

External Beam Radiation Therapy

External beam radiation therapy uses a machine to aim radiation at a specific part of the body. Most people have short treatments once a day, five days a week, for several weeks. It is painless during the session and does not make you radioactive.

The simple version

This page is for people about to start external beam radiation therapy, and the people who support them. It walks through what the treatment is, what each visit is like, and when to call your team.

External beam radiation therapy comes from a machine that aims radiation at your cancer. It is a local treatment, which means it treats a specific part of your body. For example, if you have cancer in your lung, you will have radiation only to your chest, not your whole body.

It is used to treat many types of cancer.

The radiation comes from a machine outside your body and is aimed carefully at the cancer.

How it targets the cancer

There are many types of external beam radiation therapy, but they all share one goal. That goal is to deliver the highest prescribed dose of radiation to the tumor while sparing the healthy tissue around it. Each type uses a computer to study images of the tumor and calculate the most precise dose and path possible.

Some common types include 3-D conformal radiation therapy, which shapes the beams to the tumor from many directions. Another is intensity-modulated radiation therapy (IMRT), which uses many smaller beams and can change their strength. Image-guided radiation therapy (IGRT) uses scans during treatment to adjust for changes in the tumor's size and location. Other approaches, such as stereotactic radiosurgery, focus high-energy beams on small tumors with well-defined edges.

What happens before your first treatment

You will have a 1- to 2-hour meeting with your doctor or nurse before you begin. You will have a physical exam, talk about your medical history, and maybe have imaging tests. Your team will discuss the treatment, its benefits and side effects, and how to care for yourself. You can then choose whether to have it.

If you decide to go ahead, you will have a planning session called simulation. During simulation:

- A radiation oncologist and radiation therapist figure out your treatment area while you lie very still and have x-rays or scans.
- The therapist may tattoo or draw small dots of colored ink on your skin to mark the area. These help make sure you are in exactly the same position for every treatment. Tattooed dots are about the size of a freckle and are permanent; ink markings fade over time.
- A body mold may be made to keep you from moving during treatment. If you are getting radiation to the head and neck, you may be fitted for a mask that keeps your head still.

What a treatment session is like

Most people get external beam radiation therapy as an outpatient, meaning you do not stay overnight.

At each session, you may change into a gown, then lie on a treatment table or sit in a special chair. The room will be cool. You may see harmless colored lights that help the therapist position you. You will need to stay very still so the radiation goes to the exact same place each time. The radiation itself takes about 1 to 5 minutes, and you can breathe normally.

The radiation therapist leaves the room just before treatment begins and controls the machine from nearby. They watch you on a screen or through a window and talk with you through a speaker. Tell them if you feel sick or uncomfortable — they can stop the machine at any time. You will hear and see the machine move, but you will not feel, hear, see, or smell the radiation. Most visits last 30 minutes to an hour, with most of that time spent getting you into position.

How often and for how long

Most people have treatment once a day, five days a week, Monday through Friday. Radiation is given in a series of treatments to let healthy cells recover and to make the radiation more effective. The span from your first treatment to your last is called a course of treatment. How many weeks you need depends on the type of cancer, the goal of treatment, the radiation dose, and the schedule.

It will not make you radioactive

People often wonder if they will be radioactive during treatment. External beam radiation therapy will not make you radioactive. You may safely be around other people, even pregnant women, babies, and young children.

When to get help sooner

Radiation itself is painless, but the treated area needs watching between sessions.

- **Call your care team the same day if** the treated skin blisters, weeps, or opens into a raw sore. NCI calls this a moist reaction (cancer.gov/about-cancer/treatment/side-effects/skin-nail-changes), and it can get infected if it is left.
- **Call your care team right away if** your temperature reaches 100.4°F (38°C) or higher, or you get shaking chills. MedlinePlus says getting an infection during cancer treatment is an emergency (medlineplus.gov/ency/patientinstructions/000913.htm), and to contact your provider right away. Use your team's urgent number. For emergencies call 911 or go to the ER. Do not take a fever-reducing medicine first unless your team has told you to.
- **Call your care team right away if** you are having radiation to the chest or throat and swallowing has become too painful to drink, or you cannot keep fluids down.
- **Call your care team within a day or two if** the skin turns red, dark, itchy, swollen, flaky or crusty, or if new diarrhea, urinary burning or headaches start. Also call if you are struggling to get to appointments.

Source: National Cancer Institute (cancer.gov/about-cancer/treatment/types/radiation-therapy/external-beam)

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Online: cancerexplained.org/treatments/external-beam-radiation-therapy

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