Local Coverage Determination (LCD):
Intensity Modulated Radiation Therapy (IMRT) (L34080)

Links in PDF documents are not guaranteed to work. To follow a web link, please use the MCD Website.

## Contractor Information

<table>
<thead>
<tr>
<th>CONTRACTOR NAME</th>
<th>CONTRACT TYPE</th>
<th>CONTRACT NUMBER</th>
<th>JURISDICTION</th>
<th>STATE(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>02101 - MAC A</td>
<td>J - F</td>
<td>Alaska</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>02102 - MAC B</td>
<td>J - F</td>
<td>Alaska</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>02201 - MAC A</td>
<td>J - F</td>
<td>Idaho</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>02202 - MAC B</td>
<td>J - F</td>
<td>Idaho</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>02301 - MAC A</td>
<td>J - F</td>
<td>Oregon</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>02302 - MAC B</td>
<td>J - F</td>
<td>Oregon</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>02401 - MAC A</td>
<td>J - F</td>
<td>Washington</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>02402 - MAC B</td>
<td>J - F</td>
<td>Washington</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03101 - MAC A</td>
<td>J - F</td>
<td>Arizona</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03102 - MAC B</td>
<td>J - F</td>
<td>Arizona</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03201 - MAC A</td>
<td>J - F</td>
<td>Montana</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03202 - MAC B</td>
<td>J - F</td>
<td>Montana</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03301 - MAC A</td>
<td>J - F</td>
<td>North Dakota</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03302 - MAC B</td>
<td>J - F</td>
<td>North Dakota</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03401 - MAC A</td>
<td>J - F</td>
<td>South Dakota</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03402 - MAC B</td>
<td>J - F</td>
<td>South Dakota</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03501 - MAC A</td>
<td>J - F</td>
<td>Utah</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03502 - MAC B</td>
<td>J - F</td>
<td>Utah</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03601 - MAC A</td>
<td>J - F</td>
<td>Wyoming</td>
</tr>
<tr>
<td>Noridian Healthcare Solutions, LLC</td>
<td>A and B MAC</td>
<td>03602 - MAC B</td>
<td>J - F</td>
<td>Wyoming</td>
</tr>
</tbody>
</table>

## LCD Information

Created on 09/28/2019. Page 1 of 9
Document Information

LCD ID
L34080

LCD Title
Intensity Modulated Radiation Therapy (IMRT)

Proposed LCD in Comment Period
N/A

Source Proposed LCD
N/A

AMA CPT / ADA CDT / AHA NUBC Copyright Statement
CPT codes, descriptions and other data only are copyright 2018 American Medical Association. All Rights Reserved. Applicable FARS/HHSARS apply.

Current Dental Terminology © 2018 American Dental Association. All rights reserved.

Copyright © 2019, the American Hospital Association, Chicago, Illinois. Reproduced with permission. No portion of the AHA copyrighted materials contained within this publication may be copied without the express written consent of the AHA. AHA copyrighted materials including the UB-04 codes and descriptions may not be removed, copied, or utilized within any software, product, service, solution or derivative work without the written consent of the AHA. If an entity wishes to utilize any AHA materials, please contact the AHA at 312-893-6816. Making copies or utilizing the content of the UB-04 Manual, including the codes and/or descriptions, for internal purposes, resale and/or to be used in any product or publication; creating any modified or derivative work of the UB-04 Manual and/or codes and descriptions; and/or making any commercial use of UB-04 Manual or any portion thereof, including the codes and/or descriptions, is only authorized with an express license from the American Hospital Association. To license the electronic data file of UB-04 Data Specifications, contact Tim Carlson at (312) 893-6816

Original Effective Date
For services performed on or after 10/01/2015

Revision Effective Date
For services performed on or after 10/01/2019

Revision Ending Date
N/A

Retirement Date
N/A

Notice Period Start Date
N/A

Notice Period End Date
N/A
or Laryssa Marshall at (312) 893-6814. You may also contact us at ub04@healthforum.com.

**CMS National Coverage Policy**

Title XVIII of the Social Security Act, Section 1862(a)(1)(A). This section allows coverage and payment for only those services that are considered to be medically reasonable and necessary.

Title XVIII of the Social Security Act, Section 1833(e). This section prohibits Medicare payment for any claim which lacks the necessary information to process the claim.

IOM 100-04, chap 4, §200.3.
200.3 - Billing Codes for Intensity Modulated Radiation Therapy (IMRT) and Stereotactic Radiosurgery (SRS) (Rev. 1445, Issued: 02-08-08; Effective: 01-01-08; Implementation: 03-10-08)
200.3.1 - Billing for IMRT Planning and Delivery (Rev. 1445, Issued: 02-08-08; Effective: 01-01-08; Implementation: 03-10-08)

**Coverage Guidance**

**Coverage Indications, Limitations, and/or Medical Necessity**

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 centimeter or less.

