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Clinical Appropriateness Guidelines

Radiation Oncology

Appropriate Use Criteria: Brachytherapy, Intensity Modulated Radiation Therapy, Stereotactic Body Radiation Therapy, and Stereotactic Radiosurgery

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Description and Application of the Guidelines

The Carelon Clinical Appropriateness Guidelines (hereinafter “the Carelon Clinical Appropriateness Guidelines” or the “Guidelines”) are designed to assist providers in making the most appropriate treatment decision for a specific clinical condition for an individual. As used by Carelon, the Guidelines establish objective and evidence-based criteria for medical necessity determinations where possible. In the process, multiple functions are accomplished:

- To establish criteria for when services are medically necessary (i.e., in general, shown to be effective in improving health outcomes and considered the most appropriate level of service)
- To assist the practitioner as an educational tool
- To encourage standardization of medical practice patterns
- To curtail the performance of inappropriate and/or duplicate services
- To advocate for patient safety concerns
- To enhance the quality of health care
- To promote the most efficient and cost-effective use of services

The Carelon guideline development process complies with applicable accreditation standards, including the requirement that the Guidelines be developed with involvement from appropriate providers with current clinical expertise relevant to the Guidelines under review and be based on the most up-to-date clinical principles and best practices. Relevant citations are included in the References section attached to each Guideline. Carelon reviews all of its Guidelines at least annually.

Carelon makes its Guidelines publicly available on its website twenty-four hours a day, seven days a week. Copies of the Carelon Clinical Appropriateness Guidelines are also available upon oral or written request. Although the Guidelines are publicly-available, Carelon considers the Guidelines to be important, proprietary information of Carelon, which cannot be sold, assigned, leased, licensed, reproduced or distributed without the written consent of Carelon.

Carelon applies objective and evidence-based criteria, and takes individual circumstances and the local delivery system into account when determining the medical appropriateness of health care services. The Carelon Guidelines are just guidelines for the provision of specialty health services. These criteria are designed to guide both providers and reviewers to the most appropriate services based on a patient’s unique circumstances. In all cases, clinical judgment consistent with the standards of good medical practice should be used when applying the Guidelines. Guideline determinations are made based on the information provided at the time of the request. It is expected that medical necessity decisions may change as new information is provided or based on unique aspects of the patient’s condition. The treating clinician has final authority and responsibility for treatment decisions regarding the care of the patient and for justifying and demonstrating the existence of medical necessity for the requested service. The Guidelines are not a substitute for the experience and judgment of a physician or other health care professionals. Any clinician seeking to apply or consult the Guidelines is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient’s care or treatment.

The Guidelines do not address coverage, benefit or other plan specific issues. Applicable federal and state coverage mandates take precedence over these clinical guidelines. If requested by a health plan, Carelon will review requests based on health plan medical policy/guidelines in lieu of the Carelon Guidelines. Pharmaceuticals, radiotracers, or medical devices used in any of the diagnostic or therapeutic interventions listed in the Guidelines must be FDA approved or conditionally approved for the intended use. However, use of an FDA approved or conditionally approved product does not constitute medical necessity or guarantee reimbursement by the respective health plan.

The Guidelines may also be used by the health plan or by Carelon for purposes of provider education, or to review the medical necessity of services by any provider who has been notified of the need for medical necessity review, due to billing practices or claims that are not consistent with other providers in terms of frequency or some other manner.

General Clinical Guideline

Clinical Appropriateness Framework

Critical to any finding of clinical appropriateness under the guidelines for a specific diagnostic or therapeutic intervention are the following elements:

- Prior to any intervention, it is essential that the clinician confirm the diagnosis or establish its pretest likelihood based on a complete evaluation of the patient. This includes a history and physical examination and, where applicable, a review of relevant laboratory studies, diagnostic testing, and response to prior therapeutic intervention.
- The anticipated benefit of the recommended intervention should outweigh any potential harms that may result (net benefit).
- Current literature and/or standards of medical practice should support that the recommended intervention offers the greatest net benefit among competing alternatives.
- Based on the clinical evaluation, current literature, and standards of medical practice, there exists a reasonable likelihood that the intervention will change management and/or lead to an improved outcome for the patient.

If these elements are not established with respect to a given request, the determination of appropriateness will most likely require a peer-to-peer conversation to understand the individual and unique facts that would supersede the requirements set forth above. During the peer-to-peer conversation, factors such as patient acuity and setting of service may also be taken into account.

