Radiation oncology is the specialty of medicine that utilizes high-energy ionizing radiation in the treatment of malignant neoplasms and certain non-malignant conditions. It uses several distinct therapeutic modalities: teletherapy, brachytherapy, hyperthermia, and stereotactic radiation. These may be directed at either malignant or benign lesions.

**Definitions:** Because some words are used interchangeably and some payments are allowed based on these word uses, this policy will stipulate the following definitions:

**Port, Portal:** These words are synonymous and refer to the site on the skin where the radiation beam enters the body. Field, often used as a synonym for port, will not be used in this policy.

**Volume of interest:** This phrase refers to that volume within the body to which the radiation therapy is directed. In this policy, volume of interest is never synonymous with port and is preferred to other terms with the same presumed meaning because it is the phrase most commonly used by radiation oncologists. While this policy recognizes the legitimate use of these terms in other documents, this policy will use the term volume of interest in place of the terms treatment volume, area of interest, target site, and field. However, all CPT Code descriptions that use these terms are copyrighted by the AMA, and will not be changed. For further definitions see Section: Comments

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

Radiation oncology services are considered medically reasonable and necessary when the following conditions are indicated and documented in the patient's medical records.

I. Conventional External Beam Teletherapy including 3-D Conformal Teletherapy

A. Tumor Mapping and Clinical Treatment Planning (CPT codes 77261 - 77263)

Clinical treatment planning and tumor mapping are crucial to identifying the location, extent, and volume of tumor(s) to be treated and all critical structures surrounding them. The physician plans the appropriate course of radiation therapy, which will allow
for maximum benefit while protecting surrounding tissues and structures. Clinical treatment planning may involve ordering and interpreting special tests such as lymphangiography, CT scan, nuclear medicine study, ultrasound, MR scan, and/or surgical exploration with biopsy and markers placed, for the purpose of treatment planning, and tumor localization, virtual reality-based 3D simulation system or other dedicated diagnostic x-ray, ultrasound, or nuclear medicine equipment that has been modified to localize treatment volumes in order to define the area that requires treatment.

Clinical treatment planning requires consideration of: treatment time/dose determination, choice of modalities, determination of number and size of treatment portals, planning of appropriate devices, sequencing and combination of modalities, and correlation of physical exam findings with imaging studies and special tests to delineate precise clinical location of the tumor or area at risk.

Clinical Treatment planning is a one-time charge per course of therapy. Billing for multiple treatment plans for a single course of treatment is not allowed. This is a professional service only and the physician is responsible for all of the technical aspects of the treatment planning process.

Report CPT code 77261 when the volume to be treated is clearly defined and easily encompasses the tumor while excluding normal tissue and structures. If a patient requires therapy to a new volume of interest a separate treatment plan may be allowed and appropriate documentation should be available upon request.

Simple planning requires no interpretation of special tests and involves no more than one critical structure or volume of interest.

77261 Therapeutic radiology treatment planning; SIMPLE
Criteria Level of Care
Special tests None
Modality External photon beam as sole modality
Treatment time/dose considerations Standard fractionated (once per day) treatment. Normal tissues may be included, and normal tissue tolerance may be exceeded, if patient survival is presumed to be limited.
Ports Single area of interest in a single port or simple parallel opposed ports
Devices None, or single set of any type of pre-made devices. A "set" may include multiple loose blocks placed on a tray or fixed to the tray by connecting devices. Immobilization devices not designed or manufactured for a specific patient.

Report CPT code 77262 when there is an intermediate level of planning difficulty. Two separate volumes of interest (non-contiguous) are involved.
Critical or sensitive organs that need protection require special tests for localization of tumor volume. Not more than two critical structures are involved when planning the optimum course of treatment

77262 Therapeutic radiology treatment planning; INTERMEDIATE
In order to bill this treatment planning code, at least two criteria must be met.
Criteria Level of Care
Special tests interpreted necessary to define tumor volume for treatment purposes
Fluoroscopy (other than for simulation purposes), ultrasound, which are necessary to define tumor volume for treatment purposes
Modality External photon beam as sole modality
Treatment time/dose considerations Standard fractionated (once per day) or special time-dose considerations (e.g. hyperfractionated) treatment. The number of critical/sensitive organs, will not determine complexity, per se, unless tolerance levels of these organs is reached or exceeded, and unless survival into a period of risk is reasonably anticipated. Treatment should be calculated to dose within a volume.
Ports Three or more converging ports, two separate treatment volumes
Devices Multiple sets of pre-made or manufactured generic treatment devices

Report CPT code 77263 when complex treatment planning is involved. Three or more volumes of interest may require treatment. Planning includes interpreting complex tests such as MR and/or CT localization of tumor(s). The cancer is generally complex in its distribution regardless of whether the patient is in early or advanced stages of cancer. Multiple critical areas generally require planning of special protection. Combined therapy may be required for optimum benefit such as brachytherapy, surgery, and chemotherapy. Use of electrons, tangents, wedges, customized blocks, and immobilized devices qualify for complex planning.

