

Corporate Medical Policy

Intensity Modulated Radiation Therapy (IMRT) of Head and Neck

File Name: intensity_modulated_radiation_therapy_imrt_of_head_and_neck
Origination: 11/2009
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Description of Procedure or Service

Radiation therapy is an integral component in the treatment of head and neck cancers. Intensity modulated radiation therapy (IMRT) has been proposed as a method of radiation therapy that allows adequate radiation therapy to the tumor while minimizing the radiation dose to surrounding normal tissues and critical structures.

Radiation Techniques

Conventional external beam radiation therapy

Methods to plan and deliver radiation therapy have evolved in ways that permit more precise targeting of tumors with complex geometries. Most early trials used 2-dimensional treatment planning based on flat images and radiation beams with cross-sections of uniform intensity that were sequentially aimed at the tumor along 2 or 3 intersecting axes. Collectively, these methods are termed “conventional external beam radiation therapy.”

Three-dimensional conformal radiation (3D-CRT)

Treatment planning evolved by using 3-dimensional images, usually from computed tomography (CT) scans, to delineate the boundaries of the tumor and discriminate tumor tissue from adjacent normal tissue and nearby organs at risk for radiation damage. Computer algorithms were developed to estimate cumulative radiation dose delivered to each volume of interest by summing the contribution from each shaped beam. Methods also were developed to position the patient and the radiation portal reproducibly for each fraction and immobilize the patient, thus maintaining consistent beam axes across treatment sessions. Collectively, these methods are termed 3-dimensional conformal radiotherapy (3D-CRT).

Intensity-modulated radiation therapy (IMRT)

IMRT, which uses computer software and CT images, offers better conformality than 3D-CRT as it is able to modulate the intensity of the overlapping radiation beams projected on the target and to use multiple-shaped treatment fields. Treatment planning and delivery are more complex, time consuming, and labor intensive for IMRT than for 3D-CRT. The technique uses a multileaf collimator [MLC]), which, when coupled with a computer algorithm, allows for “inverse” treatment planning. The radiation oncologist delineates the target on each slice of a CT scan and specifies the target’s prescribed radiation dose, acceptable limits of dose heterogeneity within the target volume, adjacent normal tissue volumes to avoid, and acceptable dose limits within the normal tissues. Based on these parameters and a digitally reconstructed radiographic image of the tumor, surrounding tissues, and organs at risk, computer software optimizes the location, shape, and intensities of the beam ports to achieve the treatment plan’s goals.

Increased conformality may permit escalated tumor doses without increasing normal tissue toxicity and may thus improve local tumor control with decreased exposure to surrounding, normal tissues, potentially reducing acute and late radiation toxicities. Better dose homogeneity within the target may also improve local tumor control by avoiding under-dosing within the tumor and may decrease toxicity by avoiding overdosing.

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Technologic development has produced advanced techniques that may further improve RT treatment by improving dose distribution. These techniques are considered variations of IMRT. Volumetric modulated arc therapy (VMAT) delivers radiation from a continuous rotation of the radiation source. The principal advantage of VMAT is greater efficiency in treatment delivery time, reducing radiation exposure and improving target radiation delivery due to less patient motion. Image-guided RT involves the incorporation of imaging before and/or during treatment to more precisely deliver RT to the target volume.

IMRT methods to plan and deliver RT are not uniform. IMRT may use beams that remain on as MLCs move around the patient (dynamic MLC) or that are off during movement and turn on once the MLC reaches prespecified positions (“step and shoot” technique). A third alternative uses a very narrow single beam that moves spirally around the patient (tomotherapy). Each method uses different computer algorithms to plan treatment and yields somewhat different dose distributions in and outside the target. Patient position can alter target shape and thus affect treatment plans. Treatment plans are usually based on 1 imaging scan, a static 3D-CT image. Current methods seek to reduce positional uncertainty for tumors and adjacent normal tissues by various techniques. Patient immobilization cradles and skin or bony markers are used to minimize day-to-day variability in patient positioning. In addition, many tumors have irregular edges that preclude drawing tight margins on CT scan slices when radiation oncologists contour the tumor volume. It is unknown whether omitting some tumor cells or including some normal cells in the resulting target affects outcomes of IMRT.

