



about  
brachytherapy

**BRACHYTHERAPY:**

**THE PRECISE  
ANSWER FOR  
TACKLING  
PROSTATE  
CANCER**





# Treatment options



There are several ways prostate cancer can be treated. These include:<sup>1</sup>

- **Watchful waiting**
- **Active surveillance**
- **Radiation therapy—including External beam radiation therapy (EBRT), Stereotactic Body radiation therapy (SBRT) and Brachytherapy (interventional radiation therapy)**
- **Surgery**
- **Chemotherapy**
- **Hormone therapy**

The types of treatment you receive will depend on how far the cancer has progressed. You can find out more about the progression and stages of prostate cancer in the introduction section.

The following table provides a broad overview of the different treatments.<sup>1</sup> Each treatment has advantages and disadvantages. These should be considered and discussed with your healthcare professional when choosing the most suitable treatment options for you.

# Treatment options<sup>1</sup>

Treatment	Grade of cancer		
	Low Risk	Medium risk	High risk
<p><b>Watchful waiting</b></p> <p>If the cancer is thought to be unlikely to progress during a patient’s natural lifespan, treatment is avoided unless the cancer starts to advance. This approach may be offered to older men or those with other serious illnesses. However, for most other men, active surveillance or a form of treatment (see below) are more common options.</p>	✓		
<p><b>Active surveillance</b></p> <p>If the cancer is not causing any health problems, immediate treatment may not be required. In these circumstances you can undergo regular checkups. If tests start to indicate that the cancer might progress, treatment can start immediately.</p>	✓		
<p><b>Brachytherapy (interventional radiation therapy)</b></p> <p>Works by precisely targeting the cancerous tumor. The source of radiation is placed directly next to the tumor.</p>	✓	✓	✓
<p><b>External beam radiation therapy (EBRT)</b></p> <p>The source of radiation is directed at the tumor from outside of the body.</p>	✓	✓	✓
<p><b>Stereotactic body radiation therapy (SBRT)</b></p> <p>This special type of EBRT delivers a high radiation dose in 4–5 fractions (compared with a standard 45-day course of radiation therapy).</p>	✓	✓	✓
<p><b>Surgery (prostatectomy)</b></p> <p>Removal of the prostate and surrounding tissues.</p>	✓	✓	✓
<p><b>Hormone therapy</b></p> <p>Treatment to remove hormones or block their action and stop cancer cells from growing. Hormone therapy is usually given in addition to another treatment. Androgen deprivation therapy (ADT) is an example of hormone therapy.</p>		✓	✓
<p><b>Chemotherapy</b></p> <p>A course of chemotherapy may be recommended in addition to surgery and/or radiation therapy. Several pharmaceutical products are effective and your doctor will be able to advise the best one for you.</p>			✓