Simultaneous Ordering of Multiple Diagnostic or Therapeutic Interventions

Requests for multiple diagnostic or therapeutic interventions at the same time will often require a peer-to-peer conversation to understand the individual circumstances that support the medical necessity of performing all interventions simultaneously. This is based on the fact that appropriateness of additional intervention is often dependent on the outcome of the initial intervention.

Additionally, either of the following may apply:

- Current literature and/or standards of medical practice support that one of the requested diagnostic or therapeutic interventions is more appropriate in the clinical situation presented; or
- One of the diagnostic or therapeutic interventions requested is more likely to improve patient outcomes based on current literature and/or standards of medical practice.

Repeat Diagnostic Intervention

In general, repeated testing of the same anatomic location for the same indication should be limited to evaluation following an intervention, or when there is a change in clinical status such that additional testing is required to determine next steps in management. At times, it may be necessary to repeat a test using different techniques or protocols to clarify a finding or result of the original study.

Repeated testing for the same indication using the same or similar technology may be subject to additional review or require peer-to-peer conversation in the following scenarios:

- Repeated diagnostic testing at the same facility due to technical issues
- Repeated diagnostic testing requested at a different facility due to provider preference or quality concerns
- Repeated diagnostic testing of the same anatomic area based on persistent symptoms with no clinical change, treatment, or intervention since the previous study

- Repeated diagnostic testing of the same anatomic area by different providers for the same member over a short period of time

Repeat Therapeutic Intervention

In general, repeated therapeutic intervention in the same anatomic area is considered appropriate when the prior intervention proved effective or beneficial and the expected duration of relief has lapsed. A repeat intervention requested prior to the expected duration of relief is not appropriate unless it can be confirmed that the prior intervention was never administered.

Guidelines for Radiation Oncology

Definitions

Statistical terminology

- **Confidence interval (CI)** describes the amount of uncertainty associated with a sampling method. Confidence intervals are usually reported to help explain how reliable, or precise, a result is.
- **Hazard ratio (HR)** is a measure of how often a particular event happens in one group compared to how often it happens in another group, over time. In cancer research, hazard ratios are often used in clinical trials to measure survival at any point in time in a group of patients who have been given a specific treatment compared to a control group given another treatment or a placebo. A hazard ratio of one means that there is no difference in survival between the two groups. A hazard ratio of greater than one or less than one means that survival was better in one of the groups.
- **Odds ratio (OR)** is a measure of the odds of an event happening in one group compared to the odds of the same event happening in another group. In cancer research, odds ratios are most often used in case-control (backward looking) studies to find out if being exposed to a certain substance or other factor increases the risk of cancer. For example, researchers may study a group of individuals with cancer (cases) and another group without cancer (controls) to see how many people in each group were exposed to a certain substance or factor. They calculate the odds of exposure in both groups and then compare the odds. An odds ratio of one means that both groups had the same odds of exposure and, therefore, the exposure probably does not increase the risk of cancer. An odds ratio of greater than one means that the exposure may increase the risk of cancer, and an odds ratio of less than one means that the exposure may reduce the risk of cancer. Also called relative odds.
- **Overall survival (OS)** is the length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, that patients diagnosed with the disease are still alive. In a clinical trial, measuring the overall survival is one way to see how well a new treatment works.
- **Overall survival rate** is the percentage of people in a study or treatment group who are still alive for a certain period of time after they were diagnosed with or started treatment for a disease, such as cancer. The overall survival rate is often stated as a five-year survival rate, which is the percentage of people in a study or treatment group who are alive five years after their diagnosis or the start of treatment. Also called survival rate.
- **Progression-free survival (PFS)** is the length of time during and after the treatment of a disease, such as cancer, that a patient lives with the disease but it does not get worse. In a clinical trial, measuring the progression-free survival is one way to see how well a new treatment works.
- **Relative risk (RR)** is a measure of the risk of a certain event happening in one group compared to the risk of the same event happening in another group. In cancer research, relative risk is used in prospective (forward looking) studies, such as cohort studies and clinical trials. A relative risk of one means there is no difference between two groups in terms of their risk of cancer, based on whether or not they were exposed to a certain substance or factor, or how they responded to two treatments being compared. A relative risk of greater than one or of less than one usually means that being exposed to a certain substance or factor either increases (relative risk greater than one) or decreases (relative risk less than one) the risk of cancer, or that the treatments being compared do not have the same effects. Also called risk ratio.
- **Response rate** is the percentage of patients whose cancer shrinks or disappears after treatment.