Head and Neck Tumors

The generally accepted definition of head and neck cancers includes cancers arising in the oral cavity and lip, larynx, hypopharynx, oropharynx, nasopharynx, paranasal sinuses and nasal cavity, salivary glands and occult primaries in the head and neck region. Cancers generally not considered as head and neck cancers include uveal and choroidal melanoma, cutaneous tumors of the head and neck, esophageal cancer, and tracheal cancer. External beam radiation therapy is uncommonly used in the treatment of thyroid cancers but may be considered in patients with anaplastic thyroid cancer and for loco-regional control in patients with incompletely resected high-risk or recurrent differentiated (papillary, follicular, or mixed papillary-follicular) thyroid cancer.

Related Policies:

Intensity-Modulated Radiation Therapy (IMRT) of the Prostate
Intensity-Modulated Radiation Therapy (IMRT) of the Chest
Intensity-Modulated Radiation Therapy (IMRT) of the Abdomen and Pelvis
Intensity-Modulated Radiation Therapy (IMRT) of the Central Nervous System
Intensity-Modulated Radiation Therapy (IMRT) for Sarcoma of the Extremities
Maximum Units of Service
Radiation Therapy Services

****Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.*

Policy

BCBSNC will provide coverage for Intensity Modulated Radiation Therapy (IMRT) of the head and neck when determined to be medically necessary because the medical criteria and guidelines shown below are met.

Benefits Application

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit

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design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

When Intensity-Modulated Radiation Therapy (IMRT) of the head and neck is covered

Intensity Modulated Radiation Therapy (IMRT) may be considered medically necessary for the treatment of epithelial head and neck and cervical esophageal cancers (see Policy Guidelines).

Intensity modulated radiation therapy (IMRT) of the head and neck may be considered medically necessary for the treatment of thyroid cancers, locally advanced skin cancers with regional lymph node metastases, lymphomas and sarcomas in close proximity to organs at risk (esophagus, salivary glands, and spinal cord).

When Intensity-Modulated Radiation Therapy (IMRT) of the head and neck is not covered

Intensity modulated radiation therapy (IMRT) of the head and neck is considered not medically necessary when the above criteria are not met.

Policy Guidelines

For this policy, head and neck cancers are cancers arising from the oral cavity and lip, larynx, hypopharynx, oropharynx, nasopharynx, paranasal sinuses and nasal cavity, salivary glands, and occult primaries in the head and neck region. Cancers of the cervical esophagus are included in this policy due to the proximity and similar dosing constraints as head and neck tumors.

For individuals who have a head or neck cancer who receive IMRT, the evidence includes randomized controlled trials (RCTs), nonrandomized comparative studies, and meta-analyses of these studies. Relevant outcomes are overall survival, functional outcomes, quality of life, and treatment-related morbidity. The single RCT that compared IMRT to 3-dimensional conformal radiotherapy (3D-CRT) found a significant benefit of IMRT on xerostomia that persisted through 5 years. Oncologic outcomes did not differ significantly between treatments. Other nonrandomized cohort studies have supported the findings that both short- and long-term xerostomia are reduced with IMRT. Overall, the body of evidence has shown that IMRT significantly and consistently reduces both early and late xerostomia and improves quality of life domains related to xerostomia compared with 3D-CRT. The evidence permits no conclusions on tumor control or survival. The evidence is sufficient to determine qualitatively that the technology results in a meaningful improvement in the net health outcome.

For individuals who have thyroid cancer in close proximity to organs at risk who receive IMRT, the evidence includes nonrandomized, retrospective studies. Relevant outcomes include overall survival, functional outcomes, quality of life, and treatment-related morbidity. High-quality studies that differentiate the superiority of any type of external-beam radiotherapy to treat thyroid cancer are not available. However, the published evidence plus additional dosimetry considerations together suggest IMRT for thyroid tumors may be appropriate in some circumstances, such as for anaplastic thyroid carcinoma or for thyroid tumors located near critical structures (eg, salivary glands, spinal cord), similar to the situation for head and neck cancers. Thus, when possible adverse events could result if nearby critical structures receive toxic radiation doses, the ability to improve dosimetry with IMRT may be accepted as meaningful evidence for its benefit.

