Prostate Cancer: External-Beam Radiation Therapy (EBRT)

Prostate cancer may be treated with radiation therapy. This treatment is also called radiotherapy. It works by sending radiation to the cancer cells. This can kill the cancer cells or stop them from growing.

There are two main types of radiation therapy used for prostate cancer:

- **External-beam radiation therapy (EBRT).** This type of radiation uses a machine much like an X-ray machine to send radiation to your prostate
- **Internal radiation or brachytherapy.** This type of therapy uses tiny radioactive seeds or tubes that are put into your body to send radiation to your prostate

You may be treated with one or both types of the above radiation.

If you are going to get radiation therapy, a radiation oncologist will create a treatment plan for you. This is a healthcare provider who specializes in treating cancer with radiation. Each person's treatment plan is different. Your plan will include the type of radiation you will have. It will also include how often you receive treatment, the dose, and how long you'll get treatment.

Why might I need radiation therapy?

Your healthcare provider may advise radiation therapy if:

- You have a cancer that has not spread outside your pelvis or prostate gland.
- You had surgery for prostate cancer, but there are signs the surgery might not have removed all of the cancer.
- You have had surgery, but the cancer has come back.
- You have a cancer that has grown outside the prostate, but has not reached distant organs. (In this case, radiation therapy might be used along with hormone therapy.)
- You have advanced prostate cancer that's causing symptoms, such as pain in your bones. EBRT may shrink the cancer and help relieve your pain.

Types of EBRT

Some of the types of EBRT that can be used to treat prostate cancer include:

- **Standard.** Standard EBRT aims radiation beams at your prostate from one direction. This is a lot like getting an X-ray, only it lasts longer. This type of ERBT is rarely used.
- **3-D conformal radiation therapy (3D-CRT).** This approach aims radiation at the prostate from many directions. A computer forms the beams into the shape of the tumor. This can lessen the side effects on healthy tissue.
- **Intensity-modulated radiation therapy (IMRT).** IMRT uses a computer to control the direction and shape of the beams, Like 3D-CRT. It also controls the strength (intensity) of the radiation reaching the prostate. So a high dose goes to the cancer, but nearby tissues are spared. This also can lessen the side effects on healthy tissue. A special form of IMRT is called stereotactic body radiation therapy (SBRT). It can be used in certain cases when the prostate cancer is at an early stage. SBRT usually has a shorter course of treatment than conventional EBRT.
- **Proton beam therapy.** This newer type of treatment uses protons instead of X-rays. Protons do less damage to normal, healthy cells as they pass through them, and then stop after a certain distance to release the energy there. This might lead to fewer side effects because it directly targets the tumor and

does less damage to other tissue. But so far, proton therapy has not been shown to work better or be safer than other types of EBRT. Proton therapy is only available in a small number of centers around the country because of the expensive technology needed.

Getting ready for EBRT

Before starting EBRT, you may have a lymph node biopsy to see if your cancer has spread outside the prostate gland. One or more lymph nodes are removed to see if there are cancer cells in them. Other tests may also be done.

Before you start radiation, you'll have an appointment to plan your treatment. This is called simulation. During this appointment:

- You'll lie on a table while a radiation therapist uses a machine to find exactly where the radiation will be aimed. The therapist may mark your skin with tiny dots of permanent ink or tattoos. These are used to aim the radiation at the exact same place each time.
- CT scans or other imaging tests might be done to help locate the cancer.
- A plastic mold or cast of your body may be made for some types of ERBT. The mold helps you get in the same position and holds you still for each treatment.

What to expect for your treatment

You'll get ERBT at a hospital or clinic. You'll likely not have to stay overnight. The total length of time for your treatment depends on the type and dose of radiation, as well as why you are getting it. For instance, if you're getting radiation as the main treatment for an early-stage prostate cancer, you'll likely get treatments 5 days a week for several weeks in a row. If you're getting radiation therapy to treat bone pain, you'll probably need fewer treatments.

Each treatment is much like getting an X-ray, but the radiation is stronger. You lie on a table while the machine delivers the radiation. The actual treatment is quick and doesn't hurt, but getting you into the correct place for treatment each time takes longer. When you are in the right position, the radiation therapist leaves the room and controls the machine. The therapist can see you. And you can talk with and hear the therapist the whole time.

Your radiation oncologist or nurse can tell you what to expect during treatment.

What happens after EBRT?

After you finish your radiation therapy, your oncologist and other healthcare providers will closely watch you as you recover. Lab tests and scans will be done. Make sure you tell your healthcare providers about any symptoms you have. Make sure to go to all of your follow-up visits.

Side effects of EBRT

Radiation therapy affects normal cells, as well as cancer cells. This can cause side effects. Side effects depend on the amount and type of radiation. Some side effects start during treatment. Others may not start until weeks or months after EBRT. Side effects of radiation therapy to the prostate may include:

- Feeling very tired, even after resting
- Redness, flaking, peeling, or fluid drainage at the skin over the treatment area
- Loss of hair, especially pubic hair (it may not come back)
- Swelling of your penis, scrotum, or legs

Radiation to the prostate can irritate the bladder or intestines. This can lead to side effects like:

- Diarrhea or intestinal cramping

- Blood in your stool
- Feeling the need to urinate often
- Burning when you urinate

These side effects can sometimes start during treatment. They often go away over time. But in some men, they might not go away fully. Some men might also have side effects that start later, after treatment ends, such as trouble controlling urine flow (incontinence) that can get worse in the months or years after treatment.

A hydrogel spacer may be placed by your healthcare provider before radiation therapy begins. It creates space between your rectum and prostate. This may help reduce damage to your rectum and bowel and limit side effects.

Talk with your healthcare providers about any side effects you have. They may be able to help lessen them.

Erectile dysfunction after treatment

Another possible side effect after radiation therapy is problems with erections (erectile dysfunction or impotence). The risk of this depends on many factors, including a man's age and his ability to have erections before treatment. After radiation therapy, erection problems tend to develop slowly over time and can get worse over about 2 years. This is different from surgery, where erection problems tend to happen right away but can often get better over time.