

Protocol

Charged-Particle (Proton or Helium Ion) Radiation Therapy

(80110)

Medical Benefit	Effective Date: 03/01/14	Next Review Date: 03/15
Preauthorization	Yes	Review Dates: 03/09, 03/10, 03/11, 03/12, 03/13, 03/14

*The following Protocol contains medical necessity criteria that apply for this service. It is applicable to Medicare Advantage products unless separate Medicare Advantage criteria are indicated. If the criteria are not met, reimbursement will be denied and the patient cannot be billed. **Preauthorization is required.** Please note that payment for covered services is subject to eligibility and the limitations noted in the patient's contract at the time the services are rendered.*

Description

Charged-particle beams consisting of protons or helium ions are a type of particulate radiation therapy. They contrast with conventional electromagnetic (i.e., photon) radiation therapy due to several unique properties, including minimal scatter as particulate beams pass through tissue, and deposition of ionizing energy at precise depths (i.e., the Bragg peak). Thus, radiation exposure of surrounding normal tissues is minimized. The theoretical advantages of protons and other charged-particle beams may improve outcomes when the following conditions apply:

- Conventional treatment modalities do not provide adequate local tumor control;
- Evidence shows that local tumor response depends on the dose of radiation delivered; and
- Delivery of adequate radiation doses to the tumor is limited by the proximity of vital radiosensitive tissues or structures.

Background

The use of proton or helium ion radiation therapy has been investigated in two general categories of tumors/abnormalities. However, advances in photon-based radiation therapy (RT) such as 3-D conformal RT, intensity-modulated RT (IMRT), and stereotactic body radiotherapy (SBRT) allow improved targeting of conventional therapy:

1. Tumors located near vital structures, such as intracranial lesions or lesions along the axial skeleton, such that complete surgical excision or adequate doses of conventional radiation therapy are impossible. These tumors/lesions include uveal melanomas, chordomas, and chondrosarcomas at the base of the skull and along the axial skeleton.
2. Tumors associated with a high rate of local recurrence despite maximal doses of conventional RT. One tumor in this group is locally advanced prostate cancer (i.e., Stages C or D1 [without distant metastases], also classified as T3 or T4).

Proton beam therapy can be given with or without stereotactic techniques. Stereotactic approaches are frequently used for uveal tract and skull-based tumors. For stereotactic techniques, three to five fixed beams of protons or helium ions are used.

Related Protocols

Stereotactic Radiosurgery and Stereotactic Body Radiation Therapy

Intensity-Modulated Radiation Therapy (IMRT): Cancer of the Head and Neck or Thyroid

Intensity-Modulated Radiation Therapy (IMRT): Abdomen and Pelvis

Policy (Formerly Corporate Medical Guideline)

Charged-particle irradiation with proton or helium ion beams may be considered **medically necessary** in the following clinical situations:

- primary therapy for melanoma of the uveal tract (iris, choroid, or ciliary body), with no evidence of metastasis or extrascleral extension, and with tumors up to 24 mm in largest diameter and 14 mm in height;
- postoperative therapy (with or without conventional high-energy x-rays) in patients who have undergone biopsy or partial resection of chordoma or low-grade (I or II) chondrosarcoma of the basisphenoid region (skull-base chordoma or chondrosarcoma) or cervical spine. Patients eligible for this treatment have residual localized tumor without evidence of metastasis;
- In the treatment of pediatric central nervous system tumors.

Other applications of charged-particle irradiation are considered **investigational**. This includes, but is not limited to:

- pediatric non-central nervous system tumors,
- tumors of the head and neck (other than skull-based chordoma or chondrosarcoma).

Policy Guidelines

There are no data to define age parameters for the use of proton beam therapy in pediatric patients. Some studies using proton beam therapy in pediatric central nervous system (CNS) tumors mostly included patients younger than three years of age. However, experts cite the benefit of proton beam therapy in pediatric patients of all ages (< 21 years of age).

Note: This Protocol does not address radiation treatment for cancers of the prostate, breast, lung, colon and rectum, and including metastasis to the brain/spine or bone.

Services that are the subject of a clinical trial do not meet our Technology Assessment Protocol criteria and are considered investigational. *For explanation of experimental and investigational, please refer to the Technology Assessment Protocol.*

It is expected that only appropriate and medically necessary services will be rendered. We reserve the right to conduct prepayment and postpayment reviews to assess the medical appropriateness of the above-referenced procedures. **Some of this Protocol may not pertain to the patients you provide care to, as it may relate to products that are not available in your geographic area.**

References

We are not responsible for the continuing viability of web site addresses that may be listed in any references below.

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