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Image Guidance in Radiation Oncology

General Information

Modalities used in Image Guidance

- Ultrasound-based guidance
- Stereoscopic x-ray guidance
- CT based image guidance
- Real-time intrafraction guidance
- Surface-based guidance

Radiation Oncology Considerations

Image guidance, also known as image-guided radiation therapy (IGRT), refers to pretreatment imaging used to verify correct patient positioning in cases where sub-centimeter accuracy is needed. There are multiple different technologies which can be utilized for IGRT including ultrasound visualization, stereoscopic x-ray guidance, computed tomography based guidance and continuous intra-fraction position monitoring. Both the American Society for Radiation Oncology (ASTRO) and the American College of Radiology (ACR) have published descriptive overviews and guidance related to the available methods, performance, quality assurance, limitations and safety aspects of image-guided therapy.

IGRT is an integral part of the delivery of highly conformal treatments such as intensity modulated radiation therapy (IMRT), stereotactic body radiation therapy (SBRT), and stereotactic radiosurgery (SRS). Recognition of this fact has resulted in changes to the current procedural terminology (CPT) definitions such that the technical aspect of IGRT is now bundled with IMRT delivery. Similarly, image guidance procedures have always been bundled for SBRT and SRS.

When highly tailored dose distributions such as IMRT and stereotactic radiation therapy are not being utilized, sub-centimeter precision is not generally needed and accurate patient setup is achieved with other techniques. These include patient immobilization with custom treatment devices like body molds or thermoplastic masks, placement of tattoos aligned to a 3-dimensional laser array in the treatment room and offline review of port verification films. Small daily setup uncertainties exist and these are taken into account in the target expansion process where an additional margin is added to the gross tumor volume (GTV) to create the clinical target volume (CTV) and ultimately the planning target volume (PTV) during the treatment planning process.

Pretreatment image acquisition and isocenter shifting has been suggested as a strategy to allow a safe reduction in PTV margins. By decreasing the volume of normal tissue exposed to radiation, the use of IGRT with 3D conformal radiation or IMRT has been suggested as a way to reduce toxicity, allow an increase in the radiation dose, or both. This has been most extensively studied in prostate cancer, where evidence of a dose response and improved freedom from failure with dose escalation from 70 Gy to 78 Gy was demonstrated in a randomized trial of intermediate to high-risk patients treated with radiotherapy. The higher dose treatment was associated with increased rectal toxicity and this was correlated with the proportion of the rectal volume receiving > 70 Gy. This prompted efforts to dose escalate beyond 78 Gy and simultaneously decrease normal tissue toxicity by using IGRT, IMRT, and ultimately image-guided IMRT.

When used with 3D conformal radiation, IGRT has been shown to reduce late toxicities after prostate cancer radiotherapy. A study by Gill showed that patients treated with IGRT had significantly lower rates of > grade 3 urinary frequency (7% vs 23%), > grade 2 diarrhea (3% vs 15%) and fatigue (8% vs 23%) compared to patients treated without IGRT despite higher dose treatment in the IGRT patients. Another report by Singh demonstrated that treatment with IGRT significantly decreased reports of post-treatment rectal pain (OR 0.07), urgency (OR 0.27), diarrhea (OR 0.009) and change in bowel habits (OR 0.18) compared to patients treated without IGRT. There was no difference in genitourinary symptoms reported in that study.

Multiple reports have also shown reduced late toxicities after high dose IMRT for prostate cancer compared to 3D conformal radiotherapy. Zelefsky reported 10-year follow-up comparing toxicity for prostate patient s treated with IMRT vs 3D conformal radiotherapy and found that > grade 2 gastrointestinal complaints were significantly lower in the IMRT group (5% vs 13%). One criticism of these studies is that they were performed in the pre-IGRT era and it is unclear whether IGRT and IMRT both independently reduce toxicity. Comparing 3D and IMRT for patients who were all treated with implanted fiducial-based image-guidance, IMRT resulted in significantly lower rectal doses and subsequent late rectal toxicity. Finally, the use of image-guided IMRT (IG-IMRT) with implanted fiducial markers has been shown to improve 3-year biochemical control and decrease late urinary toxicity in high-risk prostate patients compared to patients treated to the same dose (86.4 Gy) with IMRT but without IGRT.

