

Neutron Beam and Proton Beam Radiation Therapy

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DATES COMMITTEE REVIEWED 04/14/21, 11/10/21, 11/09/22, 05/10/23, 12/13/23, 12/28/23	APPROVAL DATE December 28, 2023	EFFECTIVE DATE December 29, 2023	COMMITTEE APPROVAL DATES 04/14/21, 11/10/21, 11/09/22, 05/10/23, 12/13/23, 12/28/23	
PRIMARY BUSINESS OWNER: UM		COMMITTEE/BOARD APPROVAL Utilization Management Committee		
NCQA STANDARDS UM 2		ADDITIONAL AREAS OF IMPACT		
CMS REQUIREMENTS	STATE/FEDERAL REQUIREMENTS		APPLICABLE LINES OF BUSINESS Commercial, Exchange, Medicaid, Medicare	

I. PURPOSE

The purpose of this policy is to provide general information applicable to the review and appropriateness of Radiation Therapy services. Although a service, supply or procedure may be medically necessary, it may be subject to limitations and/or exclusions under a member's benefit plan. If a service, supply, or procedure is not covered and the member proceeds to obtain the service, supply or procedure, the member may be responsible for the cost. Decisions regarding treatment and treatment plans are the responsibility of the physician. This policy is not intended to direct the course of clinical care a physician provides to a member, and it does not replace a physician's independent professional clinical judgment or duty to exercise special knowledge and skill in the treatment of members. NCH is not responsible for, does not provide, and does not hold itself out as a provider of medical care. The physician remains responsible for the quality and type of health care services provided to a member.

II. BACKGROUND

Neutron Beam Radiation Therapy (NBRT) differs from other forms of radiation particle treatment such as protons or electrons as they have no electrical charge. The treatment effects are the results of the neutron mass producing dense radiation energy distributions. This effect is high energy linear transfer (LET) and may offset the negative effects of low oxygen tension in tumors leading to increased rate of control in hypoxic tumors. Proton Beam Radiation Therapy (PBRT) is a type of external radiation treatment. Using a stereotactic planning and delivery system, positively charged subatomic particles (protons) are targeted to a specific cancer. Protons behave differently than x-rays or photons in that they have a low energy deposition rate as they enter the body, followed by a steep increased energy deposition when they reach their target (the Bragg peak).

Radiation Therapy Treatment Process:

A. Consultation

- B. Simulation
- C. Treatment Planning
- D. Treatment Delivery

III. TABLE OF CONTENTS

IV.	NEUTRON BEAM RADIATION THERAPY (NBRT).....	2
V.	PROTON BEAM RADIATION THERAPY (PBRT)	2
VI.	APPROVAL AUTHORITY	3
VII.	ATTACHMENTS.....	3
VIII.	REFERENCES	3

IV. NEUTRON BEAM RADIATION THERAPY (NBRT)

Indications for Use/Inclusion Criteria¹⁻¹⁰

All requests for NBRT require Clinical Review by an NCH Physician.

A. Neutron Beam Radiation Therapy is medically necessary only in the treatment of:

1. Salivary gland cancers – when recurrent **OR** in the case of a second primary cancer **OR** following resection with gross residual disease or positive margins **OR** for re-treatment of a previously irradiated area.

Exclusion Criteria

- A. All other cancers are not considered medically necessary for Neutron Beam Radiation Therapy.

V. PROTON BEAM RADIATION THERAPY (PBRT)

Indications for Use/Inclusion Criteria¹¹⁻⁸⁵

A. Proton Beam Radiation Therapy is medically necessary only in the treatment of:

1. Chordomas and Chondrosarcomas of the base of the skull or spine when disease is localized (non-metastatic).
2. Primary or metastatic CNS malignancies
3. Hepatocellular cancer or intrahepatic cholangiocarcinoma – when unresectable and non-metastatic
4. Melanoma of the uveal tract – with no evidence of metastasis or extra scleral extension.
5. Pediatric cancers – in all cases of pediatric cancers (in patients 18 yrs. old or younger) except in cases of bone metastases (see exclusion criteria below).
6. Cancer of the nasal cavity and paranasal sinuses – when tumor involves the base of skull and proton therapy is needed to spare the orbit, optic nerve, optic chiasm, or brainstem
7. Re-irradiation – for re-treatment of a previously irradiated area

Exclusion Criteria

- A. All other cancers are not considered medically necessary for Proton Beam Radiation Therapy.
- B. Pediatric cancers in cases where the treatment is for previously untreated bone metastases.

VI. APPROVAL AUTHORITY

- A. Review – Utilization Management Department
- B. Final Approval – Utilization Management Committee

VII. ATTACHMENTS

- A. None

VIII. REFERENCES

1. NCQA UM 2023 Standards and Elements.
2. National Comprehensive Cancer Network (NCCN) Guidelines Version 2.2024 Head and Neck Cancers, Salivary Gland Tumors
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