Limitations of published evidence include patient heterogeneity, variability in treatment protocols, short follow-up periods, inconsistency in reporting important health outcomes (eg, overall survival vs progression-free survival or tumor control rates), and inconsistency in reporting or collecting outcomes.

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The evidence is sufficient to determine qualitatively that the technology results in a meaningful improvement in the net health outcome.

There was uniform consensus from clinical input that IMRT is appropriate for the treatment of head and neck cancers. There was near-uniform consensus from clinical input that IMRT is appropriate in select patients with thyroid cancer. Respondents noted that IMRT for head, neck, and thyroid tumors may reduce the risk of exposure to radiation in critical nearby structures (eg, spinal cord, salivary glands), thus decreasing the risks of adverse effects (eg, xerostomia, esophageal stricture).

IMRT may also be considered medically necessary for the treatment of thyroid cancers, lymphomas, and sarcomas in close proximity to organs at risk (esophagus, salivary glands, and spinal cord), when 3-D CRT planning is not able to meet dose volume constraints for normal tissue tolerance.

CPT 77338 is reported once per IMRT plan and is limited to 3 units per 60-day treatment course.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable codes: 77301, 77338, 77385, 77386, G6015, G6016

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

Scientific Background and Reference Sources

National Comprehensive Cancer Network. Head and Neck Cancers. Clinical practice guidelines in oncology, v.2.2008. Available at: http://www.nccn.org/professionals/physician_gls/PDF/head-and-neck.pdf.

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 4/24/09

Specialty Matched Consultant Advisory Panel 5/2010

National Comprehensive Cancer Network. Head and Neck Cancers. Clinical practice guidelines in oncology, v.2.2010. Available at: http://www.nccn.org/professionals/physician_gls/PDF/head-and-neck.pdf.

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 10/8/10

Specialty Matched Consultant Advisory Panel 8/2011

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 6/14/12

Specialty Matched Consultant Advisory Panel 8/2012

Specialty Matched Consultant Advisory Panel 5/2013

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 6/13/13

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 6/12/14

Specialty Matched Consultant Advisory Panel 6/2014

Senior Medical Director review 11/2014

Intensity Modulated Radiation Therapy (IMRT) of Head and Neck

Specialty Matched Consultant Advisory Panel 5/2015

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 6/11/15

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 8/13/15

Senior Medical Director review 3/2016

Specialty Matched Consultant Advisory Panel 5/2016

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 8/11/16

Specialty Matched Consultant Advisory Panel 5/2017

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 7/13/17

Specialty Matched Consultant Advisory Panel 5/2018

Medical Director review 5/2018

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 7/12/18

Specialty Matched Consultant Advisory Panel 5/2019

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 7/11/19

Specialty Matched Consultant Advisory Panel 5/2020

Medical Director review 5/2020

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.48, 7/16/20

Specialty Matched Consultant Advisory Panel 5/2021

Medical Director review 5/2021

Specialty Matched Consultant Advisory Panel 5/2022

Medical Director review 5/2022

Specialty Matched Consultant Advisory Panel 5/2023

Medical Director review 5/2023

National Comprehensive Cancer Network. Head and Neck Cancers. Clinical practice guidelines in oncology, V4.2024. Available at: http://www.nccn.org/professionals/physician_gls/PDF/head-and-neck.pdf.