Daily IGRT has been compared to weekly IGRT for definitive treatment of prostate cancer. Patients treated with daily image guidance experienced decreased treatment-related toxicity and improved biochemical disease-free survival compared to weekly IGRT.

Studies of post-prostatectomy IMRT have demonstrated superior dose distribution to the target volume with the use of IMRT, as compared with 3D conformal radiation delivery, with better sparing of nearby critical healthy tissue structures and less severe toxicity-related morbidity. The use of pretreatment cone beam CT image-guidance to a median dose of 68.4 Gy has been compared to post-operative radiotherapy using weekly port films to a dose of 64.8 Gy. Despite treatment to a higher dose, the IGRT group was noted to have similar genitourinary and gastrointestinal toxicities. Pretreatment corrective left-right, anteroposterior, and superoinferior shifts were required in 15%, 6%, and 19% of cases, respectively, supporting the use of pretreatment imaging.

The ACR-ASTRO practice parameter for IGRT indicates that “when the target is not clearly visible and bony anatomy is not sufficient for adequate target alignment, fiducial markers may be needed.” For soft tissue targets such as the prostate, implanted fiducial markers have been validated as an accurate way to localize the target when using orthogonal imaging. Based on this research in prostate cancer, use of implanted fiducial markers for other soft tissue targets located in close proximity to critical structures is appropriate when needed to safely reduce PTV margins and reduce the risk of late complications.

In the setting of head and neck cancer, IGRT has been shown to allow a safe reduction of margin expansion and the ability to detect significant anatomic changes which might benefit from re-planning. Chen has reported a series of 225 consecutively treated head and neck cancer patients treated with image-guided IMRT. IGRT was performed with either kilovoltage or megavoltage volumetric imaging prior to each treatment. The first 95 patients were treated with a 5 mm CTV to PTV expansion and the following 130 patients were treated with a 3 mm expansion. Two-year local control was equal for the two groups. Examination of the treatment failures did not reveal any marginal recurrences in either cohort. The authors concluded that when IGRT is used, the CTV to PTV margin can safely be reduced to 3 mm. A subsequent report included an additional 134 patients with 3 mm margin expansions (264 total) and found that the 3-year locoregional control was equal in the two groups. Compared to the 5 mm margin group, the 3 mm margin patients had a lower incidence of gastrostomy-tube dependence at 1 year (10% vs 3%; P = .001) and esophageal stricture (14% vs 7%; P = .01). IGRT can also help identify patients who would benefit from adaptive replanning to prevent overdose of critical structures such as the spinal cord if significant weight loss occurs during treatment. Essentially all of the research around IGRT for head and neck cancer has been performed in the setting of IMRT. There are no data supporting the use of IGRT for head and neck cancer patients treated with 3D conformal radiotherapy.

IGRT in the non-IMRT setting can be justified in cases where the use of surface tattoos and standard immobilization techniques are known to be inadequate. In obese patients with deep seated tumors of the abdomen and pelvis, surface landmarks are known to be inaccurate. In a study performed before the term image-guidance was coined, the authors report the need to shift an average of 11.4 mm in left-right axis and 7.2 mm in the superior-inferior axis in order to properly align obese patients receiving pelvic radiotherapy for prostate cancer based on pretreatment portal imaging. Wong has also reported that using computed tomography based IGRT, shifts of greater than 10 mm were needed 21.2% of the time to correctly position the prostate in moderately to severely obese patients (BMI > 35). This was significantly more than shifts needed in normal weight, overweight and mildly obese patients. ASTRO has used this scenario as an example of where IGRT may be required in conjunction with three-dimensional conformal radiotherapy in their Health Policy Coding Guidance document.

A recent study of the setup accuracy for lung cancer treatment showed that when compared to tattoos, using cone beam CT registration to the spine and carina improved target coverage approximately 50% of the time. Even

using skin tattoos, however, the combined lung and nodal targets were found to be within the PTV over 97% of the time.