77263 Therapeutic radiology treatment planning; COMPLEX
In order to bill this treatment planning code, at least two criteria must be met.
Criteria Level of Care
Special tests interpreted for determination of tumor volume for treatment purposes CT, MRI, angiography, PET scan, molecular imaging
Modality External beam as primary modality (with or without electron boost*) or in conjunction with another modality (e.g. brachytherapy, hyperthermia, concurrent chemotherapy). Special or concurrent mixed beam considerations.
Treatment time/dose considerations Standard or non-standard fractionation. The number of critical/sensitive organs, will not, per se, determine complexity, but dose levels should not reach or exceed normal tissue tolerance with survival reasonably anticipated into a period of risk. Calculated doses must be to a volume.
Ports Three or more separate treatment volumes and/or rotational arcs. Tangential* and/or oblique.
Devices Blocks/immobilization devices must be customized, and, when used, must be
required for appropriate clinical management. Custom blocks fabricated for palliative 
ports only with supporting written justification and clinical appropriateness. 
*Electrons, wedges and tangents qualify for complex 

B. Therapeutic Radiology Simulation - Aided Field Setting (CPT codes 77280-77295)

Radiation oncology simulation is defined as the process of determining and establishing 
the radiation therapy treatment portals to a specific treatment volume. Ordering and 
interpreting special tests may be required to assist in the field settings.

Simulation procedures 77280-77290 may be performed if medically necessary to 
prepare the patient for treatment planning and to ensure accurate treatment.

Following treatment planning, simulation is used to actually direct the treatment beams 
to the specific volumes of interest. Simulation may be carried out on a dedicated 
conventional simulator or CT scanner, radiation therapy treatment unit (e.g., linear 
accelerator), or using diagnostic imaging equipment (e.g., fluoroscopy, Pet scan, CT, MR, 
ultrasound or virtual reality-based 3D simulation system).

The complexity of simulation is based on the number of ports, volumes of interest, and 
the inclusion and type of treatment devices. However the number of films taken per 
treatment, the modality from which images for simulation are obtained, and the use of 
fluoroscopy are not 
determinants of complexity. Portal changes based on unsatisfactory initial simulation(s) 
are not reported as additional simulations. Additional simulations may be necessary 
during treatment in order to account for changes in port size, boost dose, or tumor 
volume.

However, minor changes in port size without changes in beam or without clinical 
justification do not warrant an additional charge or a higher level of complexity. The 
inclusion of treatment devices in the simulation process typically increases the 
complexity. Simulation without the inclusion of devices or with any pre-made devices 
(e.g., blocks, immobilization) is considered simple. Custom devices elevate complexity 
when clinically appropriate. Documentation of simulation requires a written record of 
the procedure and hard copy of an x-ray film or electronic images and evidence of image 
review by physicians including signature or initials and data review.

The typical course of radiation therapy will require from one to three simulations. 
However, no more than one simulation may be reported on any given day. Frequency in 
excess of three simulations should be supported by documentation in the medical 
record and be made available upon request.

1. CPT code 77280 Set radiation therapy field
Single volume of interest with either a simple port or parallel opposed ports
Simple or no blocking
Block verification simulation
Re-simulation at a later date to verify the accuracy of custom blocks, prior to beginning a treatment is considered a simple simulation (CPT code 77280).

2. CPT code 77285 Set radiation therapy field
Simulation of three or more converging ports, or two separate volumes of interest. Multiple blocks are covered when clinically necessary.

3. CPT code 77290 Set radiation therapy field
Three or more volumes of interest, or when one or more of the following conditions exists:
- Rotation or arc therapy
- Complex blocking or custom made shielding blocks or compensators, or custom immobilization devices, when clinically necessary.
- Any use of contrast media (e.g. body cavity, GI tract, or intravascular), when clinically necessary to define anatomic structures and volumes of interest.
- Tangential ports with/or without multiple devices.

4. CPT code 77295 Set radiation therapy field
This procedure involves three dimensional computer-generated reconstruction of tumor volume and surrounding critical normal tissue structures from direct CT scan and/or MRI data in preparation for non-coplanar or coplanar therapy. The simulation uses documented 3-D beam's eye view volume-dose displays of multiple or moving beams.
Code 77295 includes those simulation procedures done on the same day in preparation for use of coplanar therapy beams and an additional simulation charge (CPT codes 77280, 77285, and 77290) is not separately payable on the same date. CPT code 77295 also includes the work done for a teletherapy isodose plan (CPT codes 77305-77315) and accordingly CPT codes 77305-77315 must not be separately billed.
Code 77295 may be billed once per treatment course per treatment volume.
Documentation in the medical record of 3-D volume reconstruction of target and critical structures and dose distribution is required.

Three dimensional simulation and treatment is clinically warranted when one or more of the following conditions exists:

a. The volume of interest is irregular and in close apposition to normal structures that must be protected.
b. The volume of interest is in such a location that its parameters can only be defined by MRI or CT
c. The final boost volume of interest must be constructed to the exact tumor volume with its irregular configuration.
d. Multiple conformed portals are necessary to cover the volumes of interest with close margins and protect immediately adjacent normal structures.
e. "Beams eye view" of multiple portals must be established for conformal treatment delivery
f. Volume of interest bordering a previously irradiated area
g. 3D reconstruction of tumor volume and critical structure volume in brachytherapy cases to develop a DVH

Additional simulations may be required when they are done to verify plan parameters before starting new portals or boosts. In those uncommon circumstances where there is a substantial change in either patient anatomy or tumor conformation where a second CT dataset is required to produce an accurate, efficacious and safe "cone-down" plan, a second 77295 charge may be appropriate. When the physician deems this to be the case, the medical necessity for the second 77295 simulation must be documented.

C. Simulation for Brachytherapy

Radiation oncology brachytherapy simulation is defined as the process of determining and establishing the brachytherapy treatment to a specific treatment volume. Simulation is accomplished through the use of equipment such as dedicated simulator, X-ray machine, diagnostic X-ray fluoroscopy unit, or other equipment used to establish areas to be treated without delivering radiation treatment. Ordering and interpreting special tests may be required to assist in the planning and calculations of brachytherapy.

