

## External Beam Radiation Therapy (EBRT)

Note: For Medicare members/enrollees, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Please refer to the CMS website at <http://www.cms.gov> for additional information.

Note: For Medicaid members/enrollees, circumstances when state Medicaid coverage provisions conflict with the coverage provisions within this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

### DISCUSSION

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External beam radiation therapy (EBRT) is a local treatment targeting the area of cancer in the body. The radiation beams used in this type of therapy come from photons, protons, and electrons.<sup>1</sup>

EBRT most commonly uses photon particles. Photons are also used in X-rays at significantly lower doses. The benefit of using photons is that these particles can target tumors deep in the body.<sup>1,2</sup> As the beams travel through the body, the photons deposit and scatter small particles of radiation. When the radiation reaches the tumor, it proceeds into the surrounding tissues.<sup>1</sup>

Protons are particles with a positive charge. The major difference between photons and protons is that when protons reach the target of the tumor, they stop and do not proceed past that point.<sup>1</sup> This may limit the amount of normal tissue that is adversely affected by the radiation. The size and cost of the proton radiation machines limit use in cancer treatment.<sup>1</sup>

Electrons are particles with a negative charge. Electron beams do not travel far in the body. Their use is limited to those cancers in the skin or near the surface of the body.<sup>1</sup>

The following are a few different types of external beam radiation therapies<sup>1,2</sup>:

- Proton beam therapy (PBT)
- Image-guided radiation therapy (IGRT)
- Intensity-modulated radiation therapy (IMRT)
- Conformal radiation therapy (3D-CRT)
- Stereotactic radiosurgery (SRS)
- Stereotactic body radiation therapy (SBRT)

### DEFINITIONS

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- **External beam radiation therapy (EBRT)** - External radiation (or external beam radiation) is the most common type of radiation therapy used for cancer treatment. A machine aims high-energy rays (or beams) from outside the body into the tumor.
- **Image-guided radiation therapy (IGRT)** - Image-guided radiation therapy (IGRT) is the use of imaging during radiation therapy to improve the precision and accuracy of treatment delivery. Radiation therapy machines are equipped with imaging technology to allow your doctor to image the tumor before and during treatment. By comparing these images to the reference images taken during simulation, the patient's position and/or the radiation beams may be adjusted to more precisely target the radiation dose to the tumor. To help align and target the

radiation equipment, some IGRT procedures may use fiducial markers, ultrasound, MRI, X-ray images of bone structure, CT scan, 3D body surface mapping, electromagnetic transponders, or colored ink tattoos on the skin.

- **Intensity-modulated radiotherapy (IMRT)** - Intensity-modulated radiation therapy (IMRT) is an advanced mode of high-precision radiotherapy that uses computer-controlled linear accelerators to deliver precise radiation doses to a malignant tumor or specific areas within the tumor. IMRT allows the radiation dose to conform more precisely to the three-dimensional shape of the tumor by controlling the intensity of the radiation beam in multiple small volumes. IMRT also allows higher radiation doses to be focused to regions within the tumor while minimizing the dose to surrounding normal critical structures.
- **National Comprehensive Cancer Network® (NCCN)** - An alliance of 32 leading cancer centers devoted to patient care, research, and education. The NCCN guidelines are utilized for Radiation Therapy and Medical Oncology standards. NCCN consensus clinical standards are periodically updated and NantHealth, Inc. reviews these and updates its policies within a timely manner.
- **Palliative radiation therapy** - Treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease. Palliative therapy may be given with other treatments from the time of diagnosis until the end of life.
- **Proton-beam radiation therapy (PBR)** - Proton-beam radiation therapy (PBR) uses protons to kill cancer cells, instead of X-rays or other types of radiation. Protons are parts of atoms that travel a certain distance before releasing most of their energy, but that cause little damage to the tissues they pass through. This is different from X-rays, which give off the same amount of energy as they pass through normal tissue both before and after reaching the tumor. This type of treatment can be helpful in treating tumors in small, intricate areas (such as the base of the skull or the spine), where it's very important to limit the radiation that reaches nearby structures.
- **Stereotactic body radiation therapy (SBRT)** - A type of external radiation therapy that uses special equipment to position a patient and precisely deliver radiation to tumors in the body (except the brain). The total dose of radiation is divided into smaller doses given over several days. This type of radiation therapy helps spare normal tissue. Also called stereotactic ablative body radiation therapy (SABR) and stereotactic body radiation therapy.
- **Stereotactic radiosurgery (SRS)** - A type of external radiation therapy that uses special equipment to position the patient and precisely give a single large dose of radiation to a tumor. It is used to treat brain tumors and other brain disorders that cannot be treated by regular surgery.
- **Total body irradiation (TBI)** - A type of radiation therapy that is given to the entire body. TBI is often used with high-dose anticancer drugs to help prepare a patient for a stem cell transplant. It is done to kill any cancer cells that are left in the body and helps make room in the patient's bone marrow for new blood stem cells to grow. TBI may also help prevent the body's immune system from rejecting the transplanted stem cells.
- **Three dimensional conformal radiation therapy (3D-CRT)** - A procedure that uses a computer to create a three dimensional picture of the tumor. This allows doctors to give the highest possible dose of radiation to the tumor, while sparing the normal tissue as much as possible.
- **Volumetric modulated arc therapy (VMAT)** - Volumetric modulated arc therapy (VMAT) is an advanced form of intensity-modulated radiotherapy (IMRT) that delivers a targeted three-dimensional dose of radiation to a tumor in one or more treatments.