Tumor motion during the breathing cycle needs to be evaluated and managed when highly conformal radiation techniques are used to treat lung cancer. Liu evaluated respiratory related tumor motion in 152 patients with lung cancer and found that motion in the superoinferior (SI) axis was > 0.5 cm in 39% of patients and > 1 cm in 11% of patients. The degree of respiratory cycle related motion was more pronounced with smaller lesions and with tumors further from the lung apex. Four-dimensional CT (4DCT) scan planning coupled with IMRT is associated with improved overall survival (HR 0.64) and a decreased risk of > grade 3 pneumonitis (HR 0.33) compared to 3D conformal radiotherapy. The volume of lung receiving 20 Gy (V20) was significantly lower in the 4DCT/IMRT group. The American Association of Physicists in Medicine (AAPM) Task Group 76 guidelines summarized the adequate methods to account for this respiratory motion including 4DCT, slow CT, inhale/ exhale/breath-hold CT, respiratory gating with internal fiducial markers or external markers to signal respiration, breath hold, abdominal compression for shallow breathing and real time tracking. There are no studies supporting the use of IGRT for lung cancer in the 3D conformal setting.

With left sided breast cancers, there is concern about cardiac toxicity due to the proximity of the heart to the treatment field. Intensity modulated radiation therapy (IMRT) has been used to decrease the cardiac dose during left sided radiation treatment. Image-guided deep inspiration breath hold (DIBH) techniques have been demonstrated to reduce cardiac exposure to radiation. The feasibility of IGRT for cardiac sparing in patients with left-sided breast cancer was investigated in a prospective study authored by Borst. Nineteen patients with left-sided breast cancer were treated with the deep inspiration breath hold (DIBH) technique during IGRT. Use of DIBH in these patients reduced mean cardiac dose (1.7 Gy vs 5.1 Gy), the maximum dose (37 Gy vs 49 Gy) and the volume of heart receiving 30 Gy (0.3 cc vs 6.3 cc) compared with the free breathing technique. Similar results have been described in a larger series of 50 patients recently published by Cosma. Patients were eligible for inclusion in this study if an absolute volume of 10cc received more than 50% of the prescription dose (D10cc > 50%) based on criteria described by Wang. In these patients, the D10cc was reduced from 34.8 Gy for the free breathing group to 6.7 Gy for the DIBH group ($P < .001$).

For the majority of cases treated with 3D conformal radiotherapy, there is no evidence that the routine use of IGRT results in clinical benefit. Regarding clinical outcomes associated with IGRT, a recent review article concluded that “results of current and future clinical trials will hopefully demonstrate the net gain in therapeutic ratio from application of IGRT technologies and the onus lies on the radiation oncology community to take up the challenge of demonstrating the benefit of expensive IGRT approaches.”

In the treatment of non-melanoma skin cancer, superficial x-rays and electron beam therapy are used as definitive or post-operative treatment. ASTRO recently published a clinical practice guideline on radiation for basal and squamous skin cancer. The guideline panel stated that “for local treatment of skin targets, the task force emphasizes the importance of regular and frequent visual confirmation of surface coverage by the treating radiation oncologist (i.e., biweekly “see-on-table” verification). Daily imaging is neither necessary nor useful when treating with electron beam, ELS, or skin surface brachytherapy.” ELS refers to electronically generated low energy sources up to 120 kV. IGRT is not appropriate for the treatment of non-melanoma skin cancer with low energy or superficial radiation.

Multiple publications have documented the additional radiation exposure which occurs in conjunction with IGRT. Patient doses range from 1-3 mGy for gantry mounted kV systems to between 10 and 50 mGy per image for cone beam and fan beam CT scans. As with any medical procedure, the risks of radiation exposure must be weighed against the benefits of daily imaging. In situations where there is a lack of demonstrable benefit, concerns about potential harms of this technology are relevant. Even in clinical scenarios where IGRT is considered medically necessary, the technique chosen should expose the patient to the minimum amount of radiation needed to achieve adequate visualization.

The National Comprehensive Cancer Network (NCCN) recommends using IGRT when using stereotactic body radiation therapy (SBRT) and when 3D conformal radiation or IMRT is used with steep dose gradients around the target, organs at risk are in close proximity to target tissues and when utilizing gating or other motion management techniques.

For breast cancer, NCCN states that routine use of daily imaging is not recommended.