IMRT uses non-uniform and customized fluence distributions in treatment delivery. Delivery of IMRT requires either the use of a multi-leaf collimator (MLC) with leaves that project to a nominal 1 cm or less at the treatment unit isocenter or the use of compensator-based beam modulation treatment using three or more high resolution compensator convergent beam modulated fields. A MLC may use a dynamic (DMLC) or segmented mode (SMLC) to create the 3-dimensional, intensity-modulated dose distribution. The average segments (or "steps") per gantry position required to meet IMRT delivery is five. The exact delivery method is not restricted as long as the particular technique chosen has the ability to model the highly modulated intensity patterns that result from the planning process described above (e.g. solid modulators or compensators may be an alternative to MLC). However, the use of a MLC just to produce simple one-dimensional ramp intensity distributions is excluded because the inverse planning process is not necessary to produce this simple intensity variation. Also, the use of a MLC does not, in itself, constitute or define IMRT (for example, it is possible to use a MLC for intermediate or complex, 3D conformal therapy).

Note also, traditional "field-in-field technique" which is neither MLC nor compensator-based is not considered IMRT but rather external beam therapy.
IMRT delivery imposes a more stringent requirement than conventional radiation therapy in terms of accounting for patient position and organ motion. Methods that account for organ motion include but are not limited to: 1) use of published studies on organ movement when developing the PTV, 2) image guided adaptive radiotherapy (e.g., ultrasound guided or portal-image guided setup with implanted fiducial markers), and 3) respiratory gating of diaphragm movement for thoracic and upper abdominal sites.

**Indications of Coverage:**

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 three dimensional (3-D) conformal radiation, a comprehensive understanding of all consequences is required before applying this technology.

IMRT is not a replacement therapy for conventional and 3-D conformal radiation therapy methods. IMRT is considered reasonable and necessary in instances where sparing the surrounding normal tissue is essential and the patient has **at least one** of the following conditions met:

1. Important dose limiting structures adjacent to, but outside the PTV, are sufficiently close and require IMRT to assure safety and morbidity reduction.

2. An immediately adjacent volume has been irradiated and abutting portals must be established with high precision.

3. Gross Tumor Volume (GTV) margins are concave or convex and in close proximity to critical structures that must be protected to avoid unacceptable morbidity.

4. Only IMRT techniques would decrease the probability of grade 2 or grade 3 radiation toxicity as compared to conventional radiation in greater than 15% of radiated similar cases.

IMRT is an evolving technology and, as such, this IMRT LCD will be reviewed and updated as often as necessary. Currently, IMRT is indicated for primary brain tumors, brain metastasis, prostate cancer, lung cancer (with special provision for organ motion), pancreas cancer and other upper abdominal sites (with special provision for organ motion), spinal cord tumors, head and neck cancer, adrenal tumors, pituitary tumors and situations in which extremely high precision is required. Indications will include some left breast tumors due to risk to immediately adjacent cardiac and pericardial structures, though it would only rarely if ever be medically necessary for tumors of the right breast.

IMRT may be necessary in some gynecologic tumors or in some genitourinary tumors where its high precision is especially necessary to avoid immediately adjacent structures such as bowel or where there is a special need to avoid marrow. It may also be necessary in some lymphomas, malignant lymph nodes or sarcomas where anatomic location gives rise to a need for special care to avoid adjacent structures. Since these are likely to be only a relatively small fraction of gynecologic tumors, genitourinary tumors, lymphomas, malignant nodes or sarcomas, in each case particular care is required to document the necessity for IMRT.

**Patient Specific IMRT Treatment Verification**

The accepted methodology to perform the computer plan distribution verification aspect of the treatment planning process is to deliver the plan to an extended phantom that contains 2D film in planes that correspond to planes in the IMRT plan that can be compared. Since there are literally thousands of beamlets used in delivering IMRT dose patterns, delivering these plans to such a phantom will indicate any deviations from the physician's (radiation oncologist) prescription and corrective action can be taken before the patient is treated.
Generally, film phantoms can be calibrated such that film density corresponds to dose on the 2D film patterns when processed, so that a one-to-one comparison with the appropriate slice on the IMRT dose plan can be obtained. If not, ion chamber apertures can be built into the phantoms to make absolute dose measurements that can be compared to the appropriate points on the dose plan. These point dose measurements, however, are not a substitute for the 2D planar comparisons mentioned above.