# Advantages and disadvantages of prostate cancer treatments<sup>1</sup>

Treatment	Advantages	Disadvantages
Watchful waiting	<ul style="list-style-type: none"> <li>• Avoids unnecessary investigations and treatment if the cancer is unlikely to progress during a patient's natural lifespan.<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>• If the cancer progresses, the available treatment options may be limited.<sup>2</sup></li> </ul>
Active surveillance	<ul style="list-style-type: none"> <li>• Regular monitoring means treatments can start immediately, if required.<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Some patients may feel concerned that the cancer will spread if actual treatment is not being received.<sup>2</sup></li> </ul>
Brachytherapy (interventional radiation therapy)	<ul style="list-style-type: none"> <li>• Reduced risk of unnecessary damage to surrounding healthy tissues and organs, which reduces the chance of side effects.<sup>3-5</sup></li> <li>• Clinically proven to be highly effective.<sup>3-5</sup></li> <li>• Minimally invasive technique.<sup>3-5</sup></li> <li>• Short treatment times—the procedure can be completed within two hours.<sup>3-5</sup></li> <li>• Short recovery time.<sup>3-5</sup></li> <li>• Can be used in combination with other treatments.<sup>3-5</sup></li> </ul>	<ul style="list-style-type: none"> <li>• May require more than one visit to the hospital, depending on the procedure.<sup>3-5</sup></li> </ul>
External beam radiation therapy (EBRT)	<ul style="list-style-type: none"> <li>• Clinically proven to be highly effective.<sup>2</sup></li> <li>• Short recovery time.</li> <li>• Can be used in combination with other treatments.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased chance of some long-term side effects compared with brachytherapy, as the radiation passes through healthy tissues.<sup>2</sup></li> <li>• Longer treatment times than brachytherapy.<sup>2</sup></li> </ul>
Stereotactic body radiation therapy (SBRT)	<ul style="list-style-type: none"> <li>• Clinically proven to be highly effective with a similar outcome to brachytherapy.<sup>6-8</sup></li> <li>• Short recovery time.</li> <li>• Can be used in combination with other treatments.<sup>6-8</sup></li> </ul>	<ul style="list-style-type: none"> <li>• SBRT is often claimed to be shorter than brachytherapy. However, HDR brachytherapy can be done in 2 sessions, very convenient for patients. SBRT can take up to 7–8 visits to complete.<sup>9</sup></li> </ul>
Surgery (prostatectomy)	<ul style="list-style-type: none"> <li>• Clinically proven to be highly effective.<sup>2</sup></li> <li>• One-time procedure.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased chance of some long-term side effects compared with brachytherapy.<sup>2</sup></li> <li>• Invasive technique.</li> <li>• Longer treatment and recovery times than brachytherapy.<sup>2</sup></li> </ul>
Hormone therapy	<ul style="list-style-type: none"> <li>• Can be used in combination with other treatments.<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Does not provide a cure.<sup>2</sup></li> </ul>
Chemotherapy	<ul style="list-style-type: none"> <li>• Can be used in combination with other treatments.</li> <li>• Depending on the pharmaceutical product, outpatient treatment is possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Depending on the pharmaceutical product, a stay in hospital may be required.</li> </ul>



## What types of brachytherapy can be used for treatment of this cancer type?

There are two types of brachytherapy that can be used to treat prostate cancer:

**Low Dose Rate (LDR) brachytherapy**, also referred to as 'seed therapy' or 'permanent seed implantation'. Tiny radioactive seeds, about the size of a grain of rice, are permanently placed inside the tumor. The seeds give out low levels of radiation for a few months, killing the cancer cells.

**High Dose Rate (HDR) brachytherapy** involves the temporary placement of a radioactive source to treat the tumor. In contrast to LDR, no radioactive material is left in the prostate after treatment.

HDR brachytherapy has been shown to be an effective treatment for low-, intermediate-, and high-risk prostate cancer. It is often given in combination with external beam radiation therapy (EBRT), as it can provide an additional dose of radiation therapy to help prevent the cancer from returning.

Some centers offer HDR brachytherapy as the sole method of treatment because it is a very effective and quick treatment, making it very convenient for many patients. Your doctor will be able to advise you if HDR brachytherapy is a possible treatment option for you.

LDR brachytherapy has a longer history of clinical usage than HDR brachytherapy. LDR and HDR brachytherapy show similar results for treatment of prostate cancer. However, since LDR radioactive seeds remain in the body, the radiation protection for patients and families could be an issue. Moreover, active seeds can migrate outside the prostate.