Society Recommendations

ASTRO/ACR – The American Society of Radiation Oncology (ASTRO) and The American College of Radiology (ACR) have published practice guidelines for IGRT. The technologies for performing IGRT are described. The guidelines also review suggested qualifications and responsibilities of the personnel involved in the performance of IGRT. The authors note that IGRT can be used to enhance either 3D conformal radiotherapy or IMRT but do not elaborate on clinical necessity for IGRT with either of these modalities. IGRT is noted to be a necessary and integral part of SBRT. Elements of interfraction and intrafraction target motion are discussed. Fiducial marker placement and migration are reviewed. As part of the process of IGRT implementation, it is suggested that the radiation oncologist develop clinical guidelines outlining when physician involvement in verification of patient positioning is needed. No clinical outcomes are discussed.

Clinical Indications

Image guidance, any modality, is appropriate when ANY of the following conditions are met:

- Intensity modulated radiation therapy (IMRT) is being utilized
- Proton beam therapy is being utilized
- Use of IGRT will allow significant reduction of radiation dose to sensitive normal structures, for example:
    - Left-sided breast cancer treatment with deep inspiration breath hold technique (DIBH) for cardiac sparing is being utilized
- Implanted fiducial markers have been placed
- Head and neck cancer
- Prone breast radiotherapy
- The treatment field abuts a previously irradiated field
- There is significant setup variation affecting the treatment target, for example:
    - Individual is morbidly obese (BMI > 35) and receiving treatment of tumors in the mediastinum, abdomen or pelvis
    - There is significant organ movement due to respiration and a 4D planning CT scan was performed with documentation demonstrating that the treatment plan addresses tumor motion that is both accounted for and managed

Frequency

When authorized, image guidance should be performed at the minimum frequency needed to assure proper patient positioning.

Exclusions

Image guidance not meeting any of the above criteria is considered **not medically necessary** including, but not limited to:

- IGRT when used in conjunction with superficial x-rays or electron beam therapy in the treatment of non-melanoma skin cancer.
- Electronic brachytherapy

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

CPT/HCPCS

Note: The work associated with CT scan acquisition for 3D or IMRT planning is bundled with codes 77295 and 77301, respectively. CPT code 77014 should NOT be billed in this setting.

77014	CT guidance for placement of radiation therapy fields
77387	Guidance for localization of target volume for delivery of radiation treatment delivery, includes intrafraction tracking, when performed
G6001	Ultrasonic guidance for placement of radiation therapy fields
G6002	Stereoscopic x-ray guidance for localization of target volume for the delivery of radiation therapy
G6017	Intra-fraction localization and tracking of target or patient motion during delivery of radiation therapy (e.g., 3D positional tracking, gating, 3D surface tracking), each fraction of treatment

ICD-10 Diagnoses

All inclusive

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Special Treatment Procedure and Special Physics Consult

General Information

Radiation Oncology Considerations

Special treatment procedure, CPT® code 77470, describes the extra time, effort and resources associated with complex radiation therapy procedures and situations which are not reimbursed by another CPT® code. Several of these procedures are specifically described in the CPT® code definition including total body irradiation, hemibody radiation and per oral or endocavitary radiation. This code may also be used to report additional work and effort when a patient receives brachytherapy or concurrent chemotherapy along with a course of external beam radiation therapy. This code should not be used to report the work effort which is specifically described another CPT® code including but not limited to intensity modulated radiation therapy (IMRT), stereotactic radiosurgery (SRS) or intraoperative radiation therapy (IORT).

Special physics consult, CPT® code 77370, describes work performed by a qualified medical physicist to address a specific question or problem related to a complex radiation therapy plan. This only applies when the query to the physicist is beyond the scope of the routine physics work effort associated with radiation therapy planning and delivery. In response to a physician request, the physicist prepares a customized written report specifically addressing the issue in question. A special physics consult may be appropriate in cases of brachytherapy where the physicist is directly involved or when a composite plan is generated by the physicist to reflect cumulative doses from different radiation modalities such as photons, electrons, charges particles and gamma rays. A special physics consult is also medically necessary when radiation dose to a fetus or medical device such as pacemaker needs to be measured. Special physics consult is appropriate when the physicist performs a fusion multiple images sets with or without associated dose distributions to be used by the physician in the development or analysis of a treatment plan. This code should not be used when fusion is performed by a non-physicist. A special physics consult may also apply to other specific treatment-related questions when ordered by the radiation oncologist and appropriate documentation is provided.