1. CPT code 77280, simple
Brachytherapy verification simulation.
Re-simulation at a later date to verify the accuracy of brachytherapy device, prior to the beginning of a treatment is considered a simple simulation (CPT code 77280). This code may be billed more than once a day since it is performed for each fraction of the treatment.

2. CPT code 77285, intermediate
This procedure involves the use of equipment such as dedicated simulator, X-ray machine, diagnostic X-ray fluoroscopy unit, custom immobilizers, or other equipment used to establish areas to be treated without delivering radiation treatment. In general, X-ray films are obtained to verify placement and location of the brachytherapy device or sources. There is no intent to use these films for dosimetry calculations.

This code can be billed at most once a day.

3. CPT code 77290, complex
This procedure involves the use of equipment such as dedicated simulator, X-ray machine, diagnostic X-ray fluoroscopy unit, custom immobilizers, or other equipment
used to establish areas to be treated without delivering radiation treatment. In general, X-ray films of different angles are obtained to determine the 3 dimensional location of the treatment point(s) or volume(s) of interest. This code can be billed at most once a day.

4. CPT code 77295, three dimensional
This procedure involves three-dimensional computer-generated reconstruction of tumor volume and surrounding critical normal tissue structures from direct CT scan and/or MRI data in preparation for brachytherapy. Three-dimensional reconstruction of the tumor volume and the critical structure volume in brachytherapy cases is used to develop DVH for the tumor and critical structures.

Documentation in the medical record should include brachytherapy treatment and 3 dimensional isodose calculations. Also see section B4.

D. Dosimetry

1. Basic Radiation Dosimetry Calculation (CPT 77300)

This service is considered to be medically necessary for each treatment port and if a patient has off-axis calculations, calculations for different depth doses, different volumes of interest, secondary film dosimetry, abutting volumes of interest, or any other situation requiring individual point calculations of radiation dosage.

Changes in a patient's weight or girth during the course of radiation treatment may necessitate dosimetry recalculation. This procedure need not be routinely performed each time the patient is treated.

Basic dosimetry calculations may be reported as many times as the calculations are performed. The typical course of radiation therapy will require from one to six dosimetry calculations, depending on the complexity of the patient's problem. However, radiation treatments to the head/neck, prostate and Hodgkin's disease may require eight or more calculations.

Medicare would expect to see ongoing documentation that would include any changes in dosimetry calculations and change in radiation treatment and frequency. Documentation requires that the calculation(s) be reviewed, signed and dated by a physician.

2. Teletherapy Isodose Plan (CPT codes 77305 - 77315)
This service is considered medically necessary for a given course of radiation therapy to a specific volume of interest. The typical course of radiation therapy will require from one to three isodose plans. Usually only one plan per volume of interest will be
sufficient, even though some patients may require multiple teletherapy plans during the course of therapy. Situations that may require an extra teletherapy plan include the need to change the machine or the volume of interest. Toward the end of treatment, due to clinical variations of the patient, another plan may be required.

CPT code 77305 Simple is used when there are one or two ports parallel opposed unmodified ports directed at one volume of interest.

CPT code 77310 Intermediate is used when there are three or more ports converging on a single volume of interest. Blocking may be utilized to eliminate the beam from certain portions of the isodose plan and must be verified.

CPT code 77315 Complex planning is used when five or more treatment ports converge on a single volume of interest. Complex is used for complex planning and includes mantle or inverted Y fields, compensators, wedges, complex blocking, rotational beam or special beam considerations.

Three-dimensional stereotactic isodose planning can be classified as a complex level isodose plan and may be billed with CPT code 77315 or as part of CPT code 77295 but not with both.

The physician's documentation must be specific to the number of volumes of interest. The specific location of tumor(s) to be treated must be documented as well as the specific number of ports involved with each volume of interest treated. All isodose plans must be checked and signed by the medical radiological physicist and approved and signed by the radiation oncologist.

Up to six isodose plans may be used in a course of radiotherapy.

3. Special Teletherapy Port Plan (CPT code 77321)
This service is considered medically necessary only when a plan for a special beam consideration is required for the treatment of a neoplasm, such as the use of electrons for total skin irradiation, photons for hemibody irradiation or heavy particles. Only one plan should be billed per volume of interest. A teletherapy isodose plan (CPT code 77305-77315) may be involved with a special teletherapy port plan.

The radiation oncologist must document his/her involvement in the planning and selection of the special beam parameters and must make the final selection and initiation of the treatment process.

4. Brachytherapy Isodose Calculation (CPT codes 77326 - 77328)
Brachytherapy is used to improve control of local disease, treat areas at high risk for recurrence of malignancy, preserve vital organ function and minimize normal
surrounding tissue damage.

Appliances, such as gynecological applicators, afterloading tubes, template needles, etc. are first surgically inserted by the radiation oncologists in, on, or around the tumor. Brachytherapy implants may be temporary or permanent, depending upon the type of tumor and the isotope used. Following insertion of the applicators, images are obtained for isodose calculation of the actual implant sources or using non-radioactive material in the applicator. Isodose calculations are then made which determines the amount of radiation that will be absorbed by the tumor per minute or hour. From this calculation, the treatment course can be modified if necessary by increasing or decreasing the patient's exposure time to the radioisotope. The definition of the levels of complexity of conventional clinical brachytherapy relates directly to the number of sources or ribbons utilized in the procedure. It is a generally accepted standard of practice for this code to be billed once per application (i.e. each instance a separate brachytherapy procedure is performed). For multiplane calculations on the same day CPT codes 77327 or 77328 should be used.

