Radiation Therapy and Cancer Treatment

Radiation therapy is a type of cancer treatment. You may also hear it called radiotherapy or therapeutic radiology.

Radiation therapy kills cancer cells with beams of high-energy X-rays (called photons) or charged particles (called electrons or protons). It can be used in many ways. It depends on the type of cancer you have and where it is in your body.

Radiation might be used to cure cancer. It might also be used to help control the disease and keep the cancer from growing and spreading. It can also shrink tumors to ease symptoms.

Radiation may be the only treatment needed for some people. But it's most often used as part of treatment. It may be given with chemotherapy, surgery, or other cancer treatments.

What are the different types of radiation therapy?

Radiation therapy can be external or internal radiation. The way you get it depends on the type of cancer, where it is in your body, your overall health, and your preferences. Sometimes both types of radiation therapy are used.

External radiation (external beam radiation therapy or EBRT)

Most radiation treatments are delivered through a large X-ray type of machine. It sends the radiation beams through your skin and precisely directs the radiation at the tumor. The beams are often aimed at the tumor from many different angles. A radiation therapist works the machine. It doesn't touch you. And it won't make you radioactive.

Radiation can affect nearby normal cells. So special shields may be used to protect parts of your body near the treatment zone. Treatment is usually done 5 days a week for several weeks. These treatments don't hurt. They often last only a few minutes. They're most often done on an outpatient basis in a hospital or clinic. This means you go home the same day.

Internal radiation (brachytherapy, implant radiation, or systemic radiation)

Less often, a source of radiation may be put into your body. It might be radioactive seeds or tubes that are put into the cancer or as close as possible. Sometimes a radioactive medicine is swallowed (ingested) or put into your blood through a vein in an IV (intravenous) line. For instance:

- Radioactive iodine can be (taken by mouth (ingested) to treat thyroid cancer.
- Radioactive medicines can be injected into your blood. They travel around your body and attach to and kill bone or liver cancer cells.
- Radioactive seeds can be put right into the tumor to treat prostate cancer.
- An applicator that holds the radiation can be put next to a tumor through a body opening. For instance, into the vagina to treat cervix or uterus cancers.

Internal radiation can be used to give a higher dose of radiation over a shorter time. The radiation only travels a short distance, so it kills the cancer cells with little damage to nearby tissues.

Some sources of the radiation stay in the body for only a short time. Others, like seeds and radioactive medicines, stay in the body forever. But the radiation gets weaker and is used up over time.

Internal radiation makes you radioactive for a short time. You may have to stay in the hospital during treatment, or you may go home. Either way, you'll need to protect the people around you. Talk with your healthcare

provider about the steps to take when getting this treatment.

Before you get radiation therapy

To plan your treatment, you'll meet with a team of cancer specialists. This team might include a surgeon, radiation oncologist, and medical oncologist. A healthcare provider who specializes in treating cancer with radiation is called a radiation oncologist. This provider works with you and your cancer care team to decide how radiation will be used.

Simulation process

External radiation is aimed at the tumor as precisely as possible. This is important to help keep nearby normal tissues from getting too much radiation. Each hospital has its own procedures. But external beam radiation therapy often starts with an appointment called simulation. This is needed to find exactly where on your body the radiation beam needs to be directed. It may take up to 2 hours.

At this visit, a physical exam will be done. You'll be asked about your health history. Tell the healthcare provider if you've ever had radiation in the past.

CT, MRI, PET scans, or ultrasound might be done. These tests help your healthcare providers see how big and exactly where the tumor is. This lets them aim the radiation right at it. They're also used to figure out where the radiation will need to go into your body and what position you'll need to be in. Body molds, masks, headrests, or other devices might be made to put you in the exact same position. They also help keep you from moving during treatments.

Then, you'll lie still on a table while a radiation therapist uses a machine to scan your treatment field. The field is the exact place on your body where the radiation will be aimed. The therapist may mark your skin with tiny dots of semipermanent ink or tattoos. This is done to make sure radiation is given to the exact same place each time.

Treatment plan

Once the simulation process is done, a radiation oncologist will make your treatment plan. They work with a team of radiation experts to do this. The process can take a few days.

Your treatment plan will cover:

- The exact type of radiation to use
- How it will be given
- The amount (dose) of radiation that's needed
- The number of treatments you'll get

Working with your team

Radiation affects normal cells as well as cancer cells. This causes side effects. Side effects depend on the type and dose of radiation used and, the part of the body that's treated. Ask your treatment team what you should expect treatment to be like. Find out how it will make you feel. Ask about short- and long-term side effects.

Many times, side effects don't start until you're a few weeks into treatment. Tell your healthcare provider about any side effects you have right away. It's important to treat them before they get worse.

Most side effects go away over time after you stop treatment. Some don't happen until many years after treatment. If you notice any changes, talk with your healthcare provider about how to deal with them. Also ask what you should do if they become serious. Ask for the phone number to call with questions or problems. Ask if there is a different phone number for evenings, weekends, and holidays.