Intensity Modulated Radiation Therapy (IMRT) is a computer-based method of planning for, and delivery of patient-specific, spatially 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 determined by various computer-based optimization techniques.

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 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. IMRT will be considered reasonable and necessary when at least one or more of the following five conditions is documented:

1. The target volume is in close proximity to critical structures that must be protected.
2. The volume of interest must be covered with narrow margins to adequately protect immediately adjacent structures.
3. An immediately adjacent area has been previously irradiated and abutting portals must be established with high precision.
4. The target volume is concave or convex, and critical normal tissues are within or around that that convexity or concavity.
5. Dose escalation is planned to deliver radiation doses in excess of those commonly utilized for similar tumors with conventional treatment.

The most common sites that currently support the use of IMRT include:

- Primary, metastatic or benign tumors of the central nervous system, including the brain, brain stem and spinal cord
- Primary metastatic tumors of the spine where spinal cord tolerance may be exceeded by conventional treatment
- Primary, metastatic or benign lesions to the head and neck area including orbits, sinuses, skull base, aerodigestive tract and salivary glands.
- Carcinoma of the prostate
- Selected cases of thoracic and abdominal malignancies
- Selected cases of left breast tumors due to risk to immediately adjacent cardiac and pericardial structures, and selected right breast cases in larger volume breasts and larger chest wall separation distances.
- Other pelvic and retroperitoneal tumors that meet the requirements for medical necessity
- Reirradiation that meets the requirements for medical necessity.

**Patient-Specific IMRT Treatment Verification**

Per the American Society for Therapeutic Radiology and Oncology (ASTRO)/The American College of Radiology (ACR) Guidelines, verification of the patient treatment plan includes documentation of all of the elements associated with implementation as well as images of treatment portals and physical dose measurements. Each facility may derive its own means to document and ensure communication of the exact details required to achieve daily, ongoing correlation between the image-based IMRT plan and dose delivery. However, the following critical information must be contained in the treatment verification elements. Documentation must exist that the qualified medical physicist has appropriately commissioned the IMRT planning and delivery system, has authorized the system for clinical use, and has established the quality assurance (QA) program to monitor the IMRT planning and delivery systems. This documentation is generally not contained in individual patients’ medical records. There are various valid commissioning and performance monitoring protocols for IMRT planning and delivery systems. Qualified medical physicists should refer to the appropriate American Association of Physicists in Medicine (AAPM) recommendations or ACR practice guideline for IMRT.
**Use of Clinical Treatment Planning in IMRT (CPT Code 77263) Prior to the Specific IMRT Treatment Plan (77301)**

Clinical treatment planning includes interpretation of special testing, tumor localization, treatment volume determinations, treatment time/dosage determinations, choice of treatment modality(ies), selection of appropriate treatment devices and other procedures such as concurrent or sequential chemotherapy or surgery. A separate charge for clinical treatment planning may be appropriately claimed when based on separately documented work itemizing the specific services provided. Review of records, pathology reports and/or imaging studies are typically part of the basis for claiming either a higher-level E/M service preceding treatment planning, or as a component of this code, but this same work should not be counted as a basis for both services. The need for IMRT should justify complex treatment planning.

**Use of Simulation-Aided Field Setting in IMRT (CPT Code 77290)**

Simulation-aided field setting complex (CPT code 77290) during a course of IMRT is appropriate for the initial setup of the patient where an immobilization device may be constructed, isocenter(s) and volume of interest are determined, and CT or other imaging is obtained for subsequent reconstruction of target(s) and critical structure(s). Documentation should include patient positioning and immobilization device, target verification, possible utilizing radiographic studies and a description of the physician’s work.

**Use of Intensity Modulated Radiotherapy Plan (CPT Code 77301), Including Dose Volume Histograms for Target and Critical Structure Partial Tolerance Specification**

Intensity-modulated radiotherapy plan (CPT code 77301) is a separate and distinct step in the process of care whose product is the computerized plan developed by the physician, medical physicist and dosimetrist, and is required for the delivery of IMRT. Only one unit of CPT code 77301 (Radiotherapy dose plan, IMRT) can be billed per course of therapy, even if there is a planned “cone down” treatment feature or change in field size. In that case, coding for conventional treatment should be used. A second unit of CPT code 77301 can only be billed if changes in patient anatomy during treatment requires repeat planning CT scanning. Such a change must be documented. Similarly, CPT code 77295 3-dimensional radiotherapy plan, including dose-volume histograms cannot be billed during the same course of treatment unless required by a change in patient anatomy.