A plan may be required for each modification of the source strength and/or position during temporary afterloading brachytherapy and both before and after permanent seed implantation and for some temporary implants where volume pre-planning is required to determine quality and strength of sources required for the procedure.

a. CPT Code 77326 Simple: used for single plane one to four sources or ribbons application or remote afterloading brachytherapy with 1 to 8 sources or positions.
   b. CPT Code 77327 Intermediate: used for multiplane dose calculations, application involving 5 to 10 sources or ribbons used, remote afterloading brachytherapy with 9 to 12 sources or positions.
   c. CPT Code 77328 Complex: used for multiplane isodose plan, volume implant calculations, over 10 sources or ribbons used, special reconstruction, remote afterloading brachytherapy with over 12 sources or positions.

Many patients may be treated with a combination of both teletherapy and brachytherapy. Therefore, if a patient undergoes brachytherapy, the appropriate isodose plan codes to report are CPT Codes 77326-77328. If external beam or teletherapy is added, a separate calculation(s) is performed for the external beam dosimetry and an additional code should be reported using CPT codes 77300-77315.

5. Special Dosimetry (CPT code 77331)
This service is considered medically necessary once per port when the physician determines that it is necessary to have a measurement of the amount of radiation that a patient has actually received at a given point with the final results being utilized to accept or modify the current treatment plan.
This procedure is not to be routinely performed each time the patient is treated. It would be expected that the utilization of this procedure would correspond with the level of complexity of the clinical treatment planning services provided for the patient. The monitoring devices utilized for measuring and monitoring can include thermoluminescent dosimeters (TLD), solid state diode probes, special dosimetry probes, or film dosimetry.

The physician must specify the type of special dosimetry. When special dosimetry is employed, the usual frequency will vary from one to six, consistent with the number of dose calculations. Frequency in excess of the upper end of this range will require appropriate documentation in the medical record. This code (CPT 77331) may be used more than once per day per treatment course.

6. Treatment Devices, Designs, and Construction (CPT codes 77332-77334)
Multiple treatment devices may be billed during a course of therapy if documentation in the medical record substantiates multiple volumes of interest/portals, the use of custom-made devices, and/or the necessity of replacement devices.

Simple treatment devices (CPT code 77332) include any of the following:
- simple port blocks which include one or two hand positioned pre-made blocks
- simple prefabricated bolus that is capable of being shaped for an individual patient
- independent jaw motion or asymmetric collimation.

Intermediate treatment devices (CPT code 77333) include any of the following:
- multiple port blocks which include three or more pre-made blocks such as corner pelvis blocks, beam splitter blocks, or midline spinal cord blocks,
- stents-bite blocks, or fabricated single patient use special bolus

Complex treatment devices (CPT code 77334) include any of the following:
- customized blocks (low temperature alloy),
- customized compensators,
- wedges, molds or casts,
- multi-leaf collimator,
- intensity modulated therapy,
- custom immobilization device (thermal plastic devices, solidifying polymers or vacuum devices),
- eye shields

Providers should bill for devices at the beginning of the treatment course and then may bill again later in the course of treatment when additional or new devices are required. Payment for one set of treatment devices may be allowed per separate port when radiation therapy is started. However, a pair of mirror imaged opposing ports, ports that direct parallel beams such as anterior-posterior or left lateral-right lateral pairs are
considered, for billing purposes, to be one port. This is true regardless of the level of complexity of the devices used to create the ports. However, if these devices are significantly different from each other, then the carrier may allow payment for each of the pair of devices. It is the responsibility of the provider to determine the CPT code that most accurately describes the devices employed. At all levels of complexity, the physician must be directly involved in the design, selection, and placement of any of the devices.

It should be noted that when more than one volume of interest is being treated, it may be appropriate to bill for devices for each volume of interest. The level of complexity of these devices will be independent of each other.

Custom-made immobilization devices must be billed at a complex level (CPT code 77334). These would include restraining and immobilization devices such as aquaplast and alpha cradle and vac-locs. The use of passive restraints such as straps, pillows, sandbags, etc. are not billable.

When the patient has a combination of a wedge, a compensator, a bolus, or a port block covering the same treatment portal, this would be billed as a single complex treatment device charge rather than a separate charge rendered for each of the individual items. If devices of two separate levels of complexity are utilized for the same treatment portal only the one of highest complexity will be billable.

The typical course of radiation therapy will justify from one to five charges for devices. Treatment for prostate, head & neck and other complex therapy may require eight or more treatment devices. Frequency in excess of the upper limit must be supported by documentation in the medical record. These codes (CPT 77332-77334) may be used more than once per day per treatment course.

Code(s) 77332-77334 may be quantity billed on the same line of the 1500 claim form if a global service is billed. When billing these codes with a 26 or a TC modifier each service has to be broken out and billed per line.

E. Medical Radiation Physics Consultation (CPT codes 77336, 77370)

CPT code 77336 - Continuing medical physics consultation: This service ensures that the treatment administered conforms to the specifications of the prescribing physician. This service includes a documented review of the patient’s treatment chart and record to verify that the patient received the prescribed radiation dosage, appropriate positioning and beam orientation and radiation safety. This procedure is reported once for every five consecutive treatments delivered.
This is a weekly code and is reported once for each week of external beam radiation treatments in which at least 3 fractions have been given, or once for each 5 treatments when treatment is given more than once per day. For radiation therapy treatment that is not administered in 5 weekly fractions (such as brachytherapy or stereotactic radiosurgery) or for a course of radiation therapy consisting of one or two fractions, code 77336 may be reported.

