



Radiation Oncology

Novel Technologies to Treat Cancer
Safely and Effectively





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Bringing the Latest Advances to Your Care

Patients who receive radiation therapy at the Herbert Irving Comprehensive Cancer Center at NewYork-Presbyterian/Columbia University Irving Medical Center benefit from a comprehensive approach that unites a team of nationally recognized specialists with sophisticated technologies. The result: radiation treatments that are highly targeted to kill cancer cells while sparing as much nearby healthy tissue as possible. Our radiation oncologists work as part of each patient's multidisciplinary care team to provide cancer treatment that is safe and customized to their individual needs and delivered in a comfortable, supportive environment.



Our mission is to provide state-of-the-art precision radiation therapy while advancing the field through innovative research and education...all while providing personalized care. Here, we treat you like family.

We offer highly effective treatments for every type of cancer for which radiation therapy is an option.

Why Choose Us for Radiation Therapy?

National Recognition

Herbert Irving Comprehensive Cancer Center is one of only four National Cancer Institute-designated comprehensive cancer centers in the state of New York. This designation is achieved by centers that demonstrate exemplary patient care, leadership in research, and programs that benefit the community.



Faster, Shorter Courses of Therapy

We tailor your treatment to your individual cancer, and deliver the radiation as quickly and over as few sessions as possible. For example, some radiation treatments for breast cancer can be given just once, during breast surgery. We also deliver highly conformal radiation for some prostate cancers daily for five days, rather than weeks, by inserting a gel spacer between the rectum and the prostate to reduce bowel side effects while using higher, more effective radiation doses. Our overarching goal is to cure your cancer and minimize any side effects.

Applying Novel Technologies

The practice of radiation oncology continues to advance and our department remains at the forefront, achieving better results than ever before. We are applying our research findings to increase the benefits of radiation treatment for cancer. Our newest technologies are using artificial intelligence (machine learning) to adapt your radiation treatments on a daily basis to changes in a tumor's size, shape, and location — all while you are resting comfortably in the treatment suite. Such adaptive radiation allows us to target your tumor even more precisely, enabling even higher radiation doses and more sparing of healthy surrounding tissue.

Top Physicians in One Hospital System

Cancer care can be complex, and patients often have other medical issues that need to be addressed. Our radiation oncology team works with other NewYork-Presbyterian/Columbia cancer experts, who are nationally renowned, on a daily basis to provide comprehensive care.

Team members collaborate on multidisciplinary tumor boards for every disease site, enabling them to pool their expertise and insights and customize your care to your personal needs.

A Variety of Uses for Radiation Therapy

Who We Treat

We provide radiation therapy for children, adolescents, and adults with cancers of the adrenal glands, anus, blood, brain and spine, breast, colon and rectum, esophagus, gallbladder and biliary system, head and neck, kidney, liver, lung, pancreas, prostate, skin, stomach, testes, and thyroid, as well as gynecologic cancers, leukemia, lymphoma, melanoma, and sarcoma. We also treat a variety of non-cancer conditions, including amyloidosis, arteriovenous malformations, arthritis, benign brain tumors, essential tremors, heart disease, heterotopic bone, keloids, lung airway fibrosis, thyroid eye disease, transplant rejection, and trigeminal neuralgia.

Treatments We Provide

Our team works with your other providers to match you with the radiation treatment that is best suited for your cancer. We use advanced CT and PET/CT scanning techniques to plan your treatment and offer a wide range of technologies.