**POLICY**

Please see all the below related anatomical policies that include external beam radiation therapy as a treatment for dosing parameters and medical necessity.

- Anal Cancer
- Bladder Cancer
- Bone Cancer, Primary
- Bone Metastases
- Breast Cancer
- Central Nervous System Cancers
- Colon and Rectal Cancer
- Esophageal and Gastric Cancer
- Gynecological Cancers
- Head and Neck Cancer
- Liver and Biliary Tract Cancers
- Lung Cancer
- Lymphoma
- Pancreatic Cancer
- Prostate Cancer
- Skin Cancer
- Soft Tissue sarcoma

**REFERENCES**

1. External beam radiation therapy for cancer. National Cancer Institute. <https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy/external-beam>. Accessed May 17, 2022.
2. External beam radiation therapy (EBRT). Cancer Treatment Centers of America. <https://www.cancercenter.com/treatment-options/radiation-therapy/external-beam-radiation>. Accessed May 17, 2022.

**CODING [ICD-10, HCPCS]\***

\*Procedure codes appearing in medical policy documents are only included as a general reference. This list may not be all-inclusive and is subject to updates. In addition, codes listed are not a guarantee of payment. CPT codes are available through the AMA.

| Code  | Description   |
|-------|---|
| C15.3 | Malignant neoplasm of upper third of esophagus                            |
| C15.4 | Malignant neoplasm of middle third of esophagus                           |
| C15.5 | Malignant neoplasm of lower third of esophagus                            |
| C15.8 | Malignant neoplasm of overlapping sites of esophagus                      |
| C45.1 | Mesothelioma of peritoneum  |
| C45.7 | Mesothelioma of other sites   |
| C47.0 | Malignant neoplasm of peripheral nerves of head, face, and neck           |
| C48.0 | Malignant neoplasm of retroperitoneum                                     |
| C48.8 | Malignant neoplasm of overlapping sites of retroperitoneum and peritoneum |

| Code          | Description  |
|---------------|--|
| C49.0         | Malignant neoplasm of connective and soft tissue of head, face, and neck   |
| C61           | Malignant neoplasm of the prostate   |
| C75.0         | Malignant neoplasm of parathyroid gland  |
| C75.1-C75.3   | Malignant neoplasm of pituitary gland - malignant neoplasm of pineal gland   |
| C76.0-C76.8   | Malignant neoplasm of head, face, and neck - malignant neoplasm of other specified ill-defined sites                               |
| C78.7         | Secondary malignant neoplasm of liver and intrahepatic bile duct   |
| C79.31        | Secondary malignant neoplasm of brain  |
| C79.51        | Secondary malignant neoplasm of bone   |
| C79.52        | Secondary malignant neoplasm of bone marrow  |
| D32.0-D33.9   | Benign neoplasm of cerebral meninges - benign neoplasm of central nervous system, unspecified                                      |
| D35.2-D35.4   | Benign neoplasm of pituitary gland - benign neoplasm of pineal gland   |
| D35.6         | Benign neoplasm of aortic body and other paraganglia   |
| D42.0-D43.2   | Neoplasm of uncertain behavior of cerebral meninges - neoplasm of uncertain behavior of brain, unspecified                         |
| D44.10-D44.12 | Neoplasm of uncertain behavior of unspecified adrenal gland - neoplasm of uncertain behavior of left adrenal gland                 |
| D44.3-D44.5   | Neoplasm of uncertain behavior of pituitary gland - neoplasm of uncertain behavior of pineal gland                                 |
| D49.6-D49.7   | Neoplasm of unspecified behavior of brain - neoplasm of unspecified behavior of endocrine glands and other parts of nervous system |
| G6001         | Image-guided radiation therapy (IGRT)  |
| G6002         | Image-guided radiation therapy (IGRT)  |
| G6003-G6014   | Conventional external beam radiation treatment delivery  |
| G6015-G6016   | Intensity-modulated radiation therapy (IMRT)   |

## REVISION AND REVIEW HISTORY

| No. | Description                           | Metadata                                 |
|-----|---------------------------------------|--|
| 1   | Original Effective Date               | 5/2022                                   |
| 2   | Policy Review Dates:                  | 5/24/2022, 6/2/2022, 6/7/2022, 7/20/2022 |
| 3   | Policy Revision Dates:                | 5/24/2022, 6/2/2022, 6/7/2022, 7/20/2022 |
| 4   | Department Owner                      | Medical Affairs                          |
| 5   | NH Advisory Committee Approval Dates: | 6/2/2022, 6/7/2022                       |
| 6   | Revision Changes:                     |  |