



## MASSACHUSETTS

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### Medical Policy

## Intensity-Modulated Radiation Therapy - IMRT - Cancer of the Head and Neck or Thyroid

### Table of Contents

- [Policy: Commercial](#)
- [Policy: Medicare](#)
- [Authorization Information](#)
- [Coding Information](#)
- [Description](#)
- [Policy History](#)
- [Information Pertaining to All Policies](#)
- [References](#)

### Policy Number: 164

BCBSA Reference Number: 8.01.48

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### Related Policies

- Intensity Modulated Radiation Therapy (IMRT) of the Prostate, [#090](#)
- Intensity Modulated Radiation Therapy (IMRT) of the Breast and Lung, [#163](#)
- Intensity-Modulated Radiation Therapy (IMRT): Abdomen and Pelvis, [#165](#)
- Intensity Modulated Radiation Therapy (IMRT): Central Nervous System Tumors, [#910](#)
- Stereotactic Radiosurgery and Stereotactic Body Radiotherapy, [#277](#)
- Charged-Particle (Proton or Helium Ion) Radiotherapy for Neoplastic Conditions, [#437](#)

### Policy

#### Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity Medicare HMO Blue<sup>SM</sup> and Medicare PPO Blue<sup>SM</sup> Members

Intensity-modulated radiation therapy may be [MEDICALLY NECESSARY](#) for the treatment of head and neck cancers, including thyroid cancers.

### Prior Authorization Information

#### Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** if the procedure is performed **inpatient**.

#### Outpatient

- For services described in this policy, see below for situations where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	Prior authorization is <b>not required</b> .
Commercial PPO and Indemnity	Prior authorization is <b>not required</b> .
Medicare HMO Blue <sup>SM</sup>	Prior authorization is <b>not required</b> .

**CPT Codes / HCPCS Codes / ICD Codes**

*Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member*

*Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.*

*The following codes are included below for informational purposes only; this is not an all-inclusive list.*

**The above medical necessity criteria MUST be met for the following codes to be covered for Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity and Medicare HMO Blue and Medicare PPO Blue:**

**CPT Codes**

<b>CPT codes:</b>	<b>Code Description</b>
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77385	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; simple
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex

**HCPCS Codes**

<b>HCPCS codes:</b>	<b>Code Description</b>
G6015	Intensity modulated treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic mlc, per treatment session
G6016	Compensator-based beam modulation treatment delivery of inverse planned treatment using 3 or more high resolution (milled or cast) compensator, convergent beam modulated fields, per treatment session

**The following ICD Diagnosis Codes are considered medically necessary when submitted with the CPT codes above if medical necessity criteria are met:**

**ICD-10 Diagnosis Codes**

<b>ICD-10-CM Diagnosis codes:</b>	<b>Code Description</b>
C00.0	Malignant neoplasm of external upper lip
C00.1	Malignant neoplasm of external lower lip
C00.2	Malignant neoplasm of external lip, unspecified
C00.3	Malignant neoplasm of upper lip, inner aspect
C00.4	Malignant neoplasm of lower lip, inner aspect
C00.5	Malignant neoplasm of lip, unspecified, inner aspect
C00.6	Malignant neoplasm of commissure of lip, unspecified
C00.8	Malignant neoplasm of overlapping sites of lip

