



Life advances®

Take your life back  
from cancer.

NEW YORK **PROTON** CENTER

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# Away from cancer. And back to living.

Millimeter precision. Remarkable control. Fewer side-effects.

These are the defining features of proton therapy, a highly advanced form of radiation treatment that targets and destroys tumor cells while reducing the risk of harmful side effects. And the leader in proton therapy is the New York Proton Center.

We're staffed by world-renowned experts, equipped with the latest technology, and partnered with three leading academic medical centers: Memorial Sloan Kettering Cancer Center, Montefiore Health System, and Mount Sinai Health System.

Simply put, you won't find better care anywhere. We'll welcome you into our center, expertly administer your treatment, then send you back into the world to live your best life.

## **Understanding proton therapy**

Proton therapy is a highly advanced form of radiation treatment that targets and destroys solid tumors.

Protons are positively charged particles in the nucleus of an atom. Because they're far more controllable than the photons used in conventional radiation treatment, protons can be delivered to the tumor with millimeter accuracy, thereby sparing healthy organs and tissue any significant exposure to radiation. As a result, proton therapy dramatically reduces the risk of harmful side effects and better preserves patient quality of life.

The precision of the proton beam also means that a higher and more effective radiation dose can be deposited directly into the tumor.

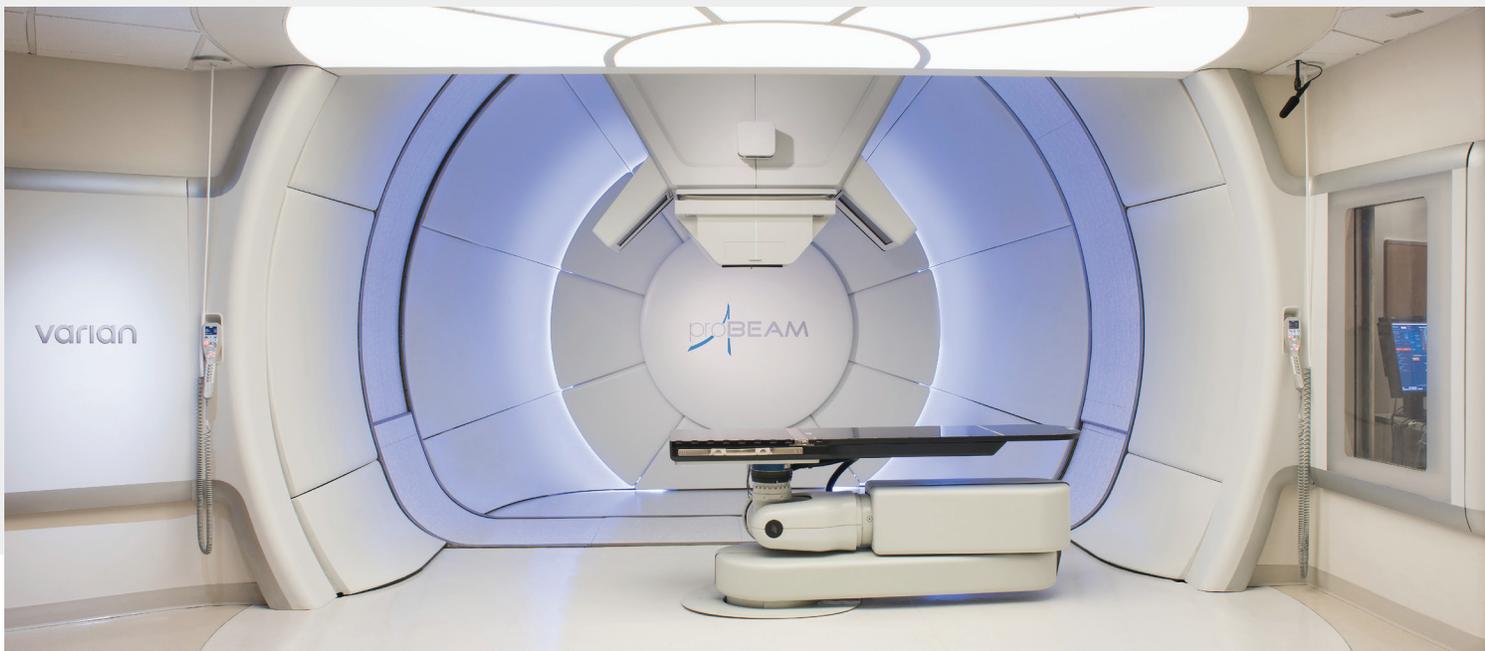
Proton therapy has proven highly effective for both common and complex cancers, particularly those that can be difficult to treat with conventional radiation. It is also uniquely well-suited for children, who are still developing and therefore at greater risk from conventional radiation's long-term side effects. Plus, proton therapy can safely treat recurrent cancers, allowing many patients a second chance for a cure.

