Ewing Sarcoma: Radiation Therapy

What is radiation?

Radiation uses beams of high-energy X-rays or other particles to kill cancer cells or keep them from growing.

When might radiation be used?

Radiation is sometimes part of the treatment for Ewing sarcomas. It's mostly used with other types of treatment. It's almost always given at the same time as chemotherapy. Although radiation is not usually the main treatment, these tumors often respond well to radiation. Here are some of the reasons your healthcare provider may suggest radiation:

- **To try to shrink a tumor before surgery.** This may make it easier to remove.
- **Instead of surgery as the main treatment.** If the whole the tumor can't be removed safely with surgery, radiation might be used instead. It is often given with chemotherapy in this case. This is called chemoradiotherapy.
- **After surgery.** This is done to kill any cancer cells that may have been left behind.
- **To treat tumors in other parts of the body.** If Ewing sarcoma has spread, radiation is often an option to treat cancer that's in other organs.

To plan radiation treatment, you'll meet with a team of cancer specialists. This might include a surgeon, radiation oncologist, dosimetrist, radiation therapist, and medical oncologist.

What happens during radiation?

The most common way to get radiation for Ewing sarcoma is called external radiation. The radiation comes from a large machine that sends out invisible X-ray beams or particles. The machine doesn't touch you, and radiation doesn't hurt. Sometimes special types of external radiation are used to try to limit how much radiation reaches nearby normal cells. These include intensity-modulated radiation therapy (IMRT) and proton beam therapy.

A healthcare provider who specializes in cancer and radiation is called a radiation oncologist. This healthcare provider decides the kind of radiation needed. They also decide the dose and how long treatment will last.

External radiation is most often given on an outpatient basis in a hospital or a clinic. In most cases, external radiation is given 5 days a week, Monday through Friday, for many weeks.

Getting ready for radiation

Before treatment, a planning session is needed to map out exactly where in the body the radiation beams need to be aimed. This process is called simulation. It may take up to 2 hours. During this session, imaging tests, like CT scans or ultrasound, may be done. This helps healthcare providers know exactly where the tumor is and where to aim the radiation.

Also at this session, body molds or casts might be made. These are used to put you in the exact same position for each treatment and help keep you from moving during treatment. Then, you'll lie still on a table while a radiation therapist uses a machine to define the treatment field. The field is the area where the radiation will be aimed. Sometimes it's called the radiation port. The therapist may mark your skin with tiny dots of semi-permanent ink or tattoos. This is done so the radiation will be aimed at the exact same place each time.

On radiation treatment days

On the days you get radiation, you'll lie on a table while the machine moves over you. You may have to wear a hospital gown. Treatment is a lot like getting an X-ray, but it takes longer, about 15 to 30 minutes. You should plan on being there for about an hour total.

At the start of the treatment session, a radiation therapist may place blocks or special shields to protect parts of your body from the radiation. Or the blocks may be located in the head of the treatment machine. The therapist then lines up lights on the machine with the marks on your skin so that radiation is sent to the spot that was marked during the simulation. When you're ready, the therapist leaves the room and turns the machine on. You may hear whirring or clicking noises, like the sounds of a vacuum cleaner, while the machine moves around you and the radiation is being given. During treatment, you'll be able to talk to the therapist over an intercom. You will not be radioactive after external beam radiation treatments.

What to expect after radiation

Because radiation affects normal cells as well as cancer cells, this treatment can cause side effects. They tend to be limited to the area being treated. Some people have few or no side effects. Most side effects can be treated. It's important to let your healthcare provider know about any changes right away. Treating side effects early can keep them from getting worse.

Sometimes, if side effects occur and don't get better with treatment, the dose of radiation or the frequency of treatments might be changed. Or treatment may be stopped until the side effects get better. Be sure to let your healthcare provider know about any side effects you notice.

Potential short-term side effects

Common side effects of radiation include:

- Treatment port skin changes. This is often like a bad sunburn. The skin may become red, blister, and peel.
- Hair loss in areas that get radiation
- Nausea or diarrhea. This may happen when radiation is needed in the abdomen or pelvis.
- Bladder irritation. This can lead to a feeling of having to urinate often or pain or burning during urination. This may happen with radiation to the pelvis.
- Low blood cell counts

If you notice any of these side effects, talk with your healthcare provider right away about how to deal with them and how to know when they become serious. These side effects tend to go away over time after treatment ends.

Potential long-term side effects

Radiation can cause some long-term side effects. These depend on where the radiation was aimed. This is a concern in treating Ewing sarcoma, which often affects children, teens, or young adults.

Possible long-term side effects include:

- **Slowed bone growth.** Radiation can slow bone growth in children. This may cause one leg to be shorter than the other, for instance. This isn't a concern in people whose bones are no longer growing.
- **Second cancers.** Cancers are more likely to form in areas that have received radiation. These cancers may form many years after treatment. So the younger you are, the higher the probability that this could happen. Be sure to discuss this with your healthcare provider.
- **Fertility problems.** Radiation to the pelvis can damage reproductive organs. This could affect fertility later in life. If you want to have children in the future, talk with your healthcare provider or a fertility specialist about your options before starting treatment.
- **Damage to other organs.** Organs like the heart or lungs might be affected by radiation to the chest. The intestines or the bladder might be affected by radiation to the belly (abdomen).

Working with your healthcare provider

Talk with your healthcare providers about what side effects to look for and when to call them. Make sure you know what number to call with questions or problems. Is there a different number for evenings, holidays, and weekends?

It may help to keep a diary of your side effects. A written list will make it easier to remember your questions when you go to appointments. It will also make it easier for you to work with your healthcare team to make a plan to manage side effects.