or nurse straight away or go to your nearest accident and emergency (A&E) department. They may need to drain your bladder using a catheter.

They might also suggest using a temporary catheter (self-catheterisation) until the swelling has gone. This is where you put a catheter in yourself when you want to urinate and take it out afterwards. Some men find that urinary problems improve over time but other men have longer-term problems.

Testicle infections

Some men get an infection in the testicles or the tubes that carry sperm from the testicles. Signs of a possible infection include pain, swelling and tenderness in one or both testicles. Tell your doctor or nurse if you have any of these symptoms. They'll usually give you antibiotics to treat the infection.

Longer-term side effects

Most side effects will settle down after HIFU, but some men have later or longer-term side effects, including:

- [sexual problems](#)
- [urinary problems](#)
- [a hole between the back passage and the urethra \(rectal fistula\)](#).

Sexual problems

Some men get erection problems that improve over time, but other men find that their erection problems don't improve. There are [treatments that can help manage erection problems](#).

You should still be able to orgasm (climax) after HIFU, but you might release less semen (the fluid that carries sperm), or no semen at all. This means you may not be able to have children naturally after treatment. If you're planning to have children, you might be able to store your sperm before HIFU to use in fertility treatment. If this is important to you, ask your doctor or nurse about it.

You may find that when you orgasm, the semen travels backwards into the bladder rather than out through the penis. The semen is then passed out of the body when you next urinate. This is called retrograde ejaculation. This is more common if you've had a TURP before HIFU. It isn't harmful and shouldn't affect your enjoyment of sex, but it might feel different to the orgasms you're used to.

Talk to your doctor or nurse if you have problems with erections or other sexual problems. They can explain your treatment options and arrange free treatment on the NHS. They can also refer you to an erectile dysfunction (ED) clinic.

[Read more about sexual problems and how to manage them.](#)

Urinary problems

HIFU can cause longer-term urinary problems. You may have some of the following symptoms straight after treatment, or they might develop some time later.

- Some men leak urine (urinary incontinence) after HIFU. This is more likely if you've already had [external beam radiotherapy](#).
- You may leak urine when you cough, sneeze or exercise (stress incontinence).
- If your urethra, which is the tube you urinate through, or the opening of your bladder becomes narrow (a stricture), you may find it difficult to empty your bladder.
- Some men need to urinate more often than usual (frequency).
- You may have a sudden urge to urinate (urgency).

Talk to your doctor or nurse if you have any urinary problems. They may refer you to an NHS continence service, run by nurses and physiotherapists who specialise in urinary problems.

[Read more about urinary problems and how to manage them.](#)

A hole between the back passage and the urethra (rectal fistula)

Very rarely, HIFU can cause a hole between the back passage (rectum) and the urethra, which is the tube you urinate through. This is called a rectal fistula. It affects fewer than 1 in 100 men who have whole-prostate HIFU (1 per cent). It is slightly more likely if you've already had radiotherapy.

Signs of a possible rectal fistula include:

- urine coming out of your back passage
- pain in your pelvis or back passage
- bowel contents in your urine
- air bubbles in your urine
- urine infections, although these can be caused by other things.

Talk to your doctor or nurse straight away if you think you may have a rectal fistula. If you develop a fistula, you will need an operation to repair the hole.

What happens afterwards?

You will have check-ups with your doctor or nurse at the hospital at first, and then with your GP. This is often called follow-up. The aim is to:

- check how your cancer has responded to treatment

- deal with any side effects of treatment
- give you a chance to raise any concerns or ask any questions.

You will have PSA tests every three to six months for the first few years to check how well the HIFU has worked. The PSA test is a blood test that measures the amount of a protein called prostate specific antigen (PSA) in your blood.

Your PSA is likely to reach its lowest level a few months after HIFU. You may also have a [prostate biopsy](#) or [MRI scan](#) after treatment to check your prostate cancer has been treated.

If you have focal HIFU, you might have low-risk cancer in another area of the prostate that is not treated on purpose. You will have regular tests to monitor the cancer that is not treated. These might include PSA tests, MRI scans, and prostate biopsies.

A continuous rise in your PSA level can be a sign that the cancer has come back. If your cancer does come back, your doctor or nurse will talk with you about further treatment options.

You might also have other tests, such as a [CT scan](#), [MRI scan](#) or [bone scan](#), to see if the cancer has spread to other parts of your body.

If your cancer does come back after HIFU, there are further treatments that you can have which aim to get rid of it or control it.

You may be offered:

- more HIFU
- [external beam radiotherapy](#)
- [cryotherapy](#)
- [surgery \(radical prostatectomy\)](#)
- [hormone therapy](#).

Or your doctor may suggest monitoring your cancer, rather than treating it straight away.

[Read more about what happens if your cancer comes back and what treatments might be available.](#)

Questions to ask your doctor or nurse

- What are the advantages and disadvantages of HIFU?
- Where is this treatment available?
- Can I see the results of HIFU treatments you have carried out?
- What are my other treatment options?
- Will I have focal HIFU or whole-prostate HIFU?
- What are the side effects of HIFU? How likely am I to get them?
- How can I manage any side effects I get?
- What is my risk of getting a rectal fistula? What will happen if I do get one?
- How will I know if the treatment has worked?
- How likely is it that I'll need more treatment after HIFU?
- What treatments are available after HIFU?





Living with prostate cancer

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References

Updated: September 2015 | Due for review:
September 2017



[List of references](#)