External Beam Radiation Therapy

- 3D conformal radiotherapy
- 4D conformal radiotherapy
- Hypofractionated breast radiotherapy (precise higher doses delivered in 1 to 3 weeks)
- Special breast radiation techniques (prone radiotherapy and deep breath hold) to minimize radiation dose to your heart
- Intensity-modulated radiation therapy (IMRT), including RapidArc volumetric arc therapy
- Stereotactic body radiotherapy (SBRT) — precise, higher radiation doses delivered in 1 to 5 sessions
- Stereotactic radiosurgery (SRS), including Gamma Knife® Icon™ radiosurgery with optional frameless capability for malignant and benign brain tumors, arteriovenous malformations, essential tremors, obsessive-compulsive disorders, and trigeminal neuralgia, as well as linear accelerator-based stereotactic radiosurgery
- Total body irradiation (TBI) before bone marrow transplant
- Total lymphoid (nodal) irradiation (TLI) for transplant rejection
- Total body electrons (TBE) for mycosis fungoides (a type of skin lymphoma)

Internal Radiation Therapy

Internal radiation therapy, known as brachytherapy, involves the placement of a radioactive source (such as a wire, seed or probe) directly on tumor tissue inside the body. We use this technique to treat a variety of localized cancers, including those of the cervix, head and neck, lung, rectum, prostate and uterus. Intraoperative radiation therapy (IORT) is another form of brachytherapy that we offer to some women with early-stage breast cancers, allowing them to complete radiation in a single treatment. We also offer eye plaque brachytherapy for melanoma, endobronchial brachytherapy for lung transplant patients, and cardiac brachytherapy to spare patients with clogged vessels from surgery.

Expertise Across the Board

A Team of Experts

Your team includes exceptional radiation oncologists, multi-disciplinary care and tumor boards — doctors with advanced training in the science and delivery of radiation therapy — as well as radiation dosimetrists and physicists who help optimize your individualized radiation plan, radiation therapists who set you up and deliver each treatment, nurses, patient navigators, and many others who are here to support you during your treatment. Registered dietitians, physical therapists, and speech pathologists are available as needed to help manage potential side effects of radiation therapy. For children, Child Life specialists are also available. We understand that radiation therapy can sometimes last for weeks. Your team gets to know you and your needs to make this experience as seamless and comfortable as possible. If necessary, we connect you with our experts in other fields of medicine to help you receive the best care.

Clinical Trial Opportunities

Clinical trials are studies to see how a new treatment or technology may work. They are designed to assess safety, benefits, and/or or side effects of a particular treatment. At the Department of Radiation Oncology, our renowned clinician-scientists conduct clinical trials to further our understanding of rapidly developing radiation technologies and treatment approaches for cancers in children and adults. Your treatment team will let you know if you are eligible to participate in a clinical trial.

Advancing the Field through Research

The Department is the home of the prestigious Columbia University Center for Radiological Research (CRR), the nation's largest and most experienced university-based research center for radiation biology and one of the first radiation research facilities in the world. The CRR owns and operates one of the very few research accelerators in the country, the Radiological Research Accelerator Facility. Through CRR's basic science research, our investigators harness new insights into the effects of radiation on the body and apply them to develop new radiation delivery protocols and technologies with the potential to improve cancer treatment.

Advanced Radiation Treatment Closer to Home

In addition to NewYork-Presbyterian/Columbia in New York City, our doctors also treat patients at NewYork-Presbyterian Lawrence Hospital in Bronxville, New York and NewYork-Presbyterian Hudson Valley Hospital in Cortlandt Manor, New York. We have an integrated system for reviewing each case as one team to offer world-class radiation care closer to home.

A Top Five Hospital in the Country

NewYork-Presbyterian is one of the nation's most comprehensive, integrated academic healthcare delivery systems, dedicated to providing the highest quality, most compassionate care and service to patients from the New York metropolitan area, across the country, and around the globe. In collaboration with two renowned Ivy League medical schools — Columbia University Vagelos College of Physicians and Surgeons and Weill Cornell Medicine — NewYork-Presbyterian is consistently recognized as a leader in medical education, groundbreaking research, and innovative patient care.



U.S. News & World Report ranks
NewYork-Presbyterian as the
#1 hospital in New York

NewYork-Presbyterian/Columbia University Irving Medical Center

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NewYork-Presbyterian Lawrence Hospital

Bronxville, NY | 914-787-3120

Additional Location:

NewYork-Presbyterian Hudson Valley Hospital

Cortlandt Manor, NY | 914-293-8450

cancer.columbia.edu/radiation-oncology | nyp.org/cancer |

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