

# Clinical Policy: Intensity-Modulated Radiotherapy

Reference Number: LA.CP.MP.69

Date of Last Revision: 1/23

Coding Implications

Revision Log

See [Important Reminder](#) at the end of this policy for important regulatory and legal information.

## Description

Medical necessity criteria for intensity-modulated radiotherapy (IMRT). IMRT is an advanced form of 3-dimensional (3-D) conformal radiation therapy that delivers a more precise radiation dose to the tumor while sparing healthy surrounding tissue. While IMRT empirically offers advances over other radiation therapies, accepted practices and the risks and benefits of IMRT over conventional or 3-D conformal radiation must be considered.

## Policy/Criteria

- I. It is the policy of Louisiana Healthcare Connections that IMRT is medically necessary for any of the following indications:
  - A. Age  $\leq$  18 years;
  - B. Target volume is in close proximity to critical structures that must be protected;
  - C. The volume of interest must be covered with narrow margins to adequately protect immediately adjacent structures;
  - D. An immediately adjacent area has been previously irradiated and abutting portals must be established with high precision;
  - E. The target volume is concave or convex, and critical normal tissues are within or around that convexity or concavity;
  - F. Dose escalation is planned to deliver radiation doses in excess of those commonly utilized for similar tumors with conventional treatment;
  - G. Indications by cancer site include any of the following:
    1. Primary or benign tumor(s) of the central nervous system, including brain, brain stem, and spinal cord;
    2. Primary tumor(s) of the spine where spinal cord tolerance may be exceeded by conventional treatment;
    3. Primary or benign lesion(s) of the head and neck area including orbits, sinuses, skull base, aerodigestive tract (lips, mouth, tongue, tonsils, nose, throat, vocal cords and part of the trachea and esophagus), salivary glands, and thyroid;
    4. Anal or perianal cancer, excluding locally recurrent perianal cancer;
    5. Prostate cancer, definitive (curative) treatment;
    6. Vulvar cancer, definitive (curative) treatment;
    7. Cervical cancer, curative treatment, any of the following:
      - a. Post-hysterectomy;
      - b. For treatment that includes para-aortic nodes;
      - c. For high doses of radiation in the presence of gross disease in regional lymph nodes;
    8. Select breast cancer cases, any of the following:
      - a. Homogeneity of dose cannot be achieved with conventional three dimensional planning techniques, demonstrated by any of the following:
        - i. A maximum dose of greater than 110% is given to a volume of at least 0.3 cc;

- ii. The volume of breast tissue receiving 105% of the prescribed dose exceeds 10% (or 20% for a large volume breast defined as greater than 800 cc);
- iii. Hot spots in the inframammary fold are 105% or greater;
- b. The volume of lung tissue receiving 20 Gy exceeds 20%;
- c. The volume of heart tissue receiving 25 Gy exceeds 2%.

### **Background**

A major goal of radiation therapy is the delivery of an appropriate dose of radiation to the targeted tissue while minimizing radiation exposure to the surrounding healthy tissue. The introduction of IMRT allowed for significant improvement of dose distributions by irradiating sub-regions of the target to different levels. It uses a computer-based planning method called inverse planning that allows the delivery of generally narrow, patient specific spatially and often temporally modulated beams of radiation to solid tumors within a patient.

IMRT changes the intensity of radiation in different parts of a single radiation beam while treatment is delivered. The dose of radiation given by each beam can also vary, enabling IMRT to simultaneously treat multiple areas within the target to different dose levels. Theoretical concerns about IMRT include dose inhomogeneity, additional time required for planning computation and quality assurance (QA) verification, and exposure of larger volumes of normal tissues to a lower dose of radiation.

There were numerous studies done, including a multicenter, randomized, double-blind trial that indicated IMRT improved the homogeneity of the radiation dose distribution and decreased acute toxicity, when used for breast cancer. <sup>23,24,25,26,27</sup>

### **NCCN**

NCCN recommends IMRT in a number of cancer types, including cancers whose radiation treatment may affect organs or other critical structures at risk.

### **Coding Implications**

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<b>CPT® Codes</b>	<b>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

CPT® Codes	Description
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	Description
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

Reviews, Revisions, and Approvals	Revision Date	Approval Date
Converted corporate to local policy.	12/1/2020	
Annual review. References reviewed and updated. Reviewed by specialist. Changed "Last Review Date" in the header to "Date of Last Revision" and "Date" in revision log to "Revision Date". Added "and may not support medical necessity" to coding implications	2/22	
Background updated. ICD-10 code table removed.	1/23	4/10/23

## References

1. Dagan R, Amdur RJ, Yeung AR, Dziegielewska PT. Tumors of the nasal cavity. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated June 23, 2021. Accessed November 11, 2022.
2. Gebhardt MC, Baldini EH, Ryan CW. Overview of multimodality treatment for primary soft tissue sarcoma of the extremities and superficial trunk. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated January 20, 2022. Accessed November 11, 2022.
3. DiBiase SJ, Roach M. External beam radiation therapy for localized prostate cancer. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated October 19, 2022. Accessed November 11, 2022.
4. Galloway T, Amdur RJ. Management and prevention of complications during initial treatment of head and neck cancer. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated August 9, 2022. Accessed November 11, 2022.
5. Gray HJ. Adjuvant treatment of intermediate-risk endometrial cancer. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated June 20, 2022. Accessed November 11, 2022.
6. Koyfman SA. General principles of radiation therapy for head and neck cancer. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated October 10, 2022. Accessed November 11, 2022.
7. Karajannis MA, Marcus KJ. Focal brainstem glioma. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated July 28, 2022. Accessed November 11, 2022.
8. MacKay RI, Staffurth J, Poynter A, Routsis D; Radiotherapy Development Board. UK guidelines for the safe delivery of intensity-modulated radiotherapy. *Clin Oncol (R Coll Radiol)*. 2010;22(8):629-635. doi:10.1016/j.clon.2010.06.017