CPT code 77370 must be used for consultative purposes when a problem or special situation arises during radiation therapy. This code requires a detailed written report describing the problem to be given to the requesting physician.

CPT codes 77336, 77370 are technical services only, and are payable by Medicare Part B only in settings in which the technical component is payable, i.e., in the freestanding radiation oncology center that employs its own radiation physicist.

Examples of problems that might justify use of this code include:
- the complex interrelationships of electron and photon ports and complex dosimetric considerations in brachytherapy, including high dose rate remote afterloader applications, intravascular brachytherapy treatments, and interstitial radioactive seed implantation;
- analysis of customized beam modification devices and special blocking procedures (and their dosimetric evaluation) to protect critical organs during treatment; or analysis of the effects of previous radiation therapy with assessment of cumulative radiation dose to critical organs.

Computation of dose to the fetus of a pregnant patient undergoing radiation therapy may be reported using this code. Special brachytherapy equipment developed by the qualified medical physicist to treat a particular patient can also be reported with this code. The qualified medical physicist will spend a considerable amount of time and effort on behalf of a specific patient and will render a customized written report (which will form part of the patient’s chart) to the radiation oncologist in reference to the problem or service being addressed. Documentation of the physician’s request and the physics report, as well as the physician review of that report, in the medical record is necessary. Special physics consultations should not be charged when a qualified medical physicist verifies the calculations performed by others or performs the duties of other members of the treatment team (e.g. dosimetrists).

F. Radiation Treatment Delivery (CPT codes 77401 - 77416)

These codes recognize the technical component and the various energy levels administered. It is important to code according to the level of service and the energy used.
When more than one treatment is performed on the same day, e.g., hyperfractionation, each treatment should be billed on a separate detail line.

Multiple treatment sessions on the same day are payable as long as there has been a distinct break in therapy services and the individual sessions are of the character usually furnished on different days. When billing for multiple treatments on the same day, the claim must document that there has been a distinct break between therapy. Statements such as "A.M. and P.M. treatments" suffice.

Radiation treatment delivery can be billed using a date range if the treatments are performed on consecutive days and the energy and level of service are the same, the total number being indicated in the CMS 1500 days or units field. If the dates of service are not consecutive or the energy or level of service is not the same, each date of service must be billed in a separate detail line.

The physician's documentation within the patient's medical record must support complexity of treatment and the specific energy levels reported to Medicare.

Two factors determine which treatment delivery code to choose:
the energy level used in treatment, in megavolts (MV); and
the complexity of treatment (defined as number of treatment sites, ports and devices).

These two selection criteria allow for the following matrix for determining which code to use:

Simple Treatment Delivery (77401, 77402, 77403, 77404, 77406)
single port
parallel ports
no devices
simple devices

Intermediate Treatment Delivery (77407, 77408, 77409, 77411)
2 separate areas treated
3 or more ports on a single area
multiple non-complex devices

Complex Treatment Delivery (77412, 77413, 77414, 77416)
3 or more areas treated
custom devices
rotational beam
compensator
electron beam
tangential ports
wedges

Tier Kilovoltage ≤ 5 MV 6-10 MV 11-19 MV ≥ 20 MV
Simple 77401 77402 77403 77404 77406
Intermediate 77401 77407 77408 77409 77411
Complex 77401 77412 77413 77414 77416

IMRT Treatment / Delivery 77418

Code(s) 77401 and 77418 may be quantity billed on the same line of the 1500 claim form.

G. Portal Verification Film(s) (CPT code 77417)

Use CPT code 77417 to report port verification films or electronically generated portal images. These images should agree with the original simulation films and dosimetry. Port film verification is a technical component only procedure and does not carry a professional physician component. No modifier is required for these services. The review and interpretation of port films by the physician, is considered part of the weekly clinical treatment management.

Although radiographs may be used in brachytherapy simulation, these images should not be reported as port-films.

Portal verification films should be reported as 1 charge per 5 fractions of therapy, per portal, one charge per port per week, with additional charges as needed as the patient’s clinical status warrants. If at the end of a treatment course, three or four fractions remain, then one unit of portal verification will be reimbursed. If only one or two fractions remain, then no reimbursement will be made. This code (CPT 77417) may be used more than once per day per treatment course.

H. Stereoscopic x-ray guidance for localization of target volume for the delivery of radiation therapy. (CPT code: 77421)

Image Guided Radiation Therapy (IGRT) uses various imaging technologies to account for changes in the position of the intended target before or during treatment delivery. IGRT is used where patients have tumors located near or within critical structures and/or in tissue with inherent setup variation. Thus, although IGRT is a distinct service, it may be used and documented along with conformal treatment delivery (CPT 77402-77416) or IMRT treatment delivery (77418). Several different imaging modalities are used for IGRT. These include the use of kV and mV imaging via stereoscopic X-ray guidance, 2D or 3D ultrasound guidance, 3 D cone beam CT guidance, and 4 D...
localization and tracking of electromagnetic transponders. Some image guidance modalities require the implantation of fiducial markers; other image guidance modalities use external markers, the organ itself, or adjacent anatomic structures to reference location of the target.

I. Radiation Treatment Management (CPT codes 77427, 77431)
CPT code 77427 - Radiation treatment management, x5

The regulation reads:
Weekly Radiation Therapy Management (CPT 77427). Pay for a physician's weekly treatment management services under code 77427. Instruct billing entities to indicate on each claim the number of fractions for which payment is sought.

A weekly unit of treatment management is equal to five fractions or treatment sessions. A week for the purpose of making payments under these codes is comprised of five fractions regardless of the actual time period in which the services are furnished. It is not necessary that the radiation therapist personally examine the patient during each fraction for the weekly treatment management code to be payable.

