

<b>Department of Origin:</b> Integrated Healthcare Services	<b>Effective Date:</b> 09/28/23
<b>Approved by:</b> Medical Policy Quality Management Subcommittee	<b>Date Approved:</b> 09/22/23
<b>Clinical Policy Document:</b> Radiation Therapy, Neutron Beam	<b>Replaces Effective Clinical Policy Dated:</b> 09/13/22
<b>Reference #:</b> MC/L024	<b>Page:</b> 1 of 3

**PURPOSE:**

The intent of this clinical policy is to ensure services are medically necessary

Please refer to the member's benefit document for specific information. To the extent there is any inconsistency between this policy and the terms of the member's benefit plan or certificate of coverage, the terms of the member's benefit plan document will govern.

**POLICY:**

Benefits must be available for health care services. Health care services must be ordered by a provider. Health care services must be medically necessary, applicable conservative treatments must have been tried, and the most cost-effective alternative must be requested for coverage consideration.

**GUIDELINES:**

Medical Necessity Criteria – Request for neutron beam therapy for the treatment of salivary gland tumors  
– Must satisfy any of the following: I - III

- I. Inoperable tumor; or
- II. Locally advanced tumor especially in persons with gross residual disease; or
- III. Unresectable tumor.

**EXCLUSIONS (not limited to):**

Refer to member's Certificate of Coverage or Summary Plan Description

Neutron beam therapy is investigative for all other indications including, such as but not limited to (see Investigative List): I - XI

- I. Colon cancer
- II. Dermatofibrosarcoma protuberans
- III. Ghost cell odontogenic carcinoma
- IV. Glioma
- V. Kidney cancer
- VI. Laryngeal cancer
- VII. Lung cancer
- VIII. Pancreatic cancer
- IX. Prostate cancer
- X. Rectal cancer
- XI. Soft tissue sarcoma

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## BACKGROUND:

Most radiation therapies utilize photons -- lightweight particles that damage cancerous cells. Neutron beam radiation therapy (NBRT) uses neutrons, which are much heavier than photons and appear to be more effective in destroying very dense tumors. Compared to roentgen ray (X-ray), neutrons are characterized by several properties:

- reduced oxygen enhancement factor,
- less or no repair of sub-lethal or potentially lethal cell damage, and
- less variation of sensitivity through cell cycle.

NBRT is a specialized type of EBRT that uses high energy neutrons (neutral charged subatomic particles). The neutrons are targeted toward tissue masses that are characterized by lower tumor oxygen levels and a slower cell cycle, since neutrons require less oxygen and are less dependent on the cell's position in the cell division cycle. Neutrons impact with approximately 20 to 100 times more energy than conventional photon radiation and may be more damaging to surrounding tissues. For that reason, the radiation is delivered utilizing a sophisticated planning and delivery system.

Neutron beam therapy entails the use of a particle accelerator; protons from the accelerator are deflected by a magnet to a target which creates the neutron beam. Neutron beam therapy has been employed mainly for the treatment of the salivary gland cancers. It has also been used to treat other malignancies such as soft tissue sarcoma (STS) as well as lung, pancreatic, colon, kidney and prostate cancers. Nevertheless, NBRT has not gained wide acceptance because of the clinical difficulty in generating neutron particles. It should be noted that NBRT is different from boron neutron capture therapy (BNCT), which is a radiotherapy based on the preferential targeting of tumor cells with non-radioactive isotope ( $^{10}\text{B}$ ) and subsequent activation with thermal neutrons to produce a highly localized radiation, and is often used to treat brain tumors. In BNCT, the patient is given a drink containing boron, which is taken up by tumor cells. The tumor is then irradiated with a neutron beam, causing the boron to split into two highly energetic particles (helium and lithium) that destroy the cancerous cells while largely sparing adjacent healthy cells.