Documentation for IMRT planning must include the following:

- Review (signed and dated) by the radiation oncologist of the CT or MRI based images of the target and all critical structures with representative isodose distributions that characterize the three-dimensional dose.
• Radiation oncologist review of dose-volume histograms for all targets and critical structures.

• Description of the number and location of each treatment step/rotation or portal to accomplish the treatment plan.

• Documentation of dosimetric verification of treatment setup and delivery, signed by both the radiation oncologist and the medical physicist.

• For compensator-based IMRT, the unique compensator design should be documented for each step or portal.

**Use of Basic Radiation Dosimetry Calculation, Central Axis Depth Dose Calculation, TDF, NSD, Gap Calculation, Off-Axis Factor, Tissue Inhomogeneity Factors, Calculation of Non-Ionizing Radiation Surface and Depth Dose, As Required During Course of Treatment, Only When Prescribed by the Treating Physician (CPT Code 77300) in IMRT**

Basic radiation dosimetry is a separate service from CPT code 77301 (Radiation dose plan, IMRT). CPT code 77300 (Radiation therapy dose plan) is used to report dosimetry calculations that arrive at the relationship between monitor units (or time) and dose, and the physician's verification, review and approval of this. The documentation should contain the independent check for each field, separate from the computer-generated IMRT plan.

**Use of Teletherapy Isodose Plan in IMRT (CPT Codes 77306, 77307, and 77321)**

A claim for a separate teletherapy isodose plan during a course of IMRT is appropriate only when the claim applies to another modality (e.g., an accompanying “boost” with external beam).

**Use of Brachytherapy Isodose Plan in IMRT (CPT Codes 77316-77318)**

A claim for a separate brachytherapy isodose plan during a course of IMRT is appropriate only when the claim applies to a separate, accompanying brachytherapy modality.

**Use of Special Dosimetry in IMRT (CPT Code 77331)**

Dosimetry performed as part of plan verification is part of the work and practice expense of CPT code 77301 and cannot be billed separately.

**Use of Treatment Devices (e.g., “Blocks”) in IMRT (CPT Codes 77332–77334)**

It would not be expected to see providers billing frequently for the design and construction of devices that are separate and distinct from the “device” derived from the computerized IMRT plan. The Correct Coding Initiative (CCI) bundles the device CPT codes 77332–77334.
Use of Continuing Medical Physics Consultation in IMRT (Weekly Physics QA: CPT Code 77336)

Continuing medical physics is appropriate for the weekly continuing medical physics process and reports the work and oversight of the medical physicist in the care of the IMRT patient. It is not appropriately reported for work associated with the creation of the IMRT plan.

Use of Special Medical Radiation Physics Consultation in IMRT (CPT Code 77370)

A claim for special medical radiation physics consultation during a course of IMRT is appropriate only where the need for and use of the consultation are carefully documented.
and occur at a time other than that necessary as a part of IMRT planning (e.g., a special physics assessment requested when already into a course of therapy). A medical physics consultation could also be appropriate where it applies to another modality (e.g., an accompanying “boost” with external beam).

**Use of Other Radiation Treatment Delivery on the Same Day as IMRT Treatment Delivery (HCPCS Codes G6015 or G6016)**

Radiation treatment delivery CPT/HCPCS codes 77401, G6003-G6014, 77422-77423 and 77371-77373 may not be used on the same date of service as IMRT treatment delivery (HCPCS codes G6015 or G6016). These other delivery codes may be used prior to or subsequent to an IMRT treatment course for treatment with a different modality.

**Radiation Treatment Management (CPT Code 77427)**

Radiation treatment management (CPT code 77427) is reported by the physician for the weekly (defined as five-fraction) management of patients receiving radiation therapy, including IMRT.

**Use of “Special Treatment Procedure” in IMRT (CPT Code 77470)**

A claim for “special treatment procedure” (e.g., total body irradiation, hemibody radiation, per oral, endocavitary or intraoperative cone irradiation) would not be appropriate for services that are a necessary part of IMRT planning, but might rarely be appropriate during a course of IMRT when the respective treatment is being delivered as a separate therapy. Providers are cautioned that the use of this code implies a special treatment procedure with moderate physician work and very considerable practice expense (such as in Total Body Irradiation (TBI)). This service is not to be claimed for much less significant “special procedures” that would more appropriately use CPT code 77499 or are a regular variant of IMRT or regular combination with IMRT.

