

RADIATION ONCOLOGY THERAPY FAQ

From the National Cancer Institute <http://www.cancer.gov>

Q: What is radiation therapy?

A: Radiation therapy (also called radiotherapy, x-ray therapy, or irradiation) is defined as the use of a certain type of energy, called ionizing radiation, to kill cancer cells and shrink tumors. Radiation therapy injures or destroys cells in the area being treated (the “target tissue”) by damaging their genetic material, making it impossible for these cells to continue to grow and divide. Although radiation damages both cancer cells and normal cells, most normal cells can recover from the effects of radiation and function properly. The goal of radiation therapy is to damage as many cancer cells as possible, while limiting harm to nearby healthy tissue.

Q: What are the types of radiation?

A: There are different types of radiation and different ways to deliver the radiation. For example, certain types of radiation can penetrate more deeply into the body than others. In addition, some types of radiation can be very finely controlled to treat only a small area (an inch of tissue, for example) without damaging nearby tissues and organs. Other types of radiation are better for treating larger areas. In some cases, the goal of radiation treatment is the complete destruction of an entire tumor. In other cases, the aim is to shrink a tumor and relieve symptoms. In either case, doctors plan treatment to spare as much healthy tissue as possible. About half of all cancer patients receive some type of radiation therapy. Radiation therapy may be used alone or in combination with other cancer treatments, such as chemotherapy or surgery. In some cases, a patient may receive more than one type of radiation therapy.

Q: When is radiation therapy used?

A: Radiation therapy may be used to treat almost every type of solid tumor, including cancers of the brain, breast, cervix, larynx, lung, pancreas, prostate, skin, spine, stomach, uterus, or soft tissue sarcomas. Radiation can also be used to treat leukemia and lymphoma (cancers of the blood-forming cells and lymphatic system, respectively). Radiation dose to each site depends on a number of factors, including the type of cancer and whether there are tissues and organs nearby that may be damaged by radiation.

For some types of cancer, radiation may be given to areas that do not have evidence of cancer. This is done to prevent cancer cells from growing in the area receiving the radiation. This technique is called prophylactic radiation therapy. Radiation therapy also can be given to help reduce symptoms such as pain from cancer that has spread to the bones or other parts of the body. This is called palliative radiation therapy.

Q: In what kinds of radiation therapies does Littleton Radiation Oncology specialize?

A: LRO specializes in the most advanced 3-D imaging to customize a patient’s radiation treatments and pinpoint cancer with millimeter accuracy. LRO specializes primarily in the following types of treatments:

- **Image Guided Targeting-** This is either a CT-based or fluoroscopy-based targeting technology used with radiation to identify and track the target for optimal delivery of the radiation. It is used to treat cancers in any organ, such as prostate, breast, liver, bladder, kidney, uterus and brain.
- **Intensity-Modulated Radiation Therapy -** Because this therapy is a computer guided radiation treatment, the strength of the radiation can be modified during treatment to protect surrounding healthy tissue, while allowing for the doctor to focus intense radiation on the tumor. This treatment is a type of conformal radiation, which can surround the shape of the tumor, enhancing its pinpoint accuracy.
- **Brachytherapy-** A form of radiation therapy where a radioisotope is placed inside the tumor to deliver an intense dose of radiation in a precise manner. Brachytherapy allows the radiation dose to be conformed within the tumor treated, not just to the shape of the tumor, creating dose distributions superior to those obtained with cyberknife. Often a course of brachytherapy can be of shorter duration than other forms of radiation treatments.
- **Hyperthermia-** Hyperthermia is a therapy used to heat tumors. Research has shown that heat can attack the cancer cells while also increasing the effect of radiation therapy in treating some tumors that are recurrent or progressive despite conventional therapy. When a tumor is heated and irradiated, the effective radiation dose is approximately doubled with no increase in risk of side effects from the radiation.