Clinical Indications

Special treatment procedure is indicated when extra planning time and effort can be documented for ANY of the following:

- Concurrent chemotherapy
- Brachytherapy
- Proton therapy
- Total body or hemibody radiation
- Pediatric patient requiring anesthesia
- Hyperthermia
- Reconstruction of previous radiation plan
- Stereotactic body radiation therapy (SBRT)
- Other (documentation of special circumstances or time-consuming plan required)

Special physics consult is indicated when requested by physician for ANY of the following:

- Brachytherapy
- Fusion of multiple image sets (CT, MRI, PET) when performed by the medical physicist
- Dosimetric analysis of previous radiation field overlapping or abutting current field
- Analysis of dose to a fetus
- Analysis of dose to a pacemaker
- Stereotactic radiosurgery (SRS) or stereotactic body radiation therapy (SBRT) with report of dosimetric parameters and specific organ tolerances met or exceeded
- Other specific physics work not described by another CPT code, at request of radiation oncologist

Frequency

Special treatment procedure and special physics consults may each only be billed once per course of therapy.

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

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CPT/HCPCS

77370	Special medical radiation physics consultation
77470	Special treatment procedure

ICD-10 Diagnoses

All inclusive

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Bone Metastases

General Information

Commonly Used Modalities

External Beam Radiation Therapy

- 2D and 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)

Radiation Oncology Considerations

Initial treatment

Metastasis to the bony skeleton is a common site of spread for many solid tumors including breast, prostate, and lung cancers. Bone metastases can be seen with any cancer histology and affects more than 250,000 patients per year in the U.S. It has been estimated that up to 80% of patients with solid cancers will develop painful bone metastases to the pelvis, spine, or extremities during the course of their illness. Metastases to the bone can cause accelerated bone breakdown which may result in pain, pathologic fracture and nerve or spinal cord compression resulting in sensory loss or motor weakness. Laboratory abnormalities may include hypercalcemia and myelosuppression. Radiation therapy has long been used to palliate pain and other symptoms of bone metastases with excellent results.

There have been multiple prospective, randomized, controlled clinical trials comparing different radiation fractionation schemes for bony metastases. Most of these trials have excluded patients with spinal cord compression or pathologic fracture at presentation. All of these trials, as well as several subsequent meta-analyses of these data, have concluded that for uncomplicated patients a single fraction of 8 Gy provides equivalent palliation to more prolonged fractionation over 1 to 4 weeks. The overall response rate with either regimen was approximately 60% with about 24% of patients demonstrating a complete response to treatment. Acute toxicity was found to be equivalent or better in the single fraction arms. There was no significant difference in pathologic fracture risk or subsequent spinal cord compression. The main difference which has been demonstrated is a higher rate of re-treatment with single fraction treatment vs more prolonged fractionation (20% vs 8%).

Because of the higher rate of re-treatment with single fraction radiotherapy, the use of fractionated regimens has been suggested for patients with bony metastasis from prostate and breast cancers. Analysis of the Dutch Bone Metastasis Study found equal pain relief and duration in patients with favorable prognosis. This has also been studied prospectively by the RTOG which looked specifically at whether prolonged fractionation resulted in superior palliation in patients with breast and prostate cancers. It was concluded that both single fraction and multifraction regimens were equally effective even in this favorable group of patients. The breast cancer expert panel of the German Society for Radiation Oncology (DEGRO) recommends fractionated regimens for breast cancer patients with oligometastatic bony metastasis and when the therapeutic goal is stabilization of disease as opposed to pain control. The NCCN guidelines for prostate cancer recommend that 8 Gy as a single dose be used instead of 30 Gy in 10 fractions for non-vertebral metastases.

In 2011, ASTRO published a guideline providing recommendations for palliative radiotherapy as a treatment for bone metastases. ASTRO's recommendations were based on the findings of their systematic review of the peer-reviewed literature on palliative RT for bone metastases combined with the expert opinion of the Task Force members. With regards to the most effective fractionation scheme for the treatment of painful and/or prevention of morbidity from peripheral bone metastases, the ASTRO task force indicated that: "Multiple prospective randomized trials have shown pain relief equivalency for dosing schema, including 30 Gy in 10 fractions, 24 Gy in 6 fractions, 20 Gy in 5 fractions, and a single 8-Gy fraction for patients with previously unirradiated painful bone

metastases. Fractionated RT courses have been associated with an 8% repeat treatment rate to the same anatomic site because of recurrent pain vs. 20% after a single fraction; however, the single fraction treatment approach optimizes patient and caregiver convenience."