Since this complex measurement system tests many of the parameters associated with the delivery of IMRT (multileaf collimator operation, gantry angle position, couch collision potential, etc.), it represents the "gold standard" in IMRT plan/delivery verification. Surrogates for the complete set of measurements with film phantom/ion chamber methods have been proposed. For those methods utilizing "step and shoot" or dynamic MultiLeaf Collimation (MLC), intensity map measurement in 2D have been proposed using film, electronic portal imaging devices or electronic 2D measuring tools. The plan intensity maps may be obtained in similar planes and compared to these measurements. If they align properly, the physician's prescription is assumed to be verified by this process. These measurements are made for each radiation field and appear to be an appropriate surrogate for the previously mentioned film phantom measurements. The time and intensity for this type of procedure closely approximates that of the film phantom technique and is acceptable.

Other methods are currently **not** acceptable surrogates for these measurements. Computer calculated machine settings (MU Calc, for example) for the radiation fields planned and used for IMRT do not test many of the parameters used in IMRT treatment delivery. This method consumes much less time and effort to be construed as IMRT treatment verification and, hence, does not qualify, by itself, as an acceptable surrogate to IMRT film phantom measurements, or the fluence mapping devices described earlier. It does not, for example, test the MLC performance during a treatment delivery. Noridian will welcome updated information from ASTRO/ACR and others on alternative IMRT verification methods as this becomes available. Until such time, other methods remain **not** acceptable.

**Limitations of Coverage:**

IMRT is not considered reasonable and necessary when at least one of the criteria listed in the "Indications and Limitations of Coverage and/or Medical Necessity" section or one of the diagnoses listed in the "ICD-10-CM Codes that Support Medical Necessity" section of this policy are not present.

Compliance with the provisions in this policy is subject to monitoring by post payment data analysis and subsequent medical review.

**Summary of Evidence**

N/A

**Analysis of Evidence**

*(Rationale for Determination)*

N/A
General Information

Associated Information
N/A

Sources of Information

- American College of Radiology (ACR) Radiation Oncology Carrier Advisory Committee (CAC) Network Model Policy on Intensity Modulated Radiation Therapy (IMRT), which had also been reviewed and approved by The American Society for Therapeutic Radiation and Oncology (ASTRO) Regulatory Subcommittee and Health Policy and Economics Committee (HPE), received by Noridian May 17, 2005.
- The ASTRO Position on Specifying Patient Specific Treatment Verification in IMRT, October 2004.
- Other contractors' LCDs

Noridian Carrier Advisory Committee Members

Bibliography
N/A

Revision History Information

<table>
<thead>
<tr>
<th>REVISION HISTORY DATE</th>
<th>REVISION HISTORY NUMBER</th>
<th>REVISION HISTORY EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/01/2019</td>
<td>R10</td>
<td>As required by CR 10901, all billing and coding information has been moved to the companion article, this article is linked to the LCD. At this time 21st Century Cures Act will apply to new and revised LCDs that restrict coverage which requires comment and notice. This revision is not a restriction to the coverage determination; and, therefore not all the fields included on the LCD are applicable as noted in this policy.</td>
</tr>
<tr>
<td>10/01/2018</td>
<td>R9</td>
<td>05/21/2019: At this time 21st Century Cures Act will apply to new and revised LCDs that restrict coverage which requires comment and notice. This revision is not a restriction to the coverage determination; and, therefore not all the fields included on</td>
</tr>
</tbody>
</table>

Reason(s) for Change
- Revisions Due To Code Removal
- Other (Consistency with NCCI.)
<table>
<thead>
<tr>
<th>REVISION HISTORY DATE</th>
<th>REVISION HISTORY NUMBER</th>
<th>REVISION HISTORY EXPLANATION</th>
<th>REASON(S) FOR CHANGE</th>
</tr>
</thead>
</table>
| 10/01/2017            | R7                      | 08/20/2017: At this time 21st Century Cures Act will apply to new and revised LCDs that restrict coverage which requires comment and notice. This revision is not a restriction to the coverage determination; and, therefore not all the fields included on the LCD are applicable as noted in this policy. LCD is revised to add the following:                                                                                                                                                                                                                       | • Revisions Due To ICD-10-CM Code Changes
  • Reconsideration Request |
|                       |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                         |
| 10/01/2018            | R8                      | 09.06.18: At this time 21st Century Cures Act will apply to new and revised LCDs that restrict coverage which requires comment and notice. This revision is not a restriction to the coverage determination; and, therefore not all the fields included on the LCD are applicable as noted in this policy. The following ICD-10 Codes were added to the ICD-10 Codes that Support Medical Necessity field: C43.111; C43.112; C43.121; C43.122; C4A.111; C4A.112; C4A.121; C4A.122; C44.1121; C44.112; C44.1191; C44.1192; C44.1221; C44.1222; C44.1921; C44.1922; C44.1991; C44.1992; D03.111; D03.112; D03.121; D03.122. This revision is due to the Annual ICD-10 Code Update and becomes effective October 1, 2018. | • Revisions Due To ICD-10-CM Code Changes                                                                                                                                                              |