C00.9	Malignant neoplasm of lip, unspecified
C01	Malignant neoplasm of base of tongue
C02.0	Malignant neoplasm of dorsal surface of tongue
C02.1	Malignant neoplasm of border of tongue
C02.2	Malignant neoplasm of ventral surface of tongue
C02.3	Malignant neoplasm of anterior two-thirds of tongue, part unspecified
C02.4	Malignant neoplasm of lingual tonsil
C02.8	Malignant neoplasm of overlapping sites of tongue
C02.9	Malignant neoplasm of tongue, unspecified
C03.0	Malignant neoplasm of upper gum
C03.1	Malignant neoplasm of lower gum
C03.9	Malignant neoplasm of gum, unspecified
C04.0	Malignant neoplasm of anterior floor of mouth
C04.1	Malignant neoplasm of lateral floor of mouth
C04.8	Malignant neoplasm of overlapping sites of floor of mouth
C04.9	Malignant neoplasm of floor of mouth, unspecified
C05.0	Malignant neoplasm of hard palate
C05.1	Malignant neoplasm of soft palate
C05.2	Malignant neoplasm of uvula
C05.8	Malignant neoplasm of overlapping sites of palate
C05.9	Malignant neoplasm of palate, unspecified
C06.0	Malignant neoplasm of cheek mucosa
C06.1	Malignant neoplasm of vestibule of mouth
C06.2	Malignant neoplasm of retromolar area
C06.80	Malignant neoplasm of overlapping sites of unspecified parts of mouth
C06.89	Malignant neoplasm of overlapping sites of other parts of mouth
C06.9	Malignant neoplasm of mouth, unspecified
C07	Malignant neoplasm of parotid gland
C08.0	Malignant neoplasm of submandibular gland
C08.1	Malignant neoplasm of sublingual gland
C08.9	Malignant neoplasm of major salivary gland, unspecified
C09.0	Malignant neoplasm of tonsillar fossa
C09.1	Malignant neoplasm of tonsillar pillar (anterior) (posterior)
C09.8	Malignant neoplasm of overlapping sites of tonsil
C09.9	Malignant neoplasm of tonsil, unspecified
C10.0	Malignant neoplasm of vallecula
C10.1	Malignant neoplasm of anterior surface of epiglottis
C10.2	Malignant neoplasm of lateral wall of oropharynx
C10.3	Malignant neoplasm of posterior wall of oropharynx
C10.4	Malignant neoplasm of branchial cleft
C10.8	Malignant neoplasm of overlapping sites of oropharynx
C10.9	Malignant neoplasm of oropharynx, unspecified
C11.0	Malignant neoplasm of superior wall of nasopharynx
C11.1	Malignant neoplasm of posterior wall of nasopharynx
C11.2	Malignant neoplasm of lateral wall of nasopharynx
C11.3	Malignant neoplasm of anterior wall of nasopharynx
C11.8	Malignant neoplasm of overlapping sites of nasopharynx
C11.9	Malignant neoplasm of nasopharynx, unspecified
C12	Malignant neoplasm of pyriform sinus
C13.0	Malignant neoplasm of postcricoid region
C13.1	Malignant neoplasm of aryepiglottic fold, hypopharyngeal aspect

C13.2	Malignant neoplasm of posterior wall of hypopharynx
C13.8	Malignant neoplasm of overlapping sites of hypopharynx
C13.9	Malignant neoplasm of hypopharynx, unspecified
C14.0	Malignant neoplasm of pharynx, unspecified
C14.2	Malignant neoplasm of Waldeyer's ring
C14.8	Malignant neoplasm of overlapping sites of lip, oral cavity and pharynx
C15.3	Malignant neoplasm of upper third of esophagus
C30.0	Malignant neoplasm of nasal cavity
C30.1	Malignant neoplasm of middle ear
C31.0	Malignant neoplasm of maxillary sinus
C31.1	Malignant neoplasm of ethmoidal sinus
C31.2	Malignant neoplasm of frontal sinus
C31.3	Malignant neoplasm of sphenoid sinus
C31.8	Malignant neoplasm of overlapping sites of accessory sinuses
C31.9	Malignant neoplasm of accessory sinus, unspecified
C32.0	Malignant neoplasm of glottis
C32.1	Malignant neoplasm of supraglottis
C32.2	Malignant neoplasm of subglottis
C32.3	Malignant neoplasm of laryngeal cartilage
C32.8	Malignant neoplasm of overlapping sites of larynx
C32.9	Malignant neoplasm of larynx, unspecified
C33	Malignant neoplasm of trachea
C73	Malignant neoplasm of thyroid gland
C77.0	Secondary and unspecified malignant neoplasm of lymph nodes of head, face and neck
C81.91	Hodgkin lymphoma, unspecified, lymph nodes of head, face, and neck
C82.01	Follicular lymphoma grade I, lymph nodes of head, face, and neck
C82.11	Follicular lymphoma grade II, lymph nodes of head, face, and neck
C82.21	Follicular lymphoma grade III, unspecified, lymph nodes of head, face, and neck
C82.31	Follicular lymphoma grade IIIa, lymph nodes of head, face, and neck
C82.41	Follicular lymphoma grade IIIb, lymph nodes of head, face, and neck
C82.51	Diffuse follicle center lymphoma, lymph nodes of head, face, and neck
C82.61	Cutaneous follicle center lymphoma, lymph nodes of head, face, and neck
C82.81	Other types of follicular lymphoma, lymph nodes of head, face, and neck
C82.91	Follicular lymphoma, unspecified, lymph nodes of head, face, and neck
C83.01	Small cell B-cell lymphoma, lymph nodes of head, face, and neck
C83.11	Mantle cell lymphoma, lymph nodes of head, face, and neck
C83.31	Diffuse large B-cell lymphoma, lymph nodes of head, face, and neck
C83.51	Lymphoblastic (diffuse) lymphoma, lymph nodes of head, face, and neck
C83.71	Burkitt lymphoma, lymph nodes of head, face, and neck
C83.81	Other non-follicular lymphoma, lymph nodes of head, face, and neck
C83.91	Non-follicular (diffuse) lymphoma, unspecified, lymph nodes of head, face, and neck
C84.01	Mycosis fungoides, lymph nodes of head, face, and neck
C84.11	Sézary disease, lymph nodes of head, face, and neck
C84.41	Peripheral T-cell lymphoma, not classified, lymph nodes of head, face, and neck
C84.61	Anaplastic large cell lymphoma, ALK-positive, lymph nodes of head, face, and neck
C84.71	Anaplastic large cell lymphoma, ALK-negative, lymph nodes of head, face, and neck
C84.91	Mature T/NK-cell lymphomas, unspecified, lymph nodes of head, face, and neck
C84.A1	Cutaneous T-cell lymphoma, unspecified lymph nodes of head, face, and neck
C84.Z1	Other mature T/NK-cell lymphomas, lymph nodes of head, face, and neck
C85.11	Unspecified B-cell lymphoma, lymph nodes of head, face, and neck