Specialty Matched Consultant Advisory Panel 5/2024

Medical Director review 5/2024

Policy Implementation/Update Information

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| 12/21/09 | New policy issued. Intensity Modulated Radiation Therapy (IMRT) may be considered medically necessary for the treatment of head and neck cancers. Notification given 12/21/09. Effective date 3/30/10. (adn) |
| 6/22/10 | Specialty Matched Consultant Advisory Panel 5/24/10. No changes in policy statement. Medical Policy number removed. (lpr) |
| 8/3/10 | Under Description Section, Head and Neck Tumors: added cancer of the central nervous system and cancer of the thyroid gland to the statement of cancers that are not generally considered as head and neck cancers. This addition per Senior Medical Director. No changes to policy statement. (lpr) |

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- 9/30/11 Under “Not Covered” section added “Intensity modulated radiation therapy (IMRT) is considered **investigational** for the treatment of thyroid cancers.” References added. Specialty Matched Consultant Advisory Panel review meeting 8/31/2011. (lpr)
- 11/13/12 Description section extensively revised. Policy statement on thyroid tumors changed. Under “When Covered” section: added “Intensity modulated radiation therapy may be considered medically necessary for the treatment of thyroid cancers in close proximity to organs at risk (esophagus, salivary glands, and spinal cord) and 3-D CRT planning is not able to meet dose volume constraints for normal tissue tolerance.” Specialty Matched Consultant Advisory Panel review meeting 8/15/12. Reference added. (lpr)
- 6/11/13 Specialty Matched Consultant Advisory Panel 5/15/2013. No change to policy statement. (lpr)
- 8/13/13 Reference updated. No change to policy statement. (lpr)
- 7/29/14 Specialty matched consultant advisory panel review meeting 6/24/2014. No change to policy statement. Reference added. (lpr)
- 12/30/14 Under “When Covered” section: added cervical esophageal cancers to medically necessary statement. Under Policy Guidelines section: added statement “Cancers of the cervical esophagus are included in this policy due to the proximity and similar dosing constraints as head and neck tumors.” Under Related policies: IMRT Breast and Lung titled changed to IMRT Chest. Added CPT codes 77385, 77386 and HCPCS codes G6015, G6016; Deleted CPT codes 77418, 0073T from Billing/Coding section effective 1/1/2015 for code update. Senior medical director review 11/2014. (lpr)
- 7/1/15 Under Policy Guidelines section added the statement: “CPT 77338 is reported once per IMRT plan and is limited to 3 units per 60-day treatment course.” Also added “Maximum Units of Service” to Related Policies under Description section. Specialty Matched Consultant Advisory Panel review 5/27/2015. Reference added. No change to policy statement. (lpr)
- 10/30/15 Reference added. No change to policy statement. (lpr)
- 4/1/16 Added covered indications for lymphomas and sarcomas under “When Covered” section. Senior medical director review 3/2016. Specialty Matched Consultant Advisory Panel review. (lpr)
- 7/1/16 Specialty Matched Consultant Advisory Panel review 5/25/2016. No change to policy statement. (lpr)
- 9/30/16 Description and Policy Guidelines sections updated. No change to policy statement. Reference added. (lpr)
- 6/30/17 Specialty Matched Consultant Advisory Panel review 5/31/2017. No change to policy statement. (lpr)
- 8/25/17 Reference added. No change to policy statement. (lpr)
- 6/8/18 Specialty Matched Consultant Advisory Panel review 5/2018. No changes to policy statements. Medical Director review 5/2018. (mco)
- 5/28/19 Specialty Matched Consultant Advisory Panel review 5/15/2019. Reference added. No changes to policy statement. (lpr)
- 6/26/20 Specialty Matched Consultant Advisory Panel review 5/20/2020. Reference added. No change to policy statement. (lpr)
- 6/15/21 Specialty Matched Consultant Advisory Panel review 5/19/2021. Reference added. No change to policy statement. (lpr)

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- 7/1/21 Under “When Covered” section: added coverage for epithelial head and neck cancer as well as locally advanced skin cancers with regional lymph node metastases. Medical Director review. (lpr)
- 5/31/22 Specialty Matched Consultant Advisory Panel review 5/18/2022. Added Radiation Therapy Services to related policies section. No change to policy statement. (lpr)
- 6/13/23 Specialty Matched Consultant Advisory Panel review 5/17/2023. No change to policy statement. (lpr)
- 6/12/24 Specialty Matched Consultant Advisory Panel review 5/15/24. Under “When Covered” section, removed statement “when 3D CRT planning is not able to meet dose volume constraints for normal tissue tolerance” per Medical Director/CAP review. Reference added. No change to policy statement. (lpr)

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.