ADVANTAGES OF PROTON THERAPY

Covenant Health Proton Center is pleased to provide an advanced form of radiation therapy to our patients.

Benefits of proton therapy include:

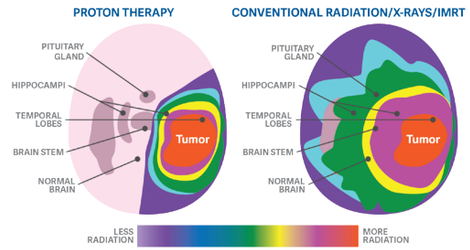
- **Controlled delivery and dosage of proton energy,** allowing direct targeting of the tumor for the maximum dose of radiation.
- **Improved quality of life**, during and after treatment, from greater precision in targeting the tumor.
- **Lower risk of side effects and impact to bodily functions**, as unnecessary radiation to nearby healthy tissue and vital organs is prevented.
- **Cancer in critical areas** close to organs and structures that could be damaged by radiation can be **safely targeted and treated.**
- **Proton therapy can be a treatment option for people with a recurrent cancer** that has previously been treated with radiation. Proton therapy can be directed to avoid the areas that have received a maximum lifetime dose of radiation while still targeting the recurrence.

Covenant Health Proton Center has met the standards of performance of the ASTRO Accreditation Program for Excellence (APEx®).

CANCERS WE TREAT

Proton therapy allows tumors to be treated with extreme accuracy, delivering cancer-killing energy to the target with less damage to surrounding healthy tissue and a lower risk of side effects. These qualities make proton therapy the ideal treatment for many types of cancers, including:

- Brain and Spine Cancer
- Breast Cancer
- GI / Esophageal Cancer
- Head, Neck and Oral Cancer
- Lung Cancer
- Lymphomas
- Pediatric Cancer
- Prostate Cancer
- Re-irradiation



IS PROTON THERAPY AN OPTION FOR ME?

A consultation with a board-certified, proton-experienced radiation oncologist is the best the way to determine if proton therapy is the preferred treatment for your cancer.

To schedule a consultation, **call (865) 770-7401** and speak with a coordinator.

To learn more about proton therapy or Covenant Health Proton Center, call 865-331-8272 or visit **CovenantHealthProton.com**

Tours of Covenant Health Proton Center are now available. Learn more: **CovenantHealthProton.com/proton-tours**

Covenant HEALTH Proton Center

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Image courtesy of IBA

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Proton Therapy for Cancer Patients

Covenant HEALTH Proton Center

ABOUT PROTON THERAPY

Proton therapy is one of the world's most advanced forms of radiation therapy for cancer treatment. It is a trusted method for precisely targeting tumors and reducing the risk of side effects. Radiation oncologists plan exactly where the maximum power of the protons will be released while avoiding unnecessary radiation to nearby healthy tissue and vital organs.

Protons STOP

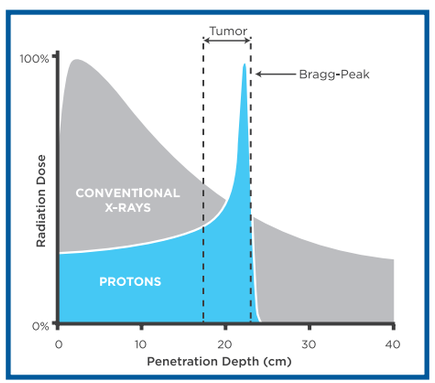
Protons and x-rays deliver radiation differently. The image below highlights a unique quality of protons.

The shaded areas, from left to right, show how x-rays or protons deposit energy while moving through the body.

X-rays constantly deposit radiation until they exit the body. Exit dose is the term for the part of the path beyond the targeted tumor.

