

A Guide to Proton Therapy for Patients with Lung and Thoracic Cancers



Lung cancer makes up about 13% of all cancer diagnoses. Chemotherapy alone is not enough to kill 100% of the cancer cells, and surgery often cannot remove all of the cancer that is present. Radiation is a critical component of lung cancer treatment. It can be given alone, or with chemotherapy or surgery. Proton therapy is one of the most advanced forms of radiation treatment.

Advantages of Proton Therapy

Too much radiation to the healthy tissue around the tumor can raise the risk of side effects. Lung cancer may be close to your heart, healthy lung tissue, and other critical organs. This makes damage to these tissues a major concern with standard X-ray therapy. Proton therapy is so precise it can target the

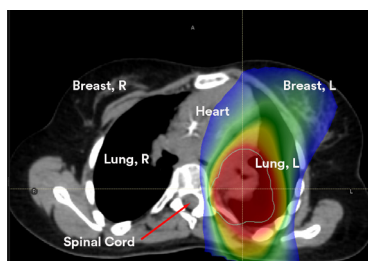
tumor within millimeters. Its goal is to reduce excess radiation to the healthy tissue and organs around it.

A large clinical trial recently showed that a lung cancer patient's survival is closely related to the amount of radiation their heart received, and the amount of swallowing difficulty they developed during radiation treatment. Proton therapy can drastically decrease the radiation dose to the heart, esophagus, and healthy lung tissue.

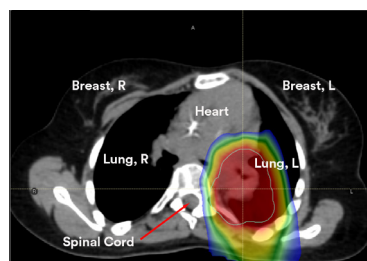
A second recent study confirmed that major heart events occur more often as radiation to the heart increases. Proton therapy can minimize radiation exposure to the heart.

Proton Therapy vs. Standard Therapy with X-rays

Standard radiation



Proton therapy



Radiation levels

Less
Radiation



More
Radiation

The illustration shows the difference between proton therapy on the right, where less healthy tissue is subjected to radiation, and standard X-ray radiation on the left, where more radiation affects surrounding, healthy tissue.

Proton Therapy Offers

- Less radiation to your heart, lung, and esophagus
- Potentially fewer side effects from radiation treatment. This includes lower rates of inflammation of the lungs and esophagus compared to standard therapy that uses X-rays.
- Similar efficacy at killing cancer cells as other forms of radiation

You should consider proton therapy if you meet any of the criteria below

- Have lung cancer that has not spread outside your chest
- Have limited or poor pulmonary function
- Have a heart condition
- Have had prior radiation therapy

Many patients with lung cancer are good candidates for proton therapy. If you would like to better understand the use of proton therapy in your treatment, call today to schedule a consultation with a radiation oncologist. The oncologist will discuss your different treatment options and determine if you will benefit from proton therapy. The radiation oncologists who practice at Fred Hutch Cancer Center Proton Therapy and UW Medicine also use other forms of radiation to treat lung cancers. They will provide you with an expert recommendation to consider.

Find out more.

To learn more about proton therapy for lung cancer or to schedule a consultation, please call us at **(888) 645-6934** or visit **FredHutch.org/protontherapy**

About Proton Therapy

The Bragg Peak

During proton therapy, a beam of subatomic particles called protons is sped up in an accelerator and then aimed at the tumor. The nature of protons is such that the radiation dose increases suddenly, in what is called a Bragg Peak. Then the radiation falls effectively to zero. This allows radiation oncologists to precisely target tumors, minimize radiation to healthy tissue in front of the tumor, and avoid healthy tissue behind the tumor. Radiation oncologists can spread the Bragg Peak to cover the entire tumor.

The Advantages of Pencil Beam Scanning (PBS)

PBS is the latest proton technology that allows for even greater accuracy when treating cancer with proton radiation. PBS uses a narrow proton beam to paint the tumor with radiation. Because the pencil beam can be targeted even more precisely, higher, more effective doses can be used. The pencil beam deposits radiation starting at the deepest layer, and works slice by slice through the tumor.

About our Specialists

All our radiation oncologists are faculty at the University of Washington School of Medicine and all are board certified. They work in a disease team model, with specialists in brain, head and neck, breast, lung, gastrointestinal, genitourinary/prostate, and pediatric cancers. Our physicians have the expertise to provide the highest level of medical care to our patients.

Fred Hutch Cancer Center - Proton Therapy

Located on UW Medicine's Northwest Campus
1570 N. 115th Street