OKLAHOMA PROTON • CENTER

LUNG

PROTON THERAPY FOR LUNG CANCER

Fewer side effects and better results ***BECAUSE A CURE IS NOT ENOUGH***

Lung Cancer Treatment

About 1 in 16 people will be diagnosed with lung cancer in their lifetime, and the disease impacts men and women equally. Most lung cancer occurs in smokers and those 65 and older, but it can occur in those younger and those who have never smoked. The disease is often broken into two categories: non-small cell and small cell lung cancer.

Lung cancer is a challenging disease to treat, and multiple approaches including surgery, radiation, and/or chemotherapy are prescribed. Because the disease often requires an aggressive treatment regimen, the side effects of treatment are sometimes severe and can include damage to the lung, esophagus, heart, and other critical structures.

The good news is that advanced techniques, such as proton therapy, can reduce these side effects while maximizing the opportunity for long term survival.

Clinical Studies

A study out of the University of Pennsylvania found a 2/3rds reduction in the incidence rate of Grade 3+ (severe) side effects for patients receiving proton therapy versus conventional X-Ray (photon) radiation as part of a combined regimen with chemotherapy.[1]

An analysis from the National Cancer Database of over 240,000 lung cancer patients treated with proton therapy or conventional X-Ray radiation found a 57% reduction in severe lung complications and a 37% increase in 5-year overall survival in the patients treated with proton therapy.[2]

A study out of MD Anderson found a reduction in the rates of grade 3+ (severe) pneumonitis and esophagitis for patients receiving proton therapy versus those receiving two advanced forms of X-Ray radiation (3D Conformal and IMRT). Also noteworthy was that the proton patients actually received an even higher radiation dose to the tumor than the X-Ray radiation patients.

TREATMENT	ESOPHAGITIS	PNEUMONITIS
Proton Therapy	5%	2%
IMRT (X-Rays)	44%	9%
3D Conformal (X-Rays)	18%	30%

- Baumann BC, Mitra N, Harton JG, et al. Comparative effectiveness of proton therapy versus photon therapy as part of concurrent chemo-radiotherapy for locally advanced cancer. American Society of Clinical Oncology poster session. June 1, 2019.
- Higgins KA, O'Connell K, Liu Y, et al. National Cancer Database Analysis of Proton Versus Photon Radiation Therapy in Non-Small Cell Lung Cancer. Int J Radiat Oncol Biol Phys 2017;97:128-137.
- Sejpal S, Komaki R, Tsao A, Chang JY, Liao Z, Wei X. et al.Early Findings on Toxicity of Proton Beam Therapy with Concurrent Chemotherapy in Nonsmall Cell Lung Cancer. Cancer. 2011;117:3004–3013. doi: 10.1002/cncr.25848.

Benefits of Proton Therapy

The challenge with radiation for lung cancer is that there are critical structures near the tumor such as the heart, esophagus, spinal column, and healthy lung tissue. Thus it is important to use a technique that delivers as much radiation to the tumor and as little to healthy tissue as possible.

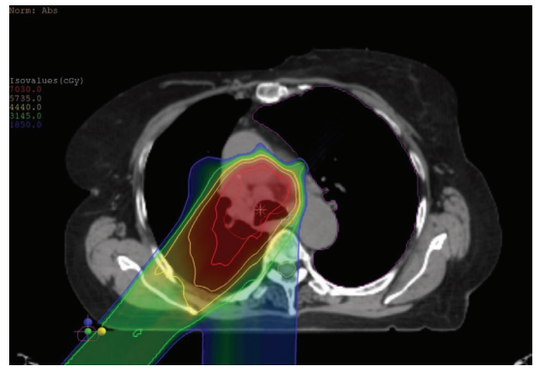
With proton therapy, radiation can be stopped inside the tumor, reducing or eliminating radiation dose to the heart, healthy lungs and other critical structures. This is different than X-ray radiation that passes through the body from one side to the other. This often exposes the heart, lungs, esphopagus, and other healthy tissue to unnecessary and damaging radiation.