C85.21	Mediastinal (thymic) large B-cell lymphoma, lymph nodes of head, face, and neck
C85.81	Other specified types of non-Hodgkin lymphoma, lymph nodes of head, face, and neck
C85.91	Non-Hodgkin lymphoma, unspecified, lymph nodes of head, face, and neck
C86.0	Extranodal NK/T-cell lymphoma, nasal type
C96.9	Malignant neoplasm of lymphoid, hematopoietic and related tissue, unspecified
C96.A	Histiocytic sarcoma
C96.Z	Other specified malignant neoplasms of lymphoid, hematopoietic and related tissue
D00.00	Carcinoma in situ of oral cavity, unspecified site
D00.01	Carcinoma in situ of labial mucosa and vermilion border
D00.02	Carcinoma in situ of buccal mucosa
D00.03	Carcinoma in situ of gingiva and edentulous alveolar ridge
D00.04	Carcinoma in situ of soft palate
D00.05	Carcinoma in situ of hard palate
D00.06	Carcinoma in situ of floor of mouth
D00.07	Carcinoma in situ of tongue
D00.08	Carcinoma in situ of pharynx
D02.0	Carcinoma in situ of larynx
D02.1	Carcinoma in situ of trachea
D04.0	Carcinoma in situ of skin of lip
D04.10	Carcinoma in situ of skin of unspecified eyelid, including canthus
D04.111	Carcinoma in situ of skin of right upper eyelid, including canthus
D04.112	Carcinoma in situ of skin of right lower eyelid, including canthus
D04.121	Carcinoma in situ of skin of left upper eyelid, including canthus
D04.122	Carcinoma in situ of skin of left lower eyelid, including canthus
D04.20	Carcinoma in situ of skin of unspecified ear and external auricular canal
D04.21	Carcinoma in situ of skin of right ear and external auricular canal
D04.22	Carcinoma in situ of skin of left ear and external auricular canal
D04.30	Carcinoma in situ of skin of unspecified part of face
D04.39	Carcinoma in situ of skin of other parts of face
D04.4	Carcinoma in situ of skin of scalp and neck
D09.20	Carcinoma in situ of unspecified eye
D09.21	Carcinoma in situ of right eye
D09.22	Carcinoma in situ of left eye
D09.3	Carcinoma in situ of thyroid and other endocrine glands
D09.8	Carcinoma in situ of other specified sites

## Description

### Head and Neck Cancers

This evidence review focuses on cancers affecting 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.

### Radiotherapy Techniques

Radiation therapy may be administered externally (ie, a beam of radiation is directed into the body) or internally (ie, a radioactive source is placed inside the body, near a tumor).<sup>1</sup> External radiotherapy (RT) techniques include "conventional" or 2-dimensional (2D) RT, 3-dimensional (3D) conformal RT, and intensity-modulated radiation therapy (IMRT).

### Conventional External-Beam Radiotherapy

Methods to plan and deliver RT have evolved that permit more precise targeting of tumors with complex geometries. Conventional 2D treatment planning utilizes X-ray films to guide and position radiation

beams.<sup>1</sup> Bony landmarks bones visualized on X-ray are used to locate a tumor and direct the radiation beams. The radiation is typically of uniform intensity.

### **Three-Dimensional Conformal Radiotherapy**

Radiation treatment planning has evolved to use 3D images, usually from computed tomography (CT) scans, to more precisely delineate the boundaries of the tumor and to discriminate tumor tissue from adjacent normal tissue and nearby organs at risk for radiation damage. Three-dimensional conformal RT (3D-CRT) involves initially scanning the patient in the position that will be used for the radiation treatment.<sup>1</sup> The tumor target and surrounding normal organs are then outlined in 3D on the scan. Computer software assists in determining the orientation of radiation beams and the amount of radiation the tumor and normal tissues receive to ensure coverage of the entire tumor in order to minimize radiation exposure for at risk normal tissue and nearby organs. Other imaging techniques and devices such as multileaf collimators (MLCs) may be used to "shape" the radiation beams. Methods have also been developed to position the patient and the radiation portal reproducibly for each fraction and to immobilize the patient, thus maintaining consistent beam axes across treatment sessions.