**Image Guided Radiation Therapy (IGRT) Codes (HCPCS codes G6001, 77014, G6002)**

IGRT is a form of adaptive radiation therapy, which utilizes imaging technology to guide action(s) that modifies the treatment in reference to the intended target. In IGRT, the external beam radiation treatment setup is accomplished with direct visualization of the target volume, implanted fiducial markers or adjacent anatomical structures. These guidance images are compared to the designated target(s) as delineated on the treatment isodose plan. An adjustment may then be required to achieve an accurate concordance of dose distribution with the original plan. IGRT is used in patients whose tumors are directly adjacent to critical structures and where conventional means of targeting are deemed to be inadequate. IGRT must be performed by the radiation oncologist, medical physicist or trained radiation therapist under the supervision of the radiation oncologist. The physician must supervise and review the procedure, as the guidance may show a shift beyond
standard tolerances.

_The current supervision requirements for the technical component of the IGRT procedure codes are as follows:_ HCPCS code G6001 requires general supervision, CPT code 77014 requires direct supervision and HCPCS code G6002 requires direct supervision.

_General supervision means the procedure is furnished under the physician’s overall direction and control, but the physician’s presence is not required during the performance of the procedure._

_Direct supervision in the office setting means the physician must be present in the office suite and immediately available to furnish assistance and direction throughout the performance of the procedure._

_It does not mean that the physician must be present in the room when the procedure is performed._

_Personal supervision means a physician must be in attendance in the room during the performance of the procedure._

**Bill Type Codes:**
Contractors may specify Bill Types to help providers identify those Bill Types typically used to report this service. Absence of a Bill Type does not guarantee that the policy does not apply to that Bill Type. Complete absence of all Bill Types indicates that coverage is not influenced by Bill Type and the policy should be assumed to apply equally to all claims.

999x Not Applicable

**Revenue Codes:**
Contractors may specify Revenue Codes to help providers identify those Revenue Codes typically used to report this service. In most instances Revenue Codes are purely advisory; unless specified in the policy services reported under other Revenue Codes are equally subject to this coverage determination. Complete absence of all Revenue Codes indicates that coverage is not influenced by Revenue Code and the policy should be assumed to apply equally to all Revenue Codes.

99999 Not Applicable

**CPT/HCPCS Codes**

*Group 1 Paragraph:* N/A

*Group 1 Codes:*
RESPIRATORY MOTION MANAGEMENT SIMULATION (LIST SEPARATELY IN ADDITION TO CODE FOR PRIMARY PROCEDURE)

INTENSITY MODULATED RADIOTHERAPY PLAN, INCLUDING

DOSE-VOLUME HISTOGRAMS FOR TARGET AND CRITICAL STRUCTURE PARTIAL TOLERANCE SPECIFICATIONS

INTENSITY MODULATED TREATMENT DELIVERY, SINGLE OR MULTIPLE FIELDS/ARCS, VIA NARROW SPATIALLY AND TEMPORALLY MODULATED BEAMS, BINARY, DYNAMIC MLC, PER TREATMENT SESSION

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

Please refer to the CMS website for the ICD-10 Codes that Support Medical Necessity.

Documentation Requirements

Medical record documentation maintained by the provider must indicate the medical necessity for IMRT, and include all of the following for IMRT planning and delivery:

- The treatment plan/prescription must define the goals and requirements of the treatment, including the specific dose constraints for the target(s) and nearby critical structures.

- A statement by the treating physician documenting the special need for performing IMRT on the patient in question, rather than performing conventional or three-dimensional treatment planning and delivery. The physician must address the other organs at risk and/or adjacent critical structures.

- Review (signed and dated) by the radiation oncologist of the CT or MRI based images of the target and all critical structures with representative isodose distributions that characterize the three-dimensional dose.

- Radiation oncologist review of dose-volume histograms for all targets and critical structures.

- Description of the number and location of each treatment step/rotation or portal to
accomplish the treatment plan.

• Documentation of dosimetric verification of treatment setup and delivery, signed by both the radiation oncologist and the medical physicist.

• For compensator-based IMRT, the unique compensator design should be documented for each step or portal.

Other procedures performed during the episode of care must have documentation that supports the professional and technical components as applicable by identifying the place of service, the date of service, the supervising physician, and proof of work.

Utilization Guidelines

It is expected that these services would be performed as indicated by current medical literature and/or medical standards of practice. When services are performed in excess of established parameters, they may be subject to review for medical necessity.

Procedures billed should be consistent with CPT code descriptors and Medicare valuation. The frequency of such procedures in the episode of care and the units on a given day must meet standards of care.

Reviewed/Approved by
Michael Pentecost, MD, Chief Medical Officer