Who Can Benefit

Common conditions treated at the Oklahoma Proton Center include:

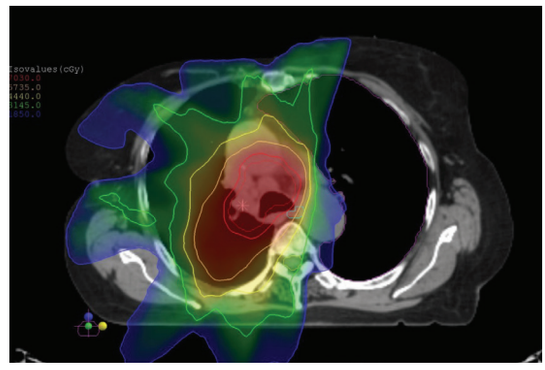
- Stage I, II, or III non-small cell lung cancer for inoperable disease or in patients who would prefer a less invasive treatment
- Small cell lung cancer
- Lung cancer recurrence after surgery

PROTON THERAPY



Grey/white area indicates no radiation exposure.

CONVENTIONAL X-RAY RADIATION



Colored area indicates radiation exposure

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FREQUENTLY ASKED QUESTIONS ABOUT PROTON THERAPY

What is the difference between Proton Therapy and other forms of radiation treatment?

Proton therapy and x-ray radiation therapy (such as IMRT, TomoTherapy, or Cyberknife) can both kill cancer cells. But unlike x-rays, protons go directly into the tumor and then stop. This allows protons to target the tumor while reducing damage to surrounding healthy tissue.

Is Proton Therapy proven?

The first cancer patient was treated with proton therapy in 1954, and nearly 200,000 patients have been treated worldwide. There are over 300 research papers outlining the clinical benefits of proton therapy. Many of the world's top cancer centers use protons to treat cancer, and leading industry groups such as American Society for Radiation Oncology (ASTRO) and the National Comprehensive Cancer Network (NCCN) recommend the use of protons for many different cancers.

Is Proton Therapy covered by insurance?

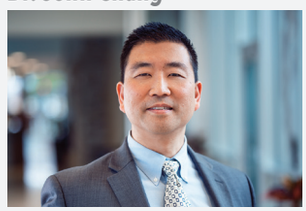
Proton Therapy is covered by Medicare and most private insurance plans. The Oklahoma Proton Center has financial counselors who will guide you through the insurance process. Please contact us if you have questions about your insurance coverage.

Can Proton Therapy be used with other treatments?

Proton Therapy can be used in conjunction with other treatments such as chemotherapy, surgery, or immunotherapy. The doctors at Oklahoma Proton Center work closely with specialists at other facilities to help coordinate these treatments.

LEADERS IN CANCER CARE

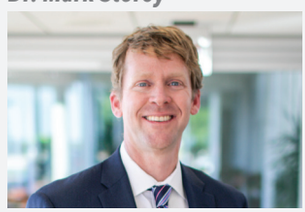
Dr. John Chang



Medical Director, Clinical Research and Education

RESIDENCY
University Of Pennsylvania

Dr. Mark Storey



Medical Director, Clinical Operations

RESIDENCY
MD Anderson

How do I know if I am a candidate for Proton Therapy?

Most patients with solid tumors can benefit from proton therapy's ability to deliver more radiation to the tumor and less radiation to healthy tissue. The doctors at Oklahoma Proton Center have many years of experience treating with all types of radiation and will carefully consider the best option for each patient at consult. It is important to speak with a radiation oncologist who actively treats with proton therapy to get the most complete information about its use for your particular cancer.

What services are available if I have to travel from out of town?

We have a dedicated concierge team that can help coordinate travel arrangements for out-of-town patients. We have partnerships with a number of hotels and extended stays in Oklahoma City with preferred rates, and we also partner with American Cancer Society to assist with accommodations for patients who may have financial hardship.

ABOUT OKLAHOMA PROTON CENTER

The Oklahoma Proton Center was the 6th proton center in the U.S. when it opened. It remains one of 30 centers in the country and one of just 5 in the Southwest. The clinical team is one of the most experienced in the country, having successfully treated thousands of patients from across the U.S. over the past decade. Many of the techniques used today in other proton centers were developed at the Oklahoma Proton Center.

The facility is adjacent to the INTEGRIS Cancer Institute (ICI), one of the preeminent cancer centers in the region. The doctors at Oklahoma Proton Center work closely with their colleagues at ICI to provide a multi-disciplinary team approach to care. Patients often receive services at both facilities, which are coordinated by the Oklahoma Proton Center.

Our goal is to provide great care focused on a patient's overall well-being throughout their cancer journey. We offer a number of services and activities besides the proton therapy treatment itself designed to maximize the healing process. These include patient lunches, group chat sessions, social events, support from former patients, educational seminars, nutritional and wellness counseling and more.

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