

# Breast Cancer: Radiation Therapy



## What is radiation therapy?

Radiation therapy is a breast cancer treatment choice that often uses X-rays to kill cancer cells. There are several ways to give radiation therapy to the breast cancer cells. Radiation therapy is also called radiotherapy. Its goal is to kill or shrink cancer cells.

## When might radiation therapy be used for breast cancer?

Radiation is most often used along with other breast cancer treatments, like surgery or chemotherapy. Your healthcare team may advise radiation if you have either of these:

- **Early stage or locally advanced breast cancer.** Radiation can be used as part of a plan to save the breast instead of a mastectomy. The surgeon removes the tumor, does a lumpectomy, and then orders radiation after surgery. This is called adjuvant treatment. Radiation can also be used to treat lymph nodes after surgery if some are found to be positive. Radiation can also be used after the entire breast is removed (mastectomy). This helps reduce the risk for the cancer coming back. It also treats the lymph nodes in the armpit, neck, or collarbone or inside the chest.
- **Metastatic breast cancer.** This means the cancer has spread to other parts of your body, such as the bones or brain. The goal of radiation in this case is mainly to ease cancer symptoms. This is sometimes called palliative treatment.

## Types of radiation therapy

The types of therapy include:

- **External radiation.** This is called external beam therapy (EBRT). It's the most common type used to treat breast cancer. EBRT precisely sends high levels of radiation directly to the cancer cells. The machine is controlled by a radiation therapist. Radiation is used to kill cancer cells and to shrink tumors. So special shields may be used to protect the tissue near the treatment area.
- **Internal radiation.** This is called brachytherapy or implant radiation. This type of radiation treatment is given right inside the body in the area of the cancer. It gives a higher dose of radiation to a small area for a shorter time. The radiation source may be put directly into the area of the breast tumor. Or it may be put in through a small tube placed near the tumor. There are several different ways to deliver brachytherapy. One way is through balloons with catheters inserted into the breast. Other ways are with an X-ray machine in the operating room, or with catheters put in after lumpectomy into the breast. These are removed later.

## Before radiation therapy

Your radiation oncologist may do some imaging tests before your radiation therapy. These may include X-rays, CT scans, MRIs, and PET-CT scans. Imaging tests help show exactly where you need treatment. You may have the same tests after treatment to see how well it worked.

Before you start treatment, imaging scans will be used to measure the exact location of the tumor so the beams of radiation can be focused there. It's usually aimed at the whole tumor in the breast or the place where the tumor was before surgery. Sometimes it has to be aimed under your arm and at other parts of your chest, too. Small ink marks may be put on your skin to mark the treatment area. This helps to make sure that the radiation reaches only the tumor, and not healthy parts of your body.

## What to expect during external beam radiation therapy (EBRT)

Radiation treatment is usually started after enough time has gone by for your surgery wound to heal, often at least 2 to 3 weeks. EBRT is usually given once a day, 5 days a week, for a set number of weeks. Or you may go to the radiation center twice a day and get a larger dose of radiation over a shorter period of time. You will need to go to the radiation clinic every day for treatment.

Radiation treatment is a lot like getting an X-ray, but the radiation is stronger. The radiation comes from a large machine. The machine doesn't touch you during the treatment. The treatments don't hurt and they are quick. The whole process will likely take less than an hour. The treatment may be delivered to part of the breast (around the lumpectomy area) or to the whole breast and lymph nodes.

Some healthcare providers believe that things such as lotion, powder, and deodorant can interfere with EBRT. You may be asked not to use them until after treatment.

On the day of treatment, you are carefully put into the right position. The radiologist may make a mold of your body. This can be used to support you in the exact same position every time and keep you from moving during treatment. You may see laser lights from the machine lined up with the marks on your skin. These help the therapist know you are in the right position. Sometimes X-rays are taken each day to make sure you are in the precise position you need to be. Some centers may ask you to hold your breath for a few seconds during treatment. Or they may use a machine that will help you be aware of your breathing pattern. The therapist will leave the room while the machine sends radiation to your tumor. During this time, they can see you, hear you, and talk to you. When the machine sends out the radiation, you will need to be very still.

The radiation oncologist and the radiation therapist will carefully watch the intensity and length of each radiation treatment. They will also check the area that is being treated. You will get regular physical exams and blood tests during the course of your treatments.

## What to expect during internal radiation therapy

For internal radiation therapy, the radiation is directed from inside the body. The radiation therapist places a small thin hollow tube (catheter) directly into the breast where the tumor used to be. Radioactive seeds or pellets are then put into the catheter for short periods of time each day. They are then removed when the treatment is over. Internal radiation may be done along with or instead of EBRT. Some types of internal radiation need a balloon-type device to be inserted into your breast (balloon brachytherapy). The device is put into the hole the surgeon created when removing your cancer. This balloon device stays in place for about 7 to 10 days. Radiation is put into the balloon twice a day (for about 10 to 15 minutes each time) for a total of 5 sessions. Then the balloon is deflated and removed. Other types include intraoperative radiation where a machine in the operating room is used to deliver localized radiation to the surgical bed while you are asleep. Usually only one treatment is needed, although sometimes, especially if lymph nodes are positive, you may be recommended to have further external beam radiation therapy.

## Side effects of radiation therapy

If you have EBRT, you don't need to worry about being radioactive after your treatments. It's perfectly safe to be around other people. If you have internal radiation, you may be told not to be around people who could be sensitive to radiation. This includes small children and pregnant women. Be sure you understand what type of radiation you're getting and any extra care you should take to protect those around you.

Also be sure you understand possible side effects, things you can do to try to prevent them, and what you should do if you have them. All cancer treatments have side effects. They vary from person to person. Side effects often get worse as treatment goes on, but they can be treated. Side effects often get better or go away over time after treatment ends. Common short-term side effects of radiation therapy to the breast include:

- Skin in the treated area that is irritated, dry, red, and blistered like sunburn, and moist and leaking fluid toward the end of treatment
- A heavy or tight feeling in the area being treated
- Decreased sensation in the breast tissue or under the arm
- Extreme tiredness or weakness
- Appetite loss

In most cases, the effects of radiation on the skin are short-term. The skin will heal after treatment ends. In some cases, long-term skin effects may occur such as:

- Skin gets dark
- Increased size of skin pores
- Reddened areas caused by dilated blood vessels
- Change in the size and appearance of the breast
- After balloon brachytherapy, there is a risk of a persistent fluid pocket (seroma) or hardening of the breast after the device is removed
- After brachytherapy, there is a small risk of infection

Other possible long-term side effects of radiation may not show up until many years after you finish treatment. This can include damage to your heart or lungs. These depend on the dose and type of radiation used. These also depend on how many times you had the treatment. Ask your healthcare team what you should watch for and what you may expect.

Sometimes if radiation is needed to treat lymph node regions, swelling (edema) of the hand or arm may occur. This needs immediate attention so therapy can begin. Sometimes the swelling of the arm, called lymphedema, is long-lasting (permanent).

## Talking with your healthcare provider

Before deciding to have radiation treatment, talk with your healthcare provider about:

- The location of the facility where radiation is given and your ability to get to it every day for the duration of your therapy
- Whether you've had radiation treatment to your chest in the past
- Whether you plan to have breast reconstruction in the future
- Any other health conditions you have that may prevent you from getting radiation
- What side effects to watch for and when to call your healthcare team

Ask your healthcare provider to tell you about the benefits and risks of radiation therapy before making a decision.

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