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Prior Authorization: Yes, per network provider agreement

## **CODING:**

CPT® or HCPCS

77423 High energy neutron radiation treatment delivery; 1 or more isocenter(s) with coplanar or non-coplanar geometry with blocking and/or wedge, and/or compensator(s)

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## **REFERENCES:**

1. Integrated Healthcare Services Process Manual: UR015 Use of Medical Policy and Criteria
2. Clinical Policy: Coverage Determination Guidelines MP/C009
3. American Cancer Society (ACS). Radiation Therapy for Salivary Gland Cancer. Last Revised: March 18, 2022. Retrieved from: <https://www.cancer.org/cancer/salivary-gland-cancer/treating/radiation-therapy.html> Accessed 06-12-23.
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6. Davis C, Sikes J, Namaranian P, Laramore G, Dillon JK. Neutron Beam Radiation Therapy: An Overview of Treatment and Oral Complications When Treating Salivary Gland Malignancies. *J Oral Maxillofac Surg*. 2016 Apr;74(4):830-5.
7. Lydiatt WM, Quivey JM. Salivary gland tumors: Treatment of locoregional disease. (Topic 3377, Version 34.0; last updated 01/03/23) In: Shah S, ed. *UpToDate*. Waltham, Mass. UpToDate; 2023. [www.uptodate.com](http://www.uptodate.com). Accessed 06-14-23.

## **DOCUMENT HISTORY:**

<b>Created Date:</b> 11/05/20
<b>Reviewed Date:</b> 07/06/21, 06/08/22, 06/08/23
<b>Revised Date:</b>

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PCHP:

Provides free aids and services to people with disabilities to communicate effectively with us, such as:

- Qualified sign language interpreters
- Written information in other formats (large print, audio, accessible electronic formats, other formats)

Provides free language services to people whose primary language is not English, such as:

- Qualified interpreters
- Information written in other languages

If you need these services, contact a Grievance Specialist.

If you believe that PCHP has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, or sex, you can file a grievance with:

Grievance Specialist  
PreferredOne Community Health Plan  
PO Box 59052  
Minneapolis, MN 55459-0052  
Phone: 1.800.940.5049 (TTY: 763.847.4013)  
Fax: 763.847.4010  
[customerservice@preferredone.com](mailto:customerservice@preferredone.com)

You can file a grievance in person or by mail, fax, or email. If you need help filing a grievance, a Grievance Specialist is available to help you.

You can also file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at <https://ocrportal.hhs.gov/ocr/portal/lobby.jsf>, or by mail or phone at:

U.S. Department of Health and Human Services  
200 Independence Avenue, SW  
Room 509F, HHH Building  
Washington, D.C. 20201  
1-800-368-1019, 800-537-7697 (TDD)

Complaint forms are available at <http://www.hhs.gov/ocr/office/file/index.html>.

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ATTENTION: If you do not speak English, language assistance services, free of charge, are available to you. Call 1.800.940.5049 (TTY: 763.847.4013).

ATENCIÓN: si habla español, tiene a su disposición servicios gratuitos de asistencia lingüística. Llame al 1.800.940.5049 (TTY: 763.847.4013).

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XIYYEEFFANNAA: Afaan dubbattu Oroomiffa, tajaajila gargaarsa afaanii, kanfaltiidhaan ala, ni argama. Bilbilaa 1.800.940.5049 (TTY: 763.847.4013).

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1.800.940.5049 (TTY: 763.847.4013).

ማስታወሻ: የሚናገሩት ቋንቋ አማርኛ ከሆነ የትርጉም እርዳታ ድርጅቶች፣ በነጻ ሊያግዝዎት ተዘጋጅተዋል፡ ወደ ሚከተለው ቁጥር ይደውሉ 1.800.940.5049 (መስማት ለተሳናቸው፡ 763.847.4013 ) .

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Fax: 763.847.4010  
[customerservice@preferredone.com](mailto:customerservice@preferredone.com)

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You can also file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at <https://ocrportal.hhs.gov/ocr/portal/lobby.jsf>, or by mail or phone at:

U.S. Department of Health and Human Services  
200 Independence Avenue, SW  
Room 509F, HHH Building  
Washington, D.C. 20201  
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