

Introduction to Cancer Therapy (Radiation Oncology)

This information is reviewed by a physician with expertise in the area presented and is further reviewed by committees from the American College of Radiology (ACR) and the Radiological Society of North America (RSNA), comprising physicians with expertise in several radiologic areas.

Shortly after the discovery of the x-ray by German physicist Wilhelm Conrad Roentgen in 1895, the "powerful rays" were being used to effectively treat cancer.

Today, an increasing number of patients have their cancers treated successfully, with fewer side effects and preservation of normal tissue function, using radiation therapy.

Modern technology has combined the use of three-dimensional imaging technology, computerized treatment planning and high-energy x-ray machines to make this possible. It is not just the technology that cures patients, but the professionals who use it, including:

- Radiation oncologists
- Radiation therapists
- Radiation oncology nurses
- Medical radiation physicists
- Dosimetrists
- Social workers
- Dietitian
- Physical Therapists
- Dentists

What is radiation therapy?

About 50 to 60 percent of cancer patients are treated with radiation at some time during their disease.

Radiation therapy is the careful use of high-energy radiation to treat cancer. A radiation oncologist may use radiation to cure cancer or to relieve a cancer patient's pain.

Radiation therapy works because the radiation destroys the cancer cells' ability to reproduce and the body naturally gets rid of these cells.

A cancer patient may be treated with radiation alone. Prostate cancer and larynx cancer are often treated in this manner.

Sometimes radiation therapy is part of a patient's treatment. For example, a woman may have radiation therapy after breast conserving surgery. She can be cured of her cancer and still keep her breast. When radiation therapy is only part of a patient's treatment it is called adjuvant treatment.

Patients can be treated with radiation therapy and chemotherapy before surgery. This may allow a patient to have less radical surgery than would otherwise be required. For example, some bladder cancer patients can keep their bladder if they are treated with all three treatments rather than only one treatment. Chemotherapy may be used simultaneously with radiotherapy without surgery to improve the local response and reduce metastatic disease; this is known as Combined Modality Therapy.

A radiation oncologist may use radiation generated by a machine outside a patient's body (external beam radiation therapy or proton therapy). Radiation also may be given with radioactive sources that are put inside the patient (brachytherapy).

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