### **Intensity-Modulated Radiotherapy**

IMRT is the more recent development in external radiation. Treatment planning and delivery are more complex, time-consuming, and labor-intensive for IMRT than for 3D-CRT. Similar to 3D-CRT, the tumor and surrounding normal organs are outlined in 3D by a scan and multiple radiation beams are positioned around the patient for radiation delivery.<sup>1</sup> In IMRT, radiation beams are divided into a grid-like pattern, separating a single beam into many smaller "beamlets". Specialized computer software 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 is proposed to 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 underdosing within the tumor and may decrease toxicity by avoiding overdosing.

Other advanced techniques that may further improve RT treatment by improving dose distribution. These techniques are considered variations of IMRT. Volumetric modulated arc therapy delivers radiation from a continuous rotation of the radiation source. The principal advantage of volumetric modulated arc therapy 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.

## **Summary**

Radiotherapy (RT) is an integral component in the treatment of head and neck cancers. Intensity-modulated radiotherapy (IMRT) has been proposed as a method to allow adequate radiation to the tumor, minimizing the radiation dose to surrounding normal tissues and critical structures.

For individuals who have head and neck cancer who receive IMRT, the evidence includes systematic reviews, randomized controlled trials (RCTs), and nonrandomized comparative studies. Relevant outcomes are overall survival (OS), functional outcomes, quality-of-life, and treatment-related morbidity. Recently published systematic reviews compared IMRT to 2-dimensional radiotherapy (2D-RT) and conformal radiotherapy (CRT) in patients with nasopharyngeal carcinoma (NPC). Results revealed a significant improvement in clinical oncologic outcomes (eg, OS, progression-free survival (PFS), locoregional control/survival) and toxicities such as xerostomia with IMRT in this patient population. A 2014 systematic review concluded that IMRT, when compared with 2D-RT or 3D-CRT, had no significant

impact on OS or loco-regional control in previously untreated patients with non-metastatic head and neck cancers; however, IMRT was associated with a significant improvement in xerostomia. One RCT compared 2 fractionation schedules of IMRT for locally advanced head and neck cancer and found a survival benefit in using SMART boost over SIB-IMRT. Nonrandomized cohort studies have supported the findings that both short- and long-term xerostomia are reduced with IMRT. Overall, 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 2D-RT or 3D-CRT. The evidence is sufficient to determine 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 case series data. Relevant outcomes include OS, functional outcomes, quality-of-life, and treatment-related morbidity. High-quality studies that differentiate the superiority of any type of external-beam RT to treat thyroid cancer are not available. However, the published evidence plus additional dosimetry considerations together suggest IMRT may be appropriate for thyroid tumors in some circumstances, such as for anaplastic thyroid carcinoma or thyroid tumors located near critical structures (eg, salivary glands, spinal cord), similar to the situation for head and neck cancers. Thus, when adverse events could result if nearby critical structures receive toxic radiation doses, the ability to improve dosimetry with IMRT might be accepted as meaningful evidence for its benefit. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

Clinical input obtained in 2012 provided a uniform consensus that IMRT is appropriate for the treatment of head and neck cancers. There was a near-uniform consensus that IMRT is appropriate in select patients with thyroid cancer. Respondents noted that IMRT for the 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 events (eg, xerostomia, esophageal stricture).

## Policy History

Date	Action
9/2020	BCBSA National medical policy review. Description, summary and references updated. Policy statements unchanged.
9/2019	BCBSA National medical policy review. Description, summary and references updated. Policy statements unchanged.
2/2019	Clarified coding language
10/2018	Clarified coding information.
2/2018	Clarified coding information.
8/2017	New references added from BCBSA National medical policy.
10/2016	New references added from BCBSA National medical policy.
2/2016	Local Coverage Determination (LCD) for Intensity Modulated Radiation Therapy (IMRT) (L3244) removed. Clarified coding information. 2/1/2016
11/2015	Added coding language
8/2015	New references from BCBSA National medical policy.
1/2015	Clarified coding information.
9/2014	Clarified that clinical exception/notification form is not required.
8/2014	Clinical exception and notification clarified. Medicare LCD added.
8/2014	Updated Coding section with ICD10 procedure and diagnosis codes, effective 10/2015.
8/2013	New references from BCBSA National medical policy.
2/2013	BCBSA National medical policy review. Changes to policy statement. Effective 2/4/2013.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
9/1/2011	Medical Policy 164 effective 9/1/2011.

## Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

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2. American Society of Clinical Oncology. Cancer.Net site. Head and neck cancer: statistics. January 2020. <https://www.cancer.net/cancer-types/head-and-neck-cancer/statistics>. Accessed May 20, 2020
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