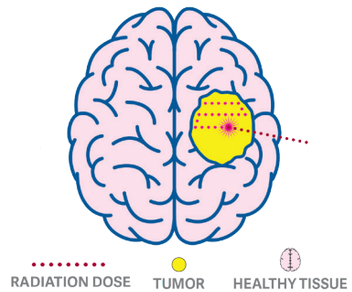
Protons have a sharp spike of energy released at the tumor site called the Bragg Peak. This spike shows how protons leave the highest radiation dose in the tumor and STOP. Protons do not have an exit dose. Any tissue, structure, or organ beyond the tumor is not exposed to unnecessary radiation.

DEPTH DOSE CURVE



Covenant Health Proton Center utilizes pencil beam scanning, the most precise delivery of proton therapy. Pencil beam scanning provides superior customization and precision in radiation therapy treatment plans. Physicians target the tumor area with the highest radiation dose, using a proton beam only millimeters wide that scans in a pattern to cover the whole target.

PENCIL BEAM SCANNING



In the custom treatment plan, the physician treats the total depth and shape of the tumor by adding together multiple proton Bragg Peaks to create a Spread Out Bragg Peak (SOBP).

FREQUENTLY ASKED QUESTIONS

What is the difference between proton therapy and traditional radiation therapy?

Proton therapy is a sophisticated form of external beam radiation therapy that uses protons rather than the high energy x-rays used in traditional radiation therapy. Both forms of radiation therapy effectively treat cancer by depositing radiation into the tumor.

Protons are different because they can be focused directly into the tumor and STOP. This precise accuracy eliminates unnecessary radiation dose beyond the treatment area.

Reducing unnecessary radiation leads to lower risks of side effects and improved quality of life, both during and after treatment.

What is the treatment like for proton therapy?

Proton therapy is a painless and non-invasive treatment. Treatment side effects or complications are decreased because proton therapy minimizes unnecessary radiation to healthy tissue.

Our expert proton therapy team uses various supports and positioning tools to help patients maintain their aligned position and to make patients as comfortable as possible.

How long does a proton therapy session last?

The actual proton therapy treatment takes only a few minutes. Due to precise positioning and alignment requirements, an entire session typically lasts between 20 and 30 minutes.

How many proton therapy sessions will I need?

Your physician and care team will develop a customized treatment plan for you. Most patients have five treatment sessions a week for several weeks. Since side effects are minimized, patients can typically maintain their pretreatment lifestyle and routines throughout their treatment course.

Can proton therapy be combined with other treatment options?

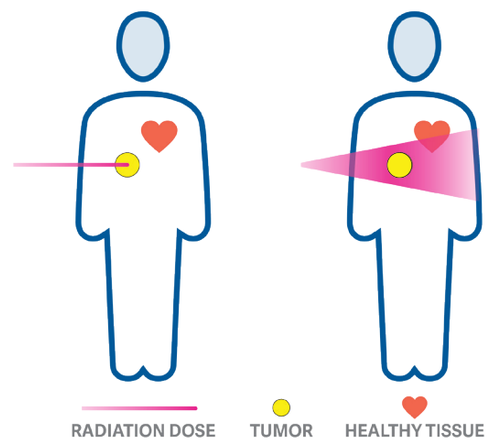
Yes. Proton therapy can be used with other cancer treatment modalities, such as surgery, chemotherapy, and immunotherapy.

Is proton therapy approved by the Food and Drug Administration?

Yes, proton therapy was FDA approved in 1988.

Covenant Health Proton Center is the only proton center in the East Tennessee region. Covenant Health's investment in proton therapy demonstrates the commitment to provide the communities of East Tennessee with comprehensive, world-class cancer treatment options close to home and elevates Thompson Cancer Survival Center as one of the country's premier cancer care organizations.

PROTON RADIATION THERAPY | **TRADITIONAL** RADIATION THERAPY



Just as with traditional radiation therapy, proton therapy treats tumors by directing radiation into the tumor site, where doses of radiation destroy cancerous cells.

Proton therapy makes it possible for physicians to treat the tumor with a higher, and sometimes more effective dose, while reducing damage to nearby healthy tissue. This leads to lower risks of side effects and improved quality of life, both during and after treatment.