Medical Policy

Intensity Modulated Radiotherapy - IMRT - Central Nervous System Tumors

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Policy Number: 910
BCBSA Reference Number: 8.01.59
NCD/LCD: N/A

Related Policies
- Clinical Exception and Notification Form for Intensity Modulated Radiation Therapy (IMRT), #325
- IMRT of the Prostate, #090
- IMRT of the Breast and Lung, #163
- IMRT of the Head and Neck or Thyroid, #164
- IMRT of the Abdomen and Pelvis, #165

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity Medicare HMO BlueSM and Medicare PPO BlueSM Members

IMRT may be MEDICALLY NECESSARY for the treatment of tumors of the central nervous system when the tumor is in close proximity to organs at risk and 3-D CRT planning is not able to meet dose volume constraints for normal tissue tolerance as noted in the following tables:

For tumors of the central nervous system:

<table>
<thead>
<tr>
<th>Tissue</th>
<th>Dose/Volume Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lenses</td>
<td>3D results in a dose &gt;=7Gy</td>
</tr>
<tr>
<td>Retinae or Globes</td>
<td>3D results in a dose &gt;=45Gy</td>
</tr>
<tr>
<td>Optic nerves/chiasm</td>
<td>3D results in a dose &gt;=54Gy</td>
</tr>
<tr>
<td>Brainstem</td>
<td>3D results in a dose &gt;=54Gy</td>
</tr>
<tr>
<td>Head and Neck IMRT</td>
<td>covered if head and neck structures would receive any radiation via 3D</td>
</tr>
</tbody>
</table>

Please note: Clinical Exception and Notification form (#325) must be filled out and submitted prior to all IMRT treatments.
Clinical Exception and Notification Form
Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity

Providers must submit a request for an exception for a non-covered indication by completing the clinical exception and notification form. Click here for the IMRT Policy and Notification exception and notification form (#325).

Providers must complete the Clinical Exception and Notification Form when requesting coverage:
- For medically necessary indications described in medical policy 910, IMRT - Central Nervous System Tumors.
- For not medically necessary and investigational indications, described in medical policy 910, IMRT - Central Nervous System Tumors.

Prior Authorization Information
Pre-service approval is required for all inpatient services for all products. See below for situations where prior authorization may be required or may not be required for outpatient services.
Yes indicates that prior authorization is required.
No indicates that prior authorization is not required.
N/A indicates that this service is primarily performed in an inpatient setting.

<table>
<thead>
<tr>
<th>Outpatient</th>
<th>Commercial Managed Care (HMO and POS)</th>
<th>Commercial PPO and Indemnity</th>
<th>Medicare HMO BlueSM</th>
<th>Medicare PPO BlueSM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Providers must complete the “Clinical Exception and Notification Form” prior to service.</td>
<td>Providers must complete the “Clinical Exception and Notification Form” prior to service.</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

CPT Codes

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

<table>
<thead>
<tr>
<th>HCPCS codes:</th>
<th>Code Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G6015</td>
<td>Intensity modulated treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic mlc, per treatment session</td>
</tr>
<tr>
<td>G6016</td>
<td>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</td>
</tr>
</tbody>
</table>

**Description**

Radiation therapy is an integral component in the treatment of many brain tumors, both benign and malignant. Intensity modulated radiation therapy (IMRT) has been proposed as a method of radiation therapy that allows adequate radiation therapy to the tumor while minimizing the radiation dose to surrounding normal tissues and critical structures.

For benign and low-grade brain tumors, gross total resection remains the primary goal. However, radiation therapy may be used in selected cases. Therefore, radiation therapy, either definitive or in the postoperative adjuvant setting, remains an integral component in the management of residual, recurrent, and/or progressive benign and low-grade brain tumors for maximizing local control.

Over the past several decades, methods to plan and deliver radiation therapy have evolved in ways that permit more precise targeting of tumors with complex geometries. Most early trials used 2-dimensional treatment planning based on flat images and radiation beams with cross-sections of uniform intensity that were sequentially aimed at the tumor along 2 or 3 intersecting axes. Collectively, these methods are termed “conventional external beam radiation therapy.”

Treatment planning evolved by using 3-dimensional images, usually from computed tomography (CT) scans, to delineate the boundaries of the tumor and discriminate tumor tissue from adjacent normal tissue and nearby organs at risk for radiation damage. This technique is known as 3D-CRT.

IMRT, which uses computer software and CT and magnetic resonance imaging (MRI) images, is better able to conform to the tumor than 3D-CRT as it is able to modulate the intensity of the overlapping radiation beams projected on the target. Increased conformity may permit escalated tumor doses without increasing normal tissue toxicity and thus may 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.

**Summary**

The body of evidence available to evaluate IMRT in the treatment of CNS tumors consists of dose planning studies and case series. The case series are limited by small numbers, heterogeneous patient populations, and different types of tumors. No randomized trials have been reported that compare results using IMRT to other conformal radiation therapy modalities, nor do any of the reported case series using IMRT include concurrently treated control groups.

In general, the limited evidence suggests that IMRT provides tumor control and survival outcomes comparable to existing radiotherapy techniques. The evidence from treatment planning studies has shown that the use of IMRT decreases radiation doses delivered to critical CNS structures (e.g., optic chiasm, brainstem) and normal tissue adjacent to the tumor. This potentially lowers the risk of adverse events (acute and late effects of radiation toxicity), although the clinical benefit of reducing the radiation dose to critical structures and surrounding normal tissue using IMRT is theoretical. Determination of whether adverse event rates are reduced with IMRT is further complicated by a lack of high-quality literature defining the adverse effects using 3D conformal radiation therapy for the CNS, the main comparator to IMRT. The single arm case series are of limited usefulness in determining the benefits of IMRT over other conformal radiation modalities.
Due to the limitations in this evidence, this policy underwent clinical vetting. There was near-uniform consensus that the use of IMRT in the CNS is at least as effective as 3D-conformal radiation therapy, and that given the possible adverse events that could result if nearby critical structures receive toxic radiation doses that IMRT dosimetric improvements should be accepted as meaningful evidence for its benefit. The results of the vetting, together with a strong indirect chain of evidence and the potential to reduce harms, led to the decision that IMRT may be considered medically necessary for the treatment of tumors of the central nervous system that are in close proximity to organs at risk.

### Policy History

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/2016</td>
<td>Clarified coding information.</td>
</tr>
<tr>
<td>2/2016</td>
<td>Local Coverage Determination (LCD) for Intensity Modulated Radiation Therapy (IMRT) (L3244) removed. 2/1/2016</td>
</tr>
<tr>
<td>1/2015</td>
<td>Clarified coding information.</td>
</tr>
<tr>
<td>8/2014</td>
<td>Clinical exception and notification clarified. Medicare LCD added.</td>
</tr>
<tr>
<td>6/2014</td>
<td>Updated Coding section with ICD10 procedure and diagnosis codes, effective 10/2015.</td>
</tr>
<tr>
<td>6/2013</td>
<td>New references from BCBSA National medical policy.</td>
</tr>
<tr>
<td>2/04/2013</td>
<td>New policy describing coverage indications.</td>
</tr>
</tbody>
</table>

### 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](#)

### References


