*Evolent	
Clinical guidelines: INTENSITY-MODULATED RADIATION THERAPY (IMRT) FOR OTHER CANCERS	**Original Date: June 2013**
CPT codes: 77385, 77386, G6015, G6016	**Last Revised Date: May 2023**
Guideline Number: Evolent_CG_223	**Implementation Date: January 2024**

GENERAL INFORMATION

- *It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.*
- *Where a specific clinical indication is not directly addressed in this guideline, medical necessity determination will be made based on widely accepted standard of care criteria. These criteria are supported by evidence-based or peer-reviewed sources such as medical literature, societal guidelines and state/national recommendations.*

Most requests for radiation therapy are addressed by Evolent treatment site clinical guidelines. However, there may be requests that are not. For such requests, determinations will be made on a case-by-case basis utilizing the following guidelines (when applicable) but not limited to: National Comprehensive Cancer Network (NCCN), American Society for Radiation Oncology ASTRO (i.e., Model Policies; Evidence-Based Consensus Statement), ACR Appropriateness Criteria, American Society of Clinical Oncology (ASCO) and/or peer reviewed literature.

This IMRT guideline applies to other cancers not addressed by Evolent treatment site clinical guidelines.

Refer to applicable treatment site-specific guidelines for the management of primary malignancies. Applicable site-specific guidelines may include all or some of the sites below.

- Anal Cancer
- Bone Metastases
- Breast Cancer
- Cervical Cancer
- CNS Cancer
- Colon Cancer
- Rectal Cancer
- Endometrial Cancer
- Bladder Cancer
- Multiple Myeloma
- Vulvar Cancer
- Gastric Cancers
- Head and Neck Cancer
- Lung – Non-Small Cell
- Lung - Small Cell Lung Cancer
- Lymphoma - Hodgkin's Lymphoma
- Lymphoma - Non-Hodgkin's Lymphoma
- Pancreas Cancer
- Prostate Cancers
- Esophageal cancer
- Pleural Mesothelioma
- Soft Tissue Sarcoma
- Thyroid cancer

For metastasis to the brain, regardless of primary site, refer to the Evolent clinical guideline for Central Nervous System (CNS).

For metastasis to bone, refer to the Evolent clinical guideline for Bone Metastases.

For all other metastases, refer to the Evolent clinical guideline for Metastatic disease.

MEDICALLY NECESSARY INDICATIONS FOR INTENSITY-MODULATED RADIATION THERAPY (IMRT)[1]:

- Anal cancer (or low-lying rectal cancer treated like anal cancer)
- Prostate cancer
- Trachea cancer
- Thyroid cancer (except for palliative radiation)
- Head and neck cancer
- CNS lesions with close proximity to the optic nerve, lens, retina, optic chiasm, cochlea or brain stem. (See Evolent CNS Clinical Guidelines)
- Primary Bone and Articular Cartilage cancer of the skull and face, vertebral column, sacrum, and coccyx
- Treatment for repeat irradiation of a field that has received prior irradiation
- Pediatric patients less than 21 years with a radiosensitive tumor
- Adjuvant radiation therapy for pancreatic cancer after Whipple Surgery
- Extremity sarcomas located within the proximal lower extremity (i.e., thigh, groin)
- Thymomas and Thymic Carcinomas

ADDITIONAL CONDITIONS (To be reviewed on a case-by-case basis)

IMRT is not indicated as a standard treatment option and should not be used routinely for the delivery of radiation therapy for all other conditions including, but not limited to[1]:

- Breast cancer
- Colon cancer
- Gastric cancer
- Gynecological cancer
- Lung cancer
- Lymphoma
- Pancreas cancer (except for adjuvant radiation therapy for pancreatic cancer after Whipple Surgery)
- Pelvic bone cancer

- Primary or secondary liver cancer
- Rectal cancer (other than low-lying cancers treated like anal cancer)
- Secondary bone and articular cartilage cancer
- Soft tissue sarcoma
- All other neoplasms not listed above as medically necessary

IMRT may be indicated for the above conditions if ALL of the following are present[1]:

IMRT is strictly defined by the utilization of inverse planning modulation techniques. IMRT may be appropriate for limited circumstances in which radiation therapy is indicated and 3D conformal radiation therapy (3D-CRT) techniques cannot adequately deliver the radiation prescription without exceeding normal tissue radiation tolerance, the delivery is anticipated to contribute to potential late toxicity or tumor volume dose heterogeneity is such that unacceptable hot or cold spots are created. If IMRT is utilized, techniques to account for respiratory motion should be performed when appropriate.

Clinical rationale and documentation for performing IMRT rather than 2D or 3D-CRT treatment planning and delivery will need to:

- Demonstrate how 3D-CRT isodose planning cannot produce a satisfactory treatment plan (as stated above) via the use of patient-specific dose volume histograms and isodose plans. 3D-CRT techniques, such as step-and-shoot or field-in-field, should be considered for the comparison.
- Confirm the IMRT requested will be inversely planned (forward plans or 'field-in-field' plans are not considered IMRT).
- Provide tissue constraints for both the target and affected critical structures.

IMRT for Endometrial Cancer

- IMRT for post-operative radiation therapy is approvable. If there is gross residual disease and the area(s) can be sufficiently utilized, a boost can be added to a total dose of 60-70Gy, respecting normal tissue sensitivity. For gross nodal disease, consider boost to 60-65Gy while respecting normal tissue constraints.[2]
- When para-aortic nodes are being treated

IMRT for Cervical Cancer

- IMRT for post-operative radiation therapy is approvable. If there is gross residual disease and the area(s) can be sufficiently utilized, a boost can be added to a total dose of 60-70 Gy, respecting normal tissue sensitivity. For gross nodal disease, consider boost to 60-65 Gy while respecting normal tissue constraints.[3-5]
- When para-aortic nodes are being treated

Hippocampal Sparing Intensity Modulated Radiation Therapy for PCI[6-8]

The use of hippocampal avoidance with WBRT, using IMRT, lowers the risks of neurocognitive decline (specifically memory and recall), and now supported with level 1 evidence.