9. MCG Health. Ambulatory Care, 25<sup>th</sup> Edition, Intensity Modulated Radiation Therapy (IMRT). <https://careweb.careguidelines.com/>. Accessed November 14, 2022.
10. Mitin T. Radiation therapy techniques in cancer treatment. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated August 31, 2022. Accessed November 11, 2022.
11. National Comprehensive Cancer Network®. Breast cancer (Version 4.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
12. National Comprehensive Cancer Network®. Cervical Cancer (Version 1.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
13. National Comprehensive Cancer Network®. Prostate cancer (Version 1.2023). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
14. Sheets NC, Goldin GH, Meyer AM, et al. Intensity-modulated radiation therapy, proton therapy, or conformal radiation therapy and morbidity and disease control in localized prostate cancer. *JAMA*. 2012;307(15):1611-1620. doi:10.1001/jama.2012.460
15. Staffurth J; Radiotherapy Development Board. A review of the clinical evidence for intensity-modulated radiotherapy. *Clin Oncol (R Coll Radiol)*. 2010;22(8):643-657. doi:10.1016/j.clon.2010.06.013
16. Su JM. Intracranial germ cell tumors. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated October 31, 2022. Accessed November 11, 2022.
17. Synderman C. Chordoma and chondrosarcoma of the skull base. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated April 13, 2022. Accessed November 11, 2022.
18. National Comprehensive Cancer Network®. Central Nervous System Cancers (Version 2.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
19. National Comprehensive Cancer Network®. Anal Carcinoma (Version 2.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
20. National Comprehensive Cancer Network®. Gastric Cancer (Version 2.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
21. National Comprehensive Cancer Network®. Head and Neck Cancers (Version 2.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
22. National Comprehensive Cancer Network®. Thyroid Carcinoma (Version 3.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
23. National Comprehensive Cancer Network®. Uterine Neoplasms (Version 1.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.
24. National Comprehensive Cancer Network®. Vulvar Cancer (squamous cell carcinoma) (Version 2.2022). <https://www.nccn.org/guidelines/guidelines-detail?category=1&id=1419> Accessed November 14, 2022.

25. National Cancer Institute (NCI). ATC guidelines for use of IMRT (including intra-thoracic treatments). May 2006. <http://rrp.can30cer.gov/content/docs/imrt.doc>. Accessed November 14, 2022.
26. Donovan E, Bleakley N, Denholm E, et al. Randomised trial of standard 2D radiotherapy (RT) versus intensity modulated radiotherapy (IMRT) in patients prescribed breast radiotherapy. *Radiother Oncol*. 2007;82(3):254-264. doi:10.1016/j.radonc.2006.12.008
27. McDonald MW, Godette KD, Butker EK, Davis LW, Johnstone PA. Long-term outcomes of IMRT for breast cancer: a single-institution cohort analysis. *Int J Radiat Oncol Biol Phys*. 2008;72(4):1031-1040. doi:10.1016/j.ijrobp.2008.02.053
28. Pignol JP, Olivetto I, Rakovitch E, et al. A multicenter randomized trial of breast intensity-modulated radiation therapy to reduce acute radiation dermatitis. *J Clin Oncol*. 2008;26(13):2085-2092. doi:10.1200/JCO.2007.15.2488
29. Rusthoven KE, Carter DL, Howell K, et al. Accelerated partial-breast intensity-modulated radiotherapy results in improved dose distribution when compared with three-dimensional treatment-planning techniques. *Int J Radiat Oncol Biol Phys*. 2008;70(1):296-302. doi:10.1016/j.ijrobp.2007.08.047
30. Local Coverage Determination (LCD L36773). Centers for Medicare and Medicaid Services Web site. <https://www.cms.gov/medicare-coverage-database/>. Published November 7, 2016. (revision effective July 31, 2019). Accessed November 11, 2022.
31. Local Coverage Determination (LCD L36711). Centers for Medicare and Medicaid Services Web site. <https://www.cms.gov/medicare-coverage-database/>. Published December 1, 2016 (revision effective January 1, 2021). Accessed November 11, 2022.
32. Chino J, Annunziata CM, Beriwal S, et al. Radiation Therapy for Cervical Cancer: Executive Summary of an ASTRO Clinical Practice Guideline. *Pract Radiat Oncol*. 2020;10(4):220-234. doi:10.1016/j.prro.2020.04.002
33. Hui EP, Chan AT, Le QT. Treatment of early and locoregionally advanced nasopharyngeal carcinoma. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated August 29, 2022. Accessed November 11, 2022.
34. Ryan DP, Willett CG. Treatment of anal cancer. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated September 15, 2022. Accessed November 11, 2022.
35. Loeffler JS. Overview of the treatment of brain metastases. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated September 26, 2022. Accessed November 11, 2022.
36. Olivier KR, Peikert T, Owen D. Radiation-induced lung injury. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated April 28, 2021. Accessed November 18, 2022.
37. Marks LB, Constine LS, Adams MJ. Cardiotoxicity of radiation therapy for breast cancer and other malignancies. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated July 12, 2022. Accessed November 18, 2022.
38. Butler-Xu YS, Marietta M, Zahra A, TenNapel M, Mitchell M. The effect of breast volume on toxicity using hypofractionated regimens for early stage breast cancer for patients. *Adv Radiat Oncol*. 2018;4(2):261-267. Published 2018 Nov 1. doi:10.1016/j.adro.2018.10.005

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This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional

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