Multiple fractions representing two or more treatment sessions furnished on the same day may be counted as long as there has been a distinct break in therapy sessions, and the fractions are of the character usually furnished on different days.

Code 77427 is also reported if there are three or four fractions beyond a multiple of five at the end of a course of treatment; one or two fractions beyond a multiple of five at the end of a course of treatment are not reported separately. The professional services furnished during treatment management typically consist of:

- review of port films;
- review of dosimetry, dose delivery, and treatment parameters;
- review of patient treatment set-ups;
- examination of patient for medical evaluation and management, (e.g., assessment of the patient's response to treatment, coordination of care and treatment, review of imaging and/or lab test results).

EXAMPLE:
18 fractions = 4 weekly services
62 fractions = 12 weekly services
8 fractions = 2 weekly services
6 fractions = 1 weekly service

If billings have occurred which indicate that the treatment course has ended (and, therefore, the number of residual fractions has been determined), but treatments
resume, adjust your payments for the additional services consistent with the above policy.

EXAMPLE:
8 fractions = payment for 2 weeks
2 additional fractions are furnished by the same physician. No additional Medicare payment is made for the 2 additional fractions.

J. Radiation Therapy Management (CPT code 77431)
This CPT code is to be used only if a patient's entire treatment course consists of only one or two fractions. This code should not be used to bill for the remaining treatments at the end of a long course of therapy. The quantity billed should be one whether one or two fractions are used.

K. Special Treatment Procedures (CPT code 77470)
CPT code 77470 (Special radiation treatment) covers the additional physician effort and work required for the special procedures of:
- hyperfractionation
- total body irradiation
- brachytherapy
- hyperthermia
- planned combination with chemotherapy; or
- other combined modality therapy
- stereotactic radiosurgery
- intra-operative radiation therapy, and
- hemibody irradiation
- intracavitary cone use
- radiation response modifiers
- heavy particles (e.g. protons/neutrons)
- 3-D CRT
- IMRT
- any other special time consuming treatment plan.

This code is not intended for use when a patient has another ongoing medical diagnosis such as diabetes, C.O.P.D or hypertension.

It is considered an acceptable standard of practice for this code to be reported only once during a treatment course and may be billed with the weekly management codes.

For the remaining treatment course, a physician should use the appropriate weekly radiation therapy management codes (CPT codes 77427 and 77431) for the management of the patient.
If the treatment course is modified for any reason, the physician should use the appropriate CPT code for the simulation field setting and dosimetry. CPT code 77470 should not be used for this reason.

II. Intensity Modulated Radiation Therapy (IMRT)

Description:
Intensity Modulated Radiation Therapy (IMRT) is a new technology in radiation oncology that delivers radiation more precisely to the tumor while relatively sparing the surrounding normal tissues. It is an advanced form of three-dimensional conformal radiation therapy (3D CRT) that allows for varying intensities of radiation to produce dose distribution that are more conformal than those possible with standard 3D CRT.

IMRT is a computer-based method of planning for, and delivery of, narrow, patient specific, spatially and temporally modulated beams of radiation to solid tumors within a patient. IMRT planning and delivery uses a new 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.

A. Treatment Planning
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 treatment plans are geometrically more accurate and tailored to the target volumes than are conventional or three-dimensional radiation plans. The IMRT planning computer algorithm describes the necessary field sizes, gantry angles, and other beam characteristics needed to achieve the desired dose distribution. The essential feature of an IMRT plan is that it describes the means to deliver treatment utilizing non-uniform beam intensities.

Three-dimensional image acquisition by simulation (e.g., CT, MRI, PET or similar image fusion technology) is a prerequisite to IMRT treatment planning. The physician then outlines (contours) the visible abnormality seen on each slice of the image set. The three-dimensional summation of these contours defines the Gross Tumor Volume (GTV). The physician draws a margin around the GTV to generate a Clinical Target Volume (CTV) which encompasses the volume of tissue at risk for microscopic disease (not visible on imaging studies). To account for potential patient set-up variation or
organ and patient motion, a final margin is then added to create what is termed the Planning Target Volume (PTV). The physician also contours nearby normal structures that potentially could be damaged by radiation ("organs at risk").

The physician must assign specific dose requirements for the PTV (minimum dose and dose homogeneity) and dose constraints for the organs at risk (maximum allowable doses). A treatment plan that satisfies these requirements and constraints should maximize the potential for disease control and minimize the risk of radiation injury to normal tissue.

Finally, the radiation physicist or a supervised dosimetrist calculates a complex multi-beam treatment plan that will deliver the prescription dose to the PTV and satisfy the normal tissue dose constraints. The radiation beam is, in effect, a collection of "beamlets," each with a different level of radiation intensity. The summation of these "beamlets" delivers the characteristic, highly conformal IMRT dose distribution. The PTV, therefore, receives a high dose of radiation while nearby organs receive significantly lower doses.

Prior to treatment delivery the physicist performs basic dose calculations on each of the modulated beams. These patient specific monitor unit computations verify through a second (independent of treatment planning) dose calculation method that the computer has correctly performed the treatment planning calculations. The calculated beams are then delivered either to a phantom or a dosimetry measuring device to confirm that the point dose and dose distribution are physically verifiable and that the intensity modulated beams are technically feasible.

Documentation of all aspects of the planning process is essential.

