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.** Over the past several decades, 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.”

**3-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.

**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 multiply-shaped treatment fields. It uses a device (a multileaf collimator, MLC) which, coupled to 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 and surrounding tissues and organs at risk, computer software optimizes the location, shape, and intensities of the beams' 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. 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.

Since most tumors move as patients breathe, dosimetry with stationary targets may not accurately reflect doses delivered within target volumes and adjacent tissues in patients. Furthermore, treatment planning and delivery are more complex, time-consuming, and labor-intensive for IMRT than for 3D-CRT. Thus, clinical studies must test whether IMRT improves tumor control or reduces acute and late toxicities when
Intensity Modulated Radiation Therapy (IMRT) of Head and Neck

compared with 3D-CRT.

Multiple-dose planning studies have generated 3D-CRT and IMRT treatment plans from the same scans, then compared predicted dose distributions within the target and in adjacent organs at risk. Results of such planning studies show that IMRT improves on 3D-CRT with respect to conformality to, and dose homogeneity within, the target. Dosimetry using stationary targets generally confirms these predictions. Thus, radiation oncologists hypothesized that IMRT may improve treatment outcomes compared with those of 3D-CRT. However, these types of studies offer indirect evidence on treatment benefit from IMRT, and it is difficult to relate results of dosing studies to actual effects on health outcomes.

Comparative studies of radiation-induced side effects from IMRT versus alternative radiation delivery are probably the most important type of evidence in establishing the benefit of IMRT. Such studies would answer the question of whether the theoretical benefit of IMRT in sparing normal tissue translates into real health outcomes. Single-arm series of IMRT can give some insights into the potential for benefit, particularly if an adverse effect that is expected to occur at high rates is shown to decrease by a large amount. Studies of treatment benefit are also important to establish that IMRT is at least as good as other types of delivery, but in the absence of such comparative trials, it is likely that benefit from IMRT is at least as good as with other types of delivery.

Head and Neck Tumors

Head and neck cancers account for about 3% to 5% of cancer cases in the United States. 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 locoregional 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
Maximum Units of Service

***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
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Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit 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 head and neck, and cervical esophageal cancers.

Intensity modulated radiation therapy (IMRT) may be considered medically necessary for the treatment of thyroid cancers 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.

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.

Organs at risk are defined as normal tissues whose radiation sensitivity may significantly influence treatment planning and/or prescribed radiation dose. These organs at risk may be particularly vulnerable to clinically important complications from radiation toxicity.

In general, the evidence to assess the role of IMRT in the treatment of cancers of the head and neck suggests that IMRT provides tumor control rates comparable to existing radiotherapy techniques. In addition, while results are not uniform across all studies, the majority of the studies show a marked improvement in the rate of late xerostomia, a clinically significant complication of radiation therapy and a complication that leads to decreased quality of life for patients. Thus, based on the published literature that provides data on outcomes of treatment, IMRT is a radiation therapy technique that can be used in the treatment of head and neck cancers. Its use in this clinical application may be considered medically necessary.

IMRT may also be considered medically necessary for the treatment of thyroid cancers 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
Intensity Modulated Radiation Therapy (IMRT) of Head and Neck

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


Specialty Matched Consultant Advisory Panel 8/2012


Senior Medical Director review 11/2014


Policy Implementation/Update Information

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)


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)
Intensity Modulated Radiation Therapy (IMRT) of Head and Neck

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)

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.