National Imaging Associates, Inc. *	
Clinical guidelines: **INTENSITY-MODULATED RADIATION THERAPY (IMRT) FOR OTHER CANCERS**	**Original Date: June 2013**
CPT codes: 77385, 77386, G6015, G6016	**Last Revised Date: January 2022**
Guideline Number: NIA_CG_223	**Implementation Date: January 2023**

Most requests for radiation therapy are addressed by NIA 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 NIA 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
- 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

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

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

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

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

- Anal cancer (or low-lying rectal cancer treated like anal cancer)
- Esophageal cancer
- Prostate cancer
- Trachea cancer
- Thyroid cancer
- Head and neck cancer
- CNS lesions with close proximity to the optic nerve, lens, retina, optic chiasm, cochlea or brain stem. (See NIA 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
- Vulvar cancer
- Pediatric patients less than 21 years with a radiosensitive tumor
- Bladder cancer (other than palliative cases)

CONDITIONS REQUIRING ADDITIONAL PHYSICIAN REVIEW

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
- Pelvic bone cancer
- Primary or secondary liver cancer
- Rectal 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 <u>ALL</u> 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.

Postoperative 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]

Postoperative 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 60-70Gy, respecting normal tissue sensitivity. For gross nodal disease, consider boost to 60-65Gy while respecting normal tissue constraints.[3-5]

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.

- <u>Dosage Guidelines</u>
    - 25Gy 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 20Gy and 37.5Gy in 5-15 fractions. Hippocampal avoidance with WBRT (HA-WBRT) (plus memantine) 30Gy 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 20Gy 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]
Upon physician review, IMRT can be approved for accelerated partial breast irradiation using 30Gy in 5 fractions once a day regimen. Comparative 3D-CRT vs. IMRT plans is not required.

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 take into account 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.

POLICY HISTORY

Date	Summary

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:
	  ○ Added Postoperative IMRT for Endometrial Cancer
	  ○ Added Postoperative IMRT for Cervical Cancer
	  ○ Added Hippocampal Sparing Intensity Modulated Radiation Therapy for PCI
	  ○ Added Hippocampal Sparing Whole Brain Intensity Modulated Radiation Therapy
	  ○ Added Stage IIIB NSCLC
	  ○ Added Accelerated Partial Breast Irradiation (APBI)

February 2021	No changes
February 2020	Updated references
February 2019	Added and updated references

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Reviewed / Approved by NIA Clinical Guideline Committee

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.