



**Our radiation oncologists are dedicated to precisely targeting and treating cancer. To achieve this, when treating patients, our physicians offer the total package including medical expertise and cutting-edge radiation techniques. Therapies include intensity modulated radiation therapy (IMRT), respiratory gating, and two forms of brachytherapy.**

## Radiation Oncology

Upholding our commitment to quality patient care, our physicians support the total patient care process by working closely with other nationally known physicians who are affiliated with UPMC Cancer Centers. These medical relationships allow for the development of individualized radiation treatment plans. To further develop these plans, our radiation oncologists also consult with physicians in the Lung and Thoracic Diseases Center. Often, these consultations occur at a weekly, multidisciplinary tumor board.

### IMRT

This particular type of radiation therapy includes specialized planning and treatment to target complex areas while minimizing the amount of radiation delivered to normal tissue. Pre-treatment CT scans are completed before therapy and are used to map out the target area (tumor) and areas that should be avoided (normal tissue). Complex radiation plans are then devised to deliver this specialized type of radiation.

In the near future, the department of radiation oncology will be able to advance this therapy by using respiratory gating. This advancement will further enhance the level of precision by monitoring organ movement, such as lung movement when a patient inhales and exhales. This monitoring will allow for concentration of the radiation dose at the tumor site itself and away from normal tissue.

### Brachytherapy

The Lung and Thoracic Diseases Center's team of radiation oncologists, medical oncologists, and surgeons works closely to identify patients with lung and esophageal cancers who may benefit most

from brachytherapy – the direct, internal placement of a radiation source into the tumor or tumor bed. This therapy can be used in place of, or as a complement to, external beam radiation. Through brachytherapy, patients benefit by receiving stronger doses of radiation to a very precise area, often in just one to three sessions.

If a patient cannot tolerate or is not a candidate for a total lung lobe resection, a smaller part of the lobe can be removed. A mesh, embedded with radiation seeds, is sewn along the margins of where the cancerous tissue was removed. The mesh provides direct radiation therapy to the cancerous area in an attempt to prevent tumor reoccurrence. This type of brachytherapy is considered a low dose rate, as the seeds are permanently placed and deliver the entire radiation dose over a period of several months.

The second type of brachytherapy is offered to patients with lung and esophageal cancer who are not surgical candidates. Radiation is delivered to the cancerous area using a minimally invasive approach. A bronchoscope or endoscope is inserted into the airway or esophagus. This treatment is often administered to alleviate symptoms such as excessive coughing, shortness of breath, and difficult or painful swallowing. This type of brachytherapy is considered a high dose rate, as the radiation is only temporarily placed in the patient.