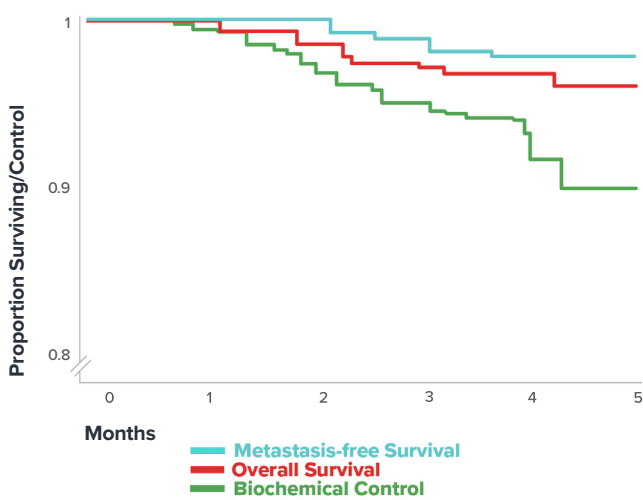




## How effective is brachytherapy?

A large study from Germany including 718 patients reported that HDR brachytherapy ensures a great outcome:

Biochemical control in prostate cancer after 8 years was 90%, and metastasis-free survival 97% (picture 1)! Biochemical control means that 90% of patients were free from an increase of PSA (biochemical recurrence) after 8 years. Metastasis-free survival means that 97% of patients had no metastases after 8 years.

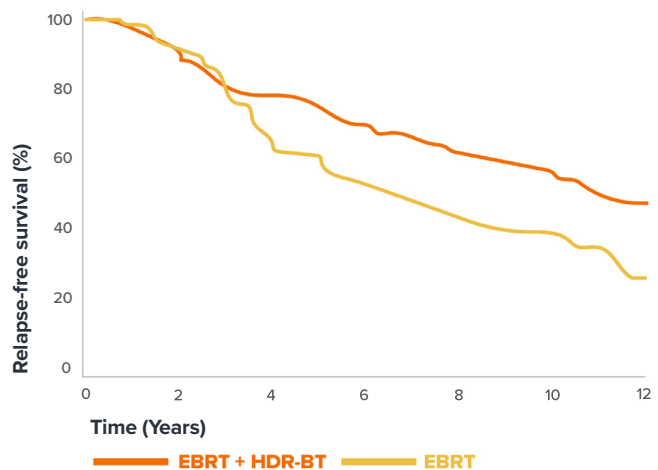


Picture 1

## Biochemical control and survival in patients with prostate cancer treated with HDR brachytherapy<sup>2</sup>

Results of the UK trial comparing external beam radiation therapy (EBRT) alone and EBRT + high dose rate (HDR) brachytherapy shows advantages in relapse-free survival when brachytherapy is added to the treatment (picture 2)<sup>2</sup>: 55% and 71% at 6 years and 27% and 48% at 12 years. It means that when brachytherapy was added to the treatment, 71% of patients didn't experience cancer in the next 6 years and 48% didn't experience cancer in the next 12 years.

Relapse-free survival in patients with prostate cancer treated with EBRT + HDR brachytherapy and only EBRT<sup>2</sup>



Picture 2



# Advantages of brachytherapy

Brachytherapy is a very effective and highly convenient treatment for prostate cancer with minimized side effects.

Brachytherapy has been used by doctors to successfully treat prostate cancer for many decades. Today, modern state-of-the-art technologies are used to help healthcare professionals deliver brachytherapy with a high level of precision. Brachytherapy is recognized as a standard treatment alongside surgery and external beam radiation therapy (EBRT).<sup>1,2</sup>

## Brachytherapy advantages

- **Effective as a cure:** There are many studies that show patients continue to remain free of cancer after treatment with brachytherapy.
- **Minimized side effects:** The accurate and targeted nature of low dose rate (LDR) and high dose rate (HDR) brachytherapy reduces the risk of side effects.
- **Minimally invasive:** Avoids the need for extensive surgery.
- **Shorter treatment times and shorter recovery periods:** Brachytherapy is usually given on an outpatient basis and completed in a couple of days. Patients are usually able to get back to their normal activities within a week.





# Side effects of brachytherapy

All treatments for prostate cancer carry a risk of side effects.

Radiation therapy in general is often associated with side effects. These side effects are well known and most side effects do not depend on the type of radiation therapy. However, brachytherapy is associated with sparing surrounding healthy tissue from unnecessary radiation, with the potential for fewer side effects than alternatives such as external beam radiation therapy.