Since its approval in 1988 by the Food and Drug Administration as a cancer treatment, proton therapy has increasingly become the standard of care for many solid tumors.

## Not all proton therapy is created equal

Patients at the New York Proton Center receive Pencil Beam Scanning, the most modern, sophisticated and precise form of proton treatment. As the name implies, Pencil Beam Scanning uses an extremely narrow beam to “paint” the protons onto the tumor, destroying the cancer cells’ DNA. By repeating this process layer by layer, the beam is able to conform to the tumor’s unique shape with very little risk to surrounding tissues.

Moreover, our pencil beam scanners use a highly advanced modality called “intensity-modulated proton therapy,” or IMPT. This is particularly valuable when treating highly complex tumors such as those in the brain or spine, head and neck, lungs and chest, and abdomen.



## Passing through without a trace

With conventional radiation treatment, the photon beams travel all the way through the body. As a result, healthy tissues in front of and behind the tumor are exposed to radiation.

But proton beams travel only as far as the tumor site, at which point—due to a phenomenon known as the Bragg peak—nearly all their radiation is deposited directly into the tumor. Very little radiation is released into healthy tissue as the beam travels to the tumor, and none is released beyond it.

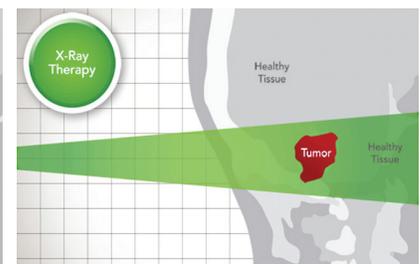
### Proton Therapy

(Irradiating 2 liters of healthy tissue)



### Conventional Radiation Therapy

(Irradiating 10 liters of healthy tissue)



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## Getting treated at the New York Proton Center

Your care at the New York Proton Center is entrusted to some of the most distinguished doctors and clinicians in the field, recruited from proton centers around the world. They work side by side with a highly skilled healthcare team that includes physicists, dosimetrists, radiation therapists and nurses.

All your appointments take place in our sprawling new facility in upper Manhattan. Its many amenities include spacious waiting areas with large flat-screen TVs, hot and cold refreshments, playrooms for children, and charging stations for your phone.

## First steps

Our team coordinates every aspect of your care, considering any special needs you might have and individualized accommodations you might require.

The first step is a consultation with a radiation oncologist. You'll discuss the specifics of your cancer and whether proton therapy is right for you.

Once cleared for treatment, you'll visit the center for imaging—CT, PET/CT, MRI or some combination—that we use to map out your radiation treatment plan. During this visit, we'll also make some non-permanent markings on your skin. These markings help us position you on the treatment couch when you return for your treatment sessions. You may also receive a custom body mold or mask to help with precise treatment positioning.

## Mapping your treatment

Based on your imaging, your radiation oncologist maps out the contours of your tumor and nearby organs to determine how much radiation should be delivered to your tumor. Then radiation dosimetrists plan your treatment, determine the proton beam angles and run simulation software to fine-tune the plan.

A medical physicist checks the settings and coordinates, making any adjustments necessary to ensure that the correct amount of radiation reaches each part of the tumor. Your radiation oncologist supervises all of the planning and reviews and approves the overall treatment plan.