B. Treatment Delivery
IMRT treatment delivery can be accomplished through a variety of technologies. The most common approach utilizes a multi-leaf collimator (MLC) to modulate the intensity of the beam. Various forms of MLC technology include fixed gantry types such as static MLC (step and shoot) where the leaves do not move when the beam is on and dynamic MLC (sliding window) where they move during treatment. There are also moving gantry technologies including fan-beam therapy that uses a binary collimator to deliver slice-by-slice treatment and intensity modulated arc therapy, in which the gantry rotates while moving MLCs create non-uniform dose to the planning target volume during individual arc segments. A different technical solution for IMRT is to use a solid compensator with varying thickness filters to modulate the beam. The basic requirement for all forms of IMRT treatment delivery is that the technology must accurately produce the calculated dose distribution described by the IMRT plan.

IMRT uses non-uniform and customized fluence distributions in treatment delivery.
Delivery and planning of IMRT may require the use of a multi-leaf collimator (MLC) with leaves that project to a nominal 1cm or less at the treatment unit isocenter. The MLC may be in a dynamic (DMLC) or segmented mode (SMLC) (mean segments per gantry position or 'steps' required to meet IMRT delivery is 5) to create the 3-dimensional, intensity-modulated dose distribution. These processes maybe called segmental, binary or step and shoot.

The use of a MLC to produce simple one-dimensional ramp intensity distributions is excluded because the inverse planning process is not expected to produce these intensity patterns.

Other planning and delivery methods include:
- Conformal Arc
- Intensity Modulated Arc
- Electronic forward planned compensator
- Inverse planned IMRT Solid Compensators

Note: There are also so called normal tissue compensators that do not produce IMRT. These devices are called wedges, compensators, etc. and do not modulate a beam into small "beamlets" as do IMRT. Do not bill for IMRT when it is not performed.

C. The exact planning and 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 and the planning/delivery method is FDA approved.

D. Patient immobilization is required for precision IMRT. A number of imaging techniques (e.g., ultrasound, kilovoltage or megavoltage cone beam CT scan, stereoscopic X-ray) may also be utilized to account for the daily motion of the PTV and more accurately deliver the treatment (Image Guided Radiation Therapy or IGRT). Changes in the location of the target within the body during a single fraction can arise from respiratory motion or other physiologic variances. To accommodate such changes the PTV may be drawn based upon published studies of organ motion or on dynamic imaging studies, or treatment delivery may be actively modulated by direct measures of motion during treatment.

IMRT delivery imposes a more stringent requirement than conventional radiation therapy in terms of accounting for patient position and organ motion.

Image Guided Radiation Therapy (IGRT) utilizes imaging technology to modify treatment delivery to account for changes in the position of the intended target. IGRT is used in conjunction with IMRT in patients whose tumors are located near or within critical structures and/or in tissue with inherent setup variation. Thus, although IGRT is a
distinct service, it may be used and documented along with IMRT treatment delivery when necessary.

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, or 4D localization and tracking of electromagnetic transponders); and
3. respiratory gating of diaphragm movement for thoracic and upper abdominal sites.  
(CPT codes: 76950, 77014, 77421, 0197T)

Indications and Limitations 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 3-Dimensional conformal radiation, a comprehensive understanding of all consequences is required before applying this technology.

IMRT is not a replacement therapy for conventional and 3D conformal radiation therapy methods.

IMRT is considered reasonable and necessary in instances where sparing the surrounding normal tissue is of added benefit and at least one of the following conditions is met:

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

Indications
IMRT is indicated as a standard treatment option for:
1. Primary, metastatic or benign tumors of the central nervous system including the brain, brain stem and spinal cord;

2. Primary, metastatic tumors of the spine where the spinal cord tolerance may be
exceeded with conventional treatment

3. Primary, metastatic, or benign lesions to the head and neck area including: Orbits, Sinuses, Skull base, Aero-digestive tract, Salivary glands;

4. Carcinoma of the prostate;

5. Selected cases of thoracic and abdominal malignancies;

6. Selected cases (i.e. not routine) of breast cancers with close proximity to critical structures;

7. Other pelvic and retroperitoneal tumors that meet the requirements for medical necessity; and

8. Reirradiation that meets the requirements for medical necessity.

Although IMRT is not indicated as the routine management for other cancers, IMRT is often reasonable and necessary treatment for other sites. There is no definitive list of "approved sites" nor is it possible to preclude some cancers solely on the basis of primary site of origin. The radiation oncologist must consider the five criteria detailed above (proximity to critical structures, narrow margins, previous radiation, target shape, and dose escalation requirement) and then determine if IMRT is indicated. For example, IMRT may be indicated in the treatment of lung cancers and intra-abdominal and pelvic malignancies where the effect of organ motion must be considered. In the case of breast cancer, while not routine, IMRT may be indicated when the tumor is in proximity to the heart. For all instances, the physician should document the indications for IMRT. It may be used as the primary/sole modality or as a boost to conventional therapy.

Appendices
Utilization Guidelines
Limitation of liability and refund requirements apply to denials for frequency and/or medical necessity. When the advance notice is given, the service (s) must be submitted with HCPCS modifier GA (advance notice has been given to the beneficiary). Refer to the body of the policy for further utilization information.

Definitions:

Bite block - A restraining device generally used in the oral cavity often attached to an outside source for patient stability.

Block - A device fabricated of an energy-absorbing material such as lead or Cerrobend (Wood's metal) to shape or delineate the treatment portal to match the configuration of
the desired area and to shield or protect normal structures.

Bolus - A tissue equivalent material used to change the surface deposition of a radiation beam.

Compensator - An irregularly shaped beam-modifying device utilized to reconfigure the beam intensity to match irregular tissue contours.