People respond to treatments in different ways. The type of side effects that may be experienced depends on a number of factors such as the stage of the prostate cancer and whether there are any compounding health problems. The majority of brachytherapy patients receive a multimodality treatment with other treatments such as surgery, EBRT and androgen deprivation therapy (ADT). This makes it very difficult to distinguish between side effects from brachytherapy, side effects caused by other treatments, and disease related symptoms and complications.

## Short-term (acute) side effects

Immediately after the brachytherapy procedure, you may experience some of the following:<sup>1</sup>

- **Soreness or localized bruising around the perineum (the area between the scrotum and anus where the needles are inserted to deliver the brachytherapy).**
- **Blood in urine and/or semen.**
- **Discomfort when passing urine (may include needing to pass urine urgently or frequently).**
- **These short-term side effects are typically mild in nature and usually resolve soon after treatment.**

## Long-term side effects

Possible long-term side effects of brachytherapy include:<sup>2</sup>

- **Urinary discomfort (may include needing to pass urine urgently or frequently, or finding it difficult to pass urine).**
- **Bowel discomfort.**
- **Erectile dysfunction.**

People respond to treatments in different ways and you may or may not experience some of these side effects. Importantly, the long-term risks are generally lower with brachytherapy compared to other treatment options for prostate cancer.<sup>3</sup> Furthermore, even if you are affected by some of these side effects, many patients find that their urinary, bowel and sexual function returns to normal after 6–12 months.





## Safety of radiation

A common question about brachytherapy is whether the procedure causes any radiation risks to family and friends

If high dose rate (HDR) brachytherapy is used, the radiation sources are only temporarily placed in the body and are removed after each treatment. Hence, there is no radiation risk to family or friends.

If low dose rate (LDR) brachytherapy (seed therapy) is used, only the seeds give out radiation and these will not make you radioactive. The radiation levels given out by the seeds are low; however, your healthcare professional may advise you to avoid close contact with small children and pregnant women after the brachytherapy procedure.



## How effective is brachytherapy in treating prostate cancer?

Brachytherapy is a very effective treatment option for curing prostate cancer. Several studies<sup>1-4</sup> have shown that patients who had either low dose rate or high dose rate brachytherapy continue to remain free from prostate cancer many years after having the procedure.

## Can I choose whether I have low dose rate or high dose rate brachytherapy to treat my prostate cancer?

This will depend on several factors, including how advanced your tumor is and what treatments are available at your hospital. Discuss with your doctor or other healthcare professional which options might be best for you.

## Will the brachytherapy procedure hurt?

For both low dose rate and high dose rate brachytherapy procedures, your treatment will be done under anesthesia so it should not be very painful. You may feel some discomfort afterward, but this usually soon wears off.

## If I have brachytherapy, do I have to stay in hospital overnight?

Both low dose rate and high dose rate brachytherapy are usually provided as outpatient procedures, meaning you can go home the same day. However, you may need to make more than one visit to the hospital.

## How will I know if brachytherapy has worked?

After your procedure, you will be scheduled follow-up appointments to check that the tumor is responding to the treatment.

## What are the side effects of brachytherapy in the treatment of prostate cancer?

All treatments for prostate cancer carry a risk of side effects. Side effects of brachytherapy can include problems passing urine and bowel problems. Some men may find that their sexual function is affected.

## How soon can I get back to work after receiving brachytherapy?

After low dose rate brachytherapy, a couple of days' rest is usually recommended before going back to work. After high dose rate brachytherapy, you may be able to return to work the following day.

## Will I still be able to have children after brachytherapy?

Brachytherapy does not usually affect a man's level of fertility and therefore does not necessarily prevent you from having children after the procedure. If you are planning to have children after your prostate cancer treatment, discuss this with your healthcare professional.



## Treatment options

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## Brachytherapy

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## FAQs

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