The following ICD-10 Codes were added to the ICD-10 Codes that Support Medical Necessity field: C43.111; C43.112; C43.121; C43.122; C4A.111; C4A.112; C4A.121; C4A.122; C44.112; C44.1191; C44.1192; C44.1221; C44.1222; C44.1921; C44.1922; C44.1991; C44.1992; D03.111; D03.112; D03.121; D03.122. This revision is due to the Annual ICD-10 Code Update and becomes effective October 1, 2018.

Use of Simulation-Aided Field Setting in IMRT (CPT 77280-77295) is revised to delete the last sentence, “Also, a simple simulation (77280) may be appropriately provided and claimed once during a course of IMRT, either as a separate or at the time of the first fraction, where the record documents the simulation is for the purpose of field verification, and occurs on a separate day from and after 77290.”, consistent with NCCI.
<table>
<thead>
<tr>
<th>REVISION HISTORY DATE</th>
<th>REVISION HISTORY NUMBER</th>
<th>REVISION HISTORY EXPLANATION</th>
<th>REASON(S) FOR CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/01/2015</td>
<td>R6</td>
<td>Group 2 diagnosis listing: LCD is revised to clarify that Z74.09 OR Z78.9 is required as a secondary diagnosis rather than both being required. The Part A LCD L34251 is retired effective 8/24/16 and combined into the existing Part B LCD so that both will have the same MCD LCD number.</td>
<td>• Typographical Error</td>
</tr>
<tr>
<td>10/01/2015</td>
<td>R5</td>
<td>Group 1: Medical Necessity ICD-10 Codes Asterisk Explanation is revised to add &quot;necessary for tumors of the right breast.&quot; to the end of the sentence.</td>
<td>• Typographical Error</td>
</tr>
<tr>
<td>10/01/2015</td>
<td>R4</td>
<td>LCD is revised to add the following diagnoses effective 10/1/2015: C34.91 and C34.92.</td>
<td>• Reconsideration Request</td>
</tr>
<tr>
<td>10/01/2015</td>
<td>R3</td>
<td>LCD is revised to add ICD-10 diagnosis C09.9 effective 10/1/2015.</td>
<td>• Revisions Due To ICD-10-CM Code Changes</td>
</tr>
</tbody>
</table>
| 10/01/2015            | R2                      | This LCD is revised to remove the paragraph, "When requesting an individual consideration through the written redetermination (formerly appeal) process, providers must include all relevant medical records and any pertinent peer-reviewed literature that supports the request. At a minimum two (2) Phase II studies (human studies of efficacy, pivotal) or one (1) Phase III study (evidence of safety and efficacy, pivotal) must be submitted for the Medical | • Other (Removed the paragraph, "When requesting an individual consideration through the written redetermination (formerly appeal) process, providers must include all relevant medical records and any pertinent peer-reviewed literature that supports the request. At a minimum two (2) Phase II studies (human studies of efficacy, pivotal) or one (1) Phase III study (evidence of safety...
## Associated Documents

### Attachments
N/A

### Related Local Coverage Documents

**Article(s)**
A57231 - Billing and Coding: Intensity Modulated Radiation Therapy (IMRT)

### Related National Coverage Documents
N/A

### Public Version(s)

- Updated on 09/19/2019 with effective dates 10/01/2019 - N/A
- Updated on 05/22/2019 with effective dates 10/01/2018 - 09/30/2019
- Updated on 09/06/2018 with effective dates 10/01/2018 - N/A
- Updated on 08/21/2017 with effective dates 10/01/2017 - 09/30/2018

Some older versions have been archived. Please visit the MCD Archive Site to retrieve them.

### Keywords

- Intensity
- Modulated
- Radiation
- Therapy
- IMRT
- 77301
- 77338
- G6015
- G6016
- Malignant
- neoplasm

---

<table>
<thead>
<tr>
<th>REVISION HISTORY DATE</th>
<th>REVISION HISTORY NUMBER</th>
<th>REVISION HISTORY EXPLANATION</th>
<th>REASON(S) FOR CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/01/2015</td>
<td>R1</td>
<td>Director’s review “ from the Associated Information field. The following HCPCS codes were replaced due to CPT 2015 updates: 77418 with G6015 and 0073T with G6016. Other coding deletions/additions were made in Indications and Limitations of Coverage.</td>
<td>• Revisions Due To CPT/HCPCS Code Changes</td>
</tr>
</tbody>
</table>

---

Created on 09/28/2019. Page 9 of 9