Radiation Oncology

Radiation oncology uses powerful X-rays to treat cancer and some non-cancerous medical conditions. More than half of cancer patients are treated with radiation during their illness. Using the most advanced technology available, Piedmont Hospital's highly-skilled radiation oncology team provides a full-range of radiation treatment for all tumor locations, sizes and types.

What is radiation therapy?

Radiation therapy is the precise targeting of high-energy radiation to treat cancer. One of the largest radiation therapy programs in the state, specialists at Piedmont Hospital provide nearly 15,000 radiation therapy treatments each year.

The goal of radiation therapy is to deliver a sufficient dose of radiation to the target area to destroy the cancer cells while sparing the surrounding healthy tissue. Your cancer treatment team will work with you and your medical oncologist to determine the most appropriate treatments for you.

Radiation therapy is typically delivered externally but can also be delivered internally through surgical procedures.

External Beam Radiation Therapy

External beam radiation therapy is a non-invasive treatment method where radiation is focused on the cancer. Sophisticated treatments can be given each day in just 10 to 15 minutes.

The most common equipment used to deliver external beam radiation therapy is a linear accelerator. The unique design of the linear accelerator allows it to rotate around the patient, delivering precise radiation from various angles. Multiple angles allow the maximum amount of radiation to be delivered to the tumor while delivering a minimal amount of radiation to the surrounding healthy tissue. Radiation oncologists use linear accelerators to treat almost any cancer including breast, prostate, head, neck and lung cancers.

The most recent advances in external beam radiation therapy are image-guided radiation therapy and intensity-modulated radiation therapy. Piedmont offers both modalities.

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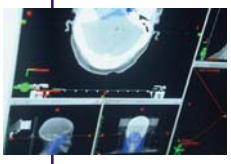
- **Image-guided Radiation Therapy (IGRT)**, delivered using the Trilogy™ Accelerator System, is the most advanced and precise radiation technology available. High quality X-ray imagers mounted directly on the linear accelerator are able to locate the tumor target on a daily basis, enabling more precise treatments. These new imaging capabilities have been combined with sophisticated computers that automatically position the patient, ensuring the greatest accuracy possible.



- **Intensity-modulated Radiation Therapy (IMRT)** uses highly-developed software and hardware systems to customize the shape and intensity of radiation delivered to the tumor and surrounding treatment area. IMRT is one of the most precise forms of external beam radiation therapy available.

Piedmont was one of the first hospitals in the country to adopt IMRT technology and can provide IMRT by using any of its three linear accelerators. For all patients undergoing radiation therapy, the radiation oncology team uses a variety of images, including computed tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography (PET), to recreate the patients' anatomy on the computer and develop specific treatment plans.

Another innovative, non-invasive treatment option for tumors, both intracranial (inside the brain) and extracranial (outside the brain),is radiosurgery. Piedmont is the only hospital in Georgia to offer both the Gamma Knife® and Trilogy™ technologies.

Internal Radiation Therapy

Brachytherapy is a treatment method in which radioactive sources are placed directly inside a tumor so high radiation doses can be delivered with little effect to the surrounding normal tissue. Radiation oncologists at Piedmont Hospital use brachytherapy to treat prostate, breast, lung, gynecologic and head and neck cancers.

There are two forms of brachytherapy: high-dose rate and low-dose rate.

- High-dose rate (HDR). Small catheters/applicators are placed into the body, and a computer-controlled device pushes a radioactive source into each catheter. A sophisticated computer is used to plan treatment and control how long a source remains in each catheter/applicator. Patients typically receive one to five treatments lasting one hour or less. No radioactive material remains once the treatments are complete.

- Low-dose rate (LDR) can be delivered through catheters like HDR procedures or by implanting seeds into the tumor (most often used to treat prostate cancer). Temporary source treatments are typically inserted into the catheter for 24 to 72 hours. Permanent prostate seeds are implanted and release an effective dose of radiation over several months. After delivering their effective dose, the seeds become inert.

Piedmont's cancer program has earned continuous approval, most recently with commendation, for more than 25 years from the American College of Surgeons Commission on Cancer, reflecting the high standards set by the approval committee.

For more information on radiation oncology treatment processes and benefits as well as other Piedmont Hospital services, visit our website at www.piedmonthospital.org.