Collimator - A beam shaping device attached to the head of the treatment machine to define the initial configuration (the length and width) of the treatment portal.

Dosimetry - The calculation of the radiation dose distribution within an area of clinical interest.

Hyperfractionation - Radiation therapy delivered more than once per day.

Isodose - A plotting of lines or a series of lines following paths of the same dosage distribution within a treatment beam.

Mold - A patient restraining device usually constructed of plaster or thermosetting plastic that fits to the contour of the patient and restricts the motion of the patient during treatment.

Port, Portal - These words are synonymous and refer to the site, on the skin, where the radiation beam enters the body.

Portal Verification - Any means of verifying the placement and configuration of the treatment portal.

Simulation - The use of simulator, or other means, to determine the various treatment portal outlines and orientation to be used in the course of radiation therapy.

Simulator - A radiation generator operating in the diagnostic x-ray range. A simulator has the mechanical capability to orient a radiation beam toward a patient with parameters imitating that, which is proposed for therapy while affording direct x-ray fluoroscopic visualization and roentgenographic images of the area. This machine is not capable of delivering radiation therapy.

Stent - A splint-restraining device generally used in the oral cavity. The device is usually constructed of acrylic or some other dental material but may incorporate lead or other energy absorbing material to protect some portion of the cavity from direct dose deposition.
Stereotactic - A 3-dimensional technique of intersecting multiple portals creating complex interaction of the treatment beams and resulting isodose plans.

Teletherapy or External Beam Radiation - The delivery of a beam of electromagnetic energy from a treatment machine at some distance from the treatment area. External beam radiation is commonly delivered by a linear accelerator which can deliver photons (x-rays) or electrons to the targeted area.
**CPT/HCPCS Codes**

**Radiation Therapy**
77261-77525 except CPT Code 77432 (Stereotactic Radiosurgery)

**IMRT**

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<th>Description</th>
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<td>77301</td>
<td>INTENSITY MODULATED RADIOThERAPY PLAN, INCLUDING DOSE-VOLUME HISTOGRAMS FOR TARGET AND CRITICAL STRUCTURE PARTIAL TOLERANCE SPECIFICATIONS</td>
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<td>77338</td>
<td>MODULATED RADIATION THERAPY (IMRT), DESIGN AND CONSTRUCTION PER IMRT PLAN</td>
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<td>77418</td>
<td>INTENSITY MODULATED TREATMENT DELIVERY, SINGLE OR MULTIPLE FIELDS/ARCS, VIA NARROW SPATIALLY AND TEMPORALLY</td>
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<td>MODULATED BEAMS, BINARY, DYNAMIC MLC, PER TREATMENT SESSION</td>
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<td>0197T</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>
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<td>INTRA-FRACTION LOCALIZATION AND TRACKING OF TARGET OR PATIENT MOTION DURING DELIVERY OF RADIATION THERAPY (EG, 3D POSITIONAL TRACKING, GATING, 3D SURFACE TRACKING), EACH FRACTION OF TREATMENT</td>
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ICD-9 Codes that Support Medical Necessity

Note: ICD-9 codes must be coded to the highest level of specificity.

77261-77470 (except 77301, 77418, 0073T, 77432)

- **140.0** - MALIGNANT NEOPLASM OF UPPER LIP VERMILION BORDER - NEOPLASM OF
- **239.9** - UNSPECIFIED NATURE SITE UNSPECIFIED
- **242.00** - TOXIC DIFFUSE GOITER WITHOUT THYROTOXIC CRISIS OR STORM - TOXIC
- **242.01** - DIFFUSE GOITER WITH THYROTOXIC CRISIS OR STORM
- **259.2** - CARCINOID SYNDROME
- **277.89** - OTHER SPECIFIED DISORDERS OF METABOLISM
- **289.4** - HYPERSPLENISM
- **331.11** - PICK'S DISEASE
- **332.0** - PARALYSIS AGITANS
- **350.1** - TRIGEMINAL NEURALGIA
- **350.8** - OTHER SPECIFIED TRIGEMINAL NERVE DISORDERS
- **362.50** - MACULAR DEGENERATION (SENILE) OF RETINA UNSPECIFIED
- **372.40** - PTERYGIFORM UNLIGNED - RECURRENT PTERYGIFORM
- **372.45** - MONOCULAR EXOTROPIA WITH A PATTERN
- **410.00** - ACUTE MYOCARDIAL INFARCTION OF ANTEROLATERAL WALL EPISODE OF
- **410.92** - SUBSEQUENT EPISODE OF CARE
- **411.1** - INTERMEDIATE CORONARY SYNDROME
- **411.81** - ACUTE CORONARY OCCLUSION WITHOUT MYOCARDIAL INFARCTION
- **413.0** - ANGINA DECUBITUS - OTHER AND UNSPECIFIED ANGINA PECTORIS
- **413.9** - CORONARY ATHEROSCLEROSIS OF NATIVE CORONARY ARTERY
- **527.2** - SIALOADENITIS
- **527.7** - DISTURBANCE OF SALIVARY SECRETION
- **701.4** - KELOID SCAR
- **728.11** - PROGRESSIVE MYOSITIS OSSIFICANS
- **728.13** - POSTOPERATIVE HETEROTOPIC CALCIFICATION
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77301, 77418, 0073T (IMRT)

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336.9  UNSPECIFIED DISEASE OF SPINAL CORD
446.4  WEGENER'S GRANULOMATOSIS
459.2  COMPRESSION OF VEIN
747.81 CONGENITAL ANOMALIES OF CEREBROVASCULAR SYSTEM