## Your treatment regimen

Once the planning is complete, you will return to the center for your treatment.

Before your first and every subsequent treatment session, we perform imaging, often with a low dose cone beam CT scan. This ensures you are aligned perfectly each day and detects changes from your initial imaging—weight loss or tumor shrinkage, for example—that we may need to factor into your treatment.

To begin your session, your radiation therapists spend 10 to 20 minutes positioning you on the treatment couch according to the coordinates of your treatment plan.

Then the proton therapy begins, often taking just 5 to 20 minutes:

- Your treatment couch and/or the treatment machine rotates while we deliver the proton beams at the prescribed angles.
- You won't feel anything, though you do hear noise as the radiation is being delivered.
- Your treatment team operates the proton beam from an adjacent control room, watching you on closed circuit television and communicating by intercom.

You'll typically receive one treatment, called a "fraction," each weekday for one to eight weeks. You'll meet with your radiation oncologist and nurse weekly to monitor your progress.

## For our youngest patients

Because children are still developing, pediatric tumors—especially those near the brain, head, neck, spinal cord, heart, lungs, and abdomen—are particularly challenging to treat with conventional radiation treatment. If these sensitive areas are exposed to radiation, children can suffer significant long-term side effects such as developmental abnormalities, growth delay, reduction in IQ, and secondary cancers later in life.

Fortunately, proton therapy is quite safe for children. Due to its precision, the radiation is far less likely to "spill" into these still-developing organs and tissues.

## **Helping children and families cope**

Just as proton therapy doesn't prevent adults from continuing at their jobs, children receiving treatment can typically continue school, hobbies and other normal activities.

That notwithstanding, a pediatric cancer diagnosis can still be traumatic, not just for the child but for the entire family. As such, we have an exceptional team in place to support you and your child at every step.

We have a team of specialized child life therapists who help families navigate the stress that can arise from serious illness. The therapists reassuringly explain the treatment to your child using photos, models, a stuffed animal or a comic book called Proton-Man® that describes proton therapy from a child's perspective.

We also have two playrooms stocked with books, toys and crafting supplies. They are available before and after treatment.

## **Patient services**

There are many support services available to you at our center. Among them are assistance with transportation, accommodations for patients who are not local, coordinating other oncology appointments, counseling, and referrals to community agencies and support groups. You'll meet with a nurse navigator and a social worker early in your treatment to identify which services you might benefit from.

Patients can also meet with a registered dietician during the course of their treatment. Nutrition sessions are complimentary and don't require a referral.

## **Insurance coverage**

Medicare and Medicaid cover proton therapy. So do most private insurance companies, on a case-by-case basis, with approval depending upon your diagnosis, medical history and other factors.

The New York Proton Center works directly with your carrier to help you get approval. We provide supporting clinical evidence, assist with paperwork and, should coverage be initially denied, mount an appeal.

## **Research and clinical trials**

Our center is adding to the already considerable body of evidence supporting proton therapy. In doing so, we're helping make this highly advanced treatment more widely available to patients everywhere.

Our research division is actively involved in leading-edge clinical, physics, and translational laboratory studies. Our physicians are leaders and pioneers of important studies funded by the National Cancer Institute. We are also engaged in institutional trials for many cancer types, offering novel treatments and—along with them—the potential for ever-better outcomes.

Your radiation oncologist can discuss these trials with you and determine whether you are eligible to participate.



**Cancers treated with proton therapy:**

- Brain tumors
- Breast cancer
- Esophageal cancer
- Gastrointestinal cancers
- Gynecological cancers
- Head and neck cancers
- Lung cancer and other thoracic tumors
- Lymphomas
- Pediatric solid malignancies
- Prostate cancer and other genitourinary tumors
- Recurrent cancers
- Sarcomas
- Skull base tumors
- Spinal tumors



## NEW YORK PROTON CENTER

### Learn more

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Call us at 833-NYPROTON (833-697-7686) to schedule a consultation.

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Montefiore

