

Proton Therapy Frequently Asked Questions

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Q: What is proton therapy?

Proton therapy is a form of external beam therapy for which powerful equipment is used to generate beams that penetrate the body. Oncologists use proton therapy to precisely deliver high doses of radiation to a tumor to kill the cancerous tissues without damaging surrounding healthy tissues.

Q: How is proton radiation different from traditional photon radiation?

In traditional radiation therapy, X-ray beams are typically used to treat cancer. The X-ray beams go through the cancerous tissue (tumor) destroying both healthy and cancerous areas along the path of the beam. Proton beams enter the body and deposit most of their energy at the target – the site of the tumor. Radiation oncology physicians are able to focus the energy of the proton beam within a tumor, minimizing damage to nearby healthy tissues and vital organs.

Q: What type of cancers in pediatric patients is proton therapy ideal for?

Children with tumors in the brain, head, neck, spinal cord, heart, lungs and other areas that are sensitive to radiation can benefit from treatment with proton therapy because physicians can target treatment directly to the tumor area. The following types of childhood cancer that may be treated with proton therapy include:

CNS: Glioma, Astrocytoma, Optic pathway/hypothalamic glioma, Optic Nerve Tumors, Ependymoma, Intracranial germ cell tumors, Medulloblastoma, pineoblastoma, Primitive neuro-ectodermal tumor (PNET), Meningioma, Craniopharyngioma, eye tumors including retinoblastoma, choroid plexus tumors, pituitary tumors, acoustic neuroma

Non-CNS: Neuroblastoma, Rhabdomyosarcoma, Osteosarcoma, Ewing's Sarcoma, soft tissue sarcoma, selected lymphoma and selected neuroblastoma

Because the center is part of MD Anderson, the #1 cancer hospital in the world, we treat more types of cancer in children with proton therapy than any other center.

Q: How many treatments of proton therapy are usually provided for children and how long is the duration of each treatment?

Though treatment can vary for each patient's specific case, most children are treated daily, Monday through Friday, for five to six weeks. Treatment can take anywhere from 30 minutes to 1 ½ hours daily, depending on whether the child is sedated.

Q: Should parents ask oncologists about proton therapy as a treatment option, even if their hospital does not offer proton therapy?

The pediatric medical community is very forthcoming regarding the best treatment option for patients. Pediatricians and pediatric oncologists often work together and with other practitioners in the medical field to ensure each patient is offered treatments that will provide the best outcome possible.

Q: What are negative effects that should be considered during proton therapy treatment?

There are no specific negative effects if proton therapy is done carefully. There are some inconveniences that the family may have to go through in order to go to a center that provides proton therapy and the longer daily treatment times that are required.

Q: How much research is there comparing the late effects of traditional radiotherapy versus proton radiotherapy?

At this time, we are actively researching the late effects of proton therapy and comparing the results to those from other forms of radiation. Because proton radiotherapy has not been used in a large number of children in the past, we are in the process of collecting data to confirm our thoughts that proton radiotherapy will be associated with fewer late side effects for children.