- Dosage Guidelines
    - 25 Gy in 10 fractions is considered medically necessary

Hippocampal Sparing Whole Brain Intensity Modulated Radiation Therapy[7, 9-11]

- Hippocampal sparing whole brain IMRT is considered medically necessary for metastatic brain lesions in individuals with all of the following:
    - Good performance status: ECOG rating is less than 3
    - Who have a prognosis of at least 4 months
    - no metastases within 5mm of the hippocampi
    - have not had prior WBRT or external beam radiation to the brain
    - do not have leptomeningeal disease
    - Whose primary histology is not germ cell, small cell, lymphoma or unknown
- Dosage Guidelines
    - Standard doses vary between 20 Gy and 37.5 Gy in 5-15 fractions. Hippocampal avoidance with WBRT (HA-WBRT) (plus memantine) 30 Gy in 10 fractions is preferred for patients with a better prognosis. For patients with poor predicated prognosis and with symptomatic brain metastases, standard WBRT of 20 Gy in 5 fractions is a reasonable option.

Stage IIIB Non-Small Cell Lung Carcinoma (any N3, or T3/4N2)[12]

IMRT is approvable for definitive treatment of stage IIIB (any N3, or T3/4N2) NSCLC. A comparative plan is not required.

Accelerated Partial Breast Irradiation (APBI)[13, 14]

IMRT can be approved on a case-by-case basis for accelerated partial breast irradiation using 30 Gy in 5 fractions once a day regimen. Comparative 3D-CRT vs. IMRT plans is not required.

Pleural Mesothelioma[15-20]

A randomized phase III trial in patients with non-metastatic pleural mesothelioma who underwent non-radical lung-sparing surgery found substantially greater overall survival with radical hemithoracic intensity-modulated RT (IMRT) compared to palliative RT.

Special attention should be paid to minimize radiation to the contralateral lung, as the risk of fatal pneumonitis with IMRT is excessively high when strict limits are not applied. The contralateral uninvolved mean lung dose should be kept as low as possible, preferably < 8.5 Gy. The low-dose volume should be minimized.

Postoperative RT for patients who have P/D, other recommended specific lung preserving techniques, should limit the ipsilateral lung dose to decrease risk of pneumonitis and keep total mean lung dose (MLD) < 21 Gy and V20 < 40% and contralateral lung V20 < 7% and MLD < 8 Gy.

Thymomas and Thymic Carcinomas[21-23]

The NCCN Guideline states for thymomas and thymic carcinomas, IMRT is preferred over 3D-CRT.

BACKGROUND

Intensity-Modulated Radiation Therapy (IMRT) is a computer-based method of planning for and delivery of, generally narrow, patient-specific, spatially, and often temporally modulated beams of radiation to solid tumors within a patient. IMRT planning and delivery uses an approach for obtaining the highly conformal dose distributions needed to irradiate complex targets positioned near, or invaginated by, sensitive normal tissues, thus improving the therapeutic ratios. IMRT delivers a more precise radiation dose to the tumor while sparing the surrounding normal tissues by using non-uniform radiation beam intensities that are determined by various computer-based optimization techniques. The computer-based optimization process is referred to as "inverse planning." Inverse planning develops a dose distribution based on the input of specific dose constraints for the Planned Treatment Volume (PTV) and nearby clinical structures and is the beginning of the IMRT treatment planning process. The Gross Tumor Volume (GTV), the PTV and surrounding normal tissues must be identified by a contouring procedure and the optimization must sample the dose with a grid spacing of 1 cm or less. Traditional "field-in-field technique," which is neither MLC nor compensator-based, is not considered IMRT but rather external beam therapy.

The decision process for using IMRT requires an understanding of accepted practices that consider the risks and benefits of such therapy compared to conventional treatment techniques. While IMRT technology may empirically offer advances over conventional or 3-D conformal radiation, a comprehensive understanding of all consequences is required before applying this technology. IMRT is not a replacement therapy for conventional radiation therapy methods.

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POLICY HISTORY

Date	Summary
May 2023	• Added new policies (Bladder Cancer, Multiple Myeloma, Vulvar Cancer, Esophageal cancer, Pleural Mesothelioma) • Removed from MEDICALLY NECESSARY INDICATIONS FOR INTENSITY-MODULATED RADIATION THERAPY (IMRT): esophageal, vulvar, and bladder cancer • Added: o Adjuvant radiation therapy for pancreatic cancer after Whipple Surgery o Cervical Cancer: When para-aortic nodes are being treated o Endometrial Cancer: When para-aortic nodes are being treated o Extremity sarcomas located within the proximal lower extremity (i.e., thigh, groin) o Pleural Mesothelioma (non-metastatic who underwent non-radical lung-sparing surgery) o Thyroid cancer (except for palliative radiation) o Thymomas and Thymic Carcinomas • Deleted additional resources
January 2022	• Added "low-lying rectal cancer treated like anal cancer" • Added Bladder cancer (other than palliative cases) • Under the section for Conditions Requiring Additional Physician Review: o Added Postoperative IMRT for Endometrial Cancer o Added Postoperative IMRT for Cervical Cancer o Added Hippocampal Sparing Intensity Modulated Radiation Therapy for PCI o Added Hippocampal Sparing Whole Brain Intensity Modulated Radiation Therapy o Added Stage IIIB NSCLC o Added Accelerated Partial Breast Irradiation (APBI)

Reviewed / Approved by Clinical Guideline Committee

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