How does radiation work?

All cells, cancerous and healthy, grow and divide. But cancer cells grow and divide more rapidly than many of the normal cells around them. Radiation therapy uses special equipment to deliver high doses of radiation to cancerous tumors, killing or damaging them so they cannot grow, multiply, or spread. Although some normal cells may be affected by radiation, most appear to recover fully from the effects of the treatment. Unlike chemotherapy, which exposes the entire body to cancer-fighting chemicals, radiation therapy affects only the tumor and the surrounding area.

How long does the treatment take?

External radiation therapy usually is given 5 days a week. Weekend rest breaks allow normal cells to recover. But the total dose of radiation and the number of treatments you need depends on:

- the size and location of your cancer
- the type of cancer
- your general health
- any other treatments you are receiving

For example, radiation therapy may last only 2 or 3 weeks when given mainly to relieve symptoms. Another schedule, known as split-course therapy, allows for several weeks off in the middle of treatments to allow the body time to recover while the cancer shrinks.

What should I ask my doctor?

Understanding the goals of the treatment and your doctor's expectations will help you decide whether radiation therapy is best for you. Questions to ask your doctor might include the following:

- What is the purpose of radiation treatment for my type of cancer?
- Will it prevent or stop the spread of cancer?
- Will it destroy or shrink the tumor?
- If radiation therapy follows surgery, will it destroy any remaining cancer cells? Could radiation alone be used instead of surgery?
- What are the chances that radiation therapy will work?
- Are there other ways to achieve the same goals? What are other treatment options?
- How will the radiation directly affect the cancer and the area surrounding it?
- What side effects are likely to occur?
- Will any of these side effects affect my ability to function normally, for example my ability to eat or drink, exercise, work, etc.?
- Will side effects change my appearance?
- Will they be temporary or permanent? If temporary, how long will they last?

What is the chance that the cancer will spread or come back if I do not have radiation therapy?

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Asian American Cancer Support Network

Generating Resources for Hope

RADIATION THERAPY

What is radiation Therapy?

Radiation therapy uses a stream of high-energy particles or waves, such as x-rays, gamma rays, electrons, or protons to destroy or damage cancer cells. Other names for radiation therapy include radiotherapy, x-ray therapy, cobalt therapy, and irradiation.

Radiation therapy is one of the most common treatments for cancer and is used in more than half of all cancer cases. It is the primary treatment for some types of cancer, such as certain non-melanoma skin cancers, head and neck cancers, early-stage Hodgkin's disease and non-Hodgkin's lymphomas. Cancers of the lung, breast, cervix, prostate, testes, bladder, thyroid, and brain are also treated with radiation therapy. For some patients, radiation therapy may be the only treatment they receive.

Radiation can be administered in several ways: In external beam radiotherapy, radiation beams are delivered using a machine called a linear accelerator. External beam is the most common type of radiotherapy. Internal radiotherapy (called brachytherapy) is administered using a radiation source implanted into the site of the tumor. These sources may be implanted permanently (e.g. permanent seeds used in prostate cancer therapy), or temporarily. Radiosurgery (frame-based, Gamma Knife, or Cyberknife) is performed using high doses of radiation and delivers focused radiation to the tumor. Contrary to their names, no "knife" is used.

Thousands of people become free of cancer after receiving radiation treatments alone or in combination with surgery, chemotherapy, or immune therapy (biologic therapy). For example, doctors can use radiation before surgery to shrink a tumor so that it can be removed more easily or after surgery to stop the growth of any cancer cells that remain.
Radiation therapy given during surgery is called intraoperative radiation.

What happens during each treatment?

External radiation treatments are painless. The experience is just like having a regular x-ray taken. The treatment takes only a few minutes; but each session can last 15 to 30 minutes because of the time it takes to set up the equipment and place you in the correct position.

Depending on the treatment area, you may need to undress, so it is wise to wear clothes that are easy to take on and off. You will lie on a treatment table positioned under the radiation machine. The radiation therapist may put special shields (or blocks) between the machine and other parts of your body to help protect normal tissues and organs. Although radiation does not distinguish between tumor cells and healthy cells, healthy tissue usually recovers with little or no permanent damage. Nevertheless, you should remain still during the treatment.

Once you are in the correct position, the radiation therapists will go into a nearby room to turn on the machine and watch you on a TV monitor. You will be able to talk with the therapists over an intercom. X-rays may be taken during treatments to confirm accuracy.

The radiation therapy machine will make clicking and whirring noises and sometimes sound like a vacuum cleaner as it moves to aim at the treatment area from different angles. The radiation therapist controls the movement and constantly checks to be sure it is working properly. If you are concerned about anything that happens in the treatment room, ask your therapist to explain. If you feel ill or uncomfortable during the treatment, tell your therapist at once. The machine can be stopped at any time.

Will I be radioactive?

No. Even though the effects of radiation are powerful, you will not become permanently radioactive. External radiation therapy affects targeted cells only for a moment. With internal radiation therapy, your body may emit a small amount of radiation for a short time. If the source of radiation is contained in a closed implant, the radioactive material cannot escape, but precautions are taken anyway and may include hospitalization and limitation of visitors. Pregnant women, whose unborn babies are vulnerable to the smallest doses of radiation, are not allowed to visit.

Patients who are given radioactive substances such as iodine, phosphorus, or strontium by mouth or into a vein will be instructed on precautions to take until their bodies no longer contain enough radioactivity to be hazardous to others. Be sure to discuss any safety concerns you have and precautions you need to take with your radiation oncologist, nurse, or the radiation safety officer at your treatment facility.

What side effects can I expect?

Most side effects that occur during radiation therapy are not serious and usually disappear soon after treatment ends. The extent of the possible side effects depends on your general health, your treatment dose, and the area of your body that is being treated. The most common side effect is fatigue. Specific side effects within the area being treated may include reddening and itching of the skin. Ask your physician about the potential side effects of your particular treatment because side effects vary depending on what part of your body is being treated. For example, if you are receiving radiation to your breast for breast cancer, you will not experience any nausea, vomiting, diarrhea, or hair loss. There are many ways to reduce the discomfort of side effects, so be sure to ask your physician.

Many patients have minimal side effects. They are able to work, manage a household, and enjoy leisure activities as usual during their treatment. Other patients find that they need more rest and therefore cannot do as much. Your energy level should return to normal after treatment ends.