



Proton Beam Radiation Therapy

Origination: 05/20/09	Revised: 7/23/20	Annual Review: 11/05/20
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Purpose:

The Medical Technology Assessment Committee will review published scientific literature and information from appropriate government regulatory bodies (when available) related to Proton Beam Radiation Therapy in order to determine inclusion in the benefit plan.

Recommendation:

A recommendation was made by the MTAC following discussion by committee members based on current literature:

Definition

- Proton Beam Radiation Therapy (PBRT or PBT) differs from standard conformal radiation therapy (XRT). If given in sufficient doses, conventional radiation therapy techniques will control many cancers. Because of the inability to adequately conform the irradiation pattern to the cancer, healthy tissues may be damaged during XRT. Consequently, a less-than- desired dose frequently is used in XRT to reduce damage to healthy tissues and avoid subsequent unacceptable side effects. The characteristics of PBRT enable the physician to deliver full or higher doses while sparing surrounding healthy tissues and organs. PBRT is notably valuable for treating localized, isolated, solid tumors before they spread to other tissues and to the rest of the body.

Coverage Guidelines

PBRT is covered for the following radiosensitive tumors only if there is sufficient documentation that alternative forms of radiation therapy (i.e., conventional radiation therapy, Gamma Knife, CyberKnife, or Intensity-Modulated Radiation Therapy, etc.) would not be effective:

- Melanomas of the uveal tract (iris, ciliary body, and choroid) that are confined to the globe, and without evidence of distant metastasis;
- Base of the skull or axial skeleton tumors without evidence of metastasis;
- CNS lesions, including AVMs, located near vital structures without evidence of distant metastasis;
- Stereotactic administration of proton beam radiotherapy is covered only for lesions that are located intracranially.



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Exclusion Criteria

- PBRT is not covered, and is considered investigational, for all other tumors not listed above; this includes, but is not limited to: Age-related Macular Degeneration (AMD), Non-uveal Melanomas, Hepatocellular Carcinoma, Lung cancer, Breast cancer, and Esophageal cancer.
- Stereotactic administration of proton beam radiotherapy for extracranial lesions is not a covered benefit.

References:

1. Sivagnanavel V, Evans JR, Ockrim Z, Chong V. Radiotherapy for neovascular age-related macular degeneration. *Cochrane Database Syst Rev.* 2004;(3).
2. Zietman AL, DeSilvio ML, Slater JD, et al. Comparison of conventional-dose vs high-dose conformal radiation therapy in clinically localized adenocarcinoma of the prostate: A randomized controlled trial. *JAMA.* 2005;294(10):1233-1239.
3. Kawashima M, Furuse J, Nishio T, et al. Phase II study of radiotherapy employing proton beam for hepatocellular carcinoma. *J Clin Oncol.* 2005;23(9):1839-1846.
4. Hayes Technology Review – Proton Beam Therapy in Prostate Cancer. Proton Beam Therapy in intraabdominal tumors.
5. Al-Shahi R, Warlow CP. Interventions for treating brain arteriovenous malformations in adults. *Cochrane Database Syst Rev.* 2006;(1).
6. Adelaide Health Technology Assessment on behalf of National Horizon Scanning Unit (HealthPACT and MSAC). Proton beam therapy for cancer therapy. Horizon Scanning Prioritising Summary - Volume 13. Adelaide, SA; HealthPACT and MSAC; 2006.
7. Konski A, Speier W, Hanlon A, et al. Is proton beam therapy cost effective in the treatment of adenocarcinoma of the prostate? *J Clin Oncol.* 2007;25(24):3603-3608.
8. Almefty K, Pravdenkova S, Colli BO, et al. Chordoma and chondrosarcoma: Similar, but quite different, skull base tumors. *Cancer.* 2007;110(11):2457-2467.
9. Hata M, Tokuyue K, Kagei K, et al. Hypofractionated high-dose proton beam therapy for stage I non-small-cell lung cancer: Preliminary results of a phase I/II clinical study. *Int J Radiat Oncol Biol Phys.* 2007;68(3):786-793.
10. Nishimura H, Ogino T, Kawashima M, et al. Proton-beam therapy for olfactory neuroblastoma. *Int J Radiat Oncol Biol Phys.* 2007;68(3):758-762.
11. Vargas C, Fryer A, Mahajan C, et al. Dose-volume comparison of proton therapy and intensity-modulated radiotherapy for prostate cancer. *Int J Radiat Oncol Biol Phys.* 2008;70(3):744-751.
12. Hayes Technology Assessment Briefs. Proton Beam Therapy and Melanoma; Proton Beam Therapy and Prostate Cancer; Proton Beam Therapy and Lung, Breast, Liver, and Esophageal Cancer. 2008.



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