ASTRO recently published an update of their evidence-based guideline which reviewed 20 new randomized trials, 32 new prospective non-randomized trials and 4 meta-analyses. The literature continues to support the equivalent pain relief of a single 8 Gy treatment compared to multifraction therapy.

Special circumstances have been suggested where more prolonged fractionation may be preferable. These include individuals with soft tissue involvement causing neuropathic symptoms, spinal metastases, impending or outright spinal cord compression, and presence of oligometastatic disease. Most of these trials exploring different radiation fractionation schemes for bony metastases have excluded subjects with spinal cord compression or pathologic fracture at presentation.

The study by Roos et al. looked at single fraction vs fractionated radiotherapy for patients with neuropathic pain and found that the time to treatment failure was shorter in the single fraction regimen. The risk of developing spinal cord compression in patients with vertebral bony metastasis has been found to be slightly higher with single fraction treatment, although this did not reach statistical significance and the overall risk of cord compression was less than 6% in both groups. Recently published results of the SCORAD randomized trial of 8 Gy single fraction treatment vs 20 Gy in five fractions in patients with spinal cord compression demonstrated that the single fraction treatment was non-inferior in terms of return to ambulatory status and survival.

ASTRO indicated that while many of the peer-reviewed studies did not make a distinction between treatment relief for spinal vs non-spinal metastases, the task force was able to conclude that there was no evidence to suggest that a single 8-Gy fraction was less effective in providing pain relief than a more prolonged RT course in painful spinal sites. The authors also concluded that there were not "any suggestions from the available data that single-fraction therapy produces unacceptable rates of long-term side effects that might limit this fractionation schedule for patients with painful bone metastases."

A recent report by Lam explores factors affecting adverse outcomes in 299 patients receiving palliative radiotherapy for uncomplicated spine metastases. The cumulative incidence of first skeletal adverse event (SAE) at 180 days was 23.6% for single fraction (SF) radiation vs 9.2% for multiple fraction (MF) treatment. On multivariate analysis, singe fraction treatment (HR 2.8, P = .001) and baseline spine instability score (HR 2.5, P = .007) were significant predictors of the incidence of first SAE. To account for baseline differences, outcomes were compared using a propensity score matched analysis. They found that the 90-day incidence of SAEs was 22% for patients treated with SF radiotherapy vs 6% for patients treated with a MF regimen (HR 3.9, P = .003). Spinal adverse events were defined as a symptomatic fracture, hospitalization for site-related pain, salvage surgery, interventional procedure, new neurologic symptoms or cord compression.

Radiation therapy is a common treatment for metastatic spinal cord compression. In patients with a single site of compression and life expectancy of at least 3 months, surgical decompression should be considered as it has been shown to preserve neurologic function better than radiotherapy alone in a phase III randomized study. Post-operative radiotherapy should be given in these patients. 30 Gy in 10 fractions has been the most commonly used. No reports have been published regarding the use of single fraction palliative EBRT in the post-operative setting. For patients who are not candidates for surgery, radiation therapy should be given after initiation of corticosteroid therapy. A recent review of radiation therapy for metastatic spinal cord compression concluded that for patients with a poor prognosis, a single fraction of 8 Gy should be given. For those with patients with a good prognosis, consideration of 30 Gy in 10 fractions was recommended.

When a metastasis results in a pathologic compression fracture, percutaneous kyphoplasty may be of benefit. The ASTRO evidence-based guideline concluded that no prospective data are available to suggest that the use of either kyphoplasty or vertebroplasty obviates the need for EBRT in the management of painful bone metastases.

Stereotactic body radiation therapy (SBRT) or stereotactic ablative body radiotherapy (SABR) is being studied in the treatment of bony metastatic disease. Proposed indications for this modality include standalone or postoperative treatment in patients with progressive or recurrent disease following conventional external beam radiotherapy (cEBRT) and in the treatment of tumors traditionally considered radioresistant to cEBRT such as sarcoma, melanoma, and renal cell carcinoma. Several recent studies have not shown improvement in pain control compared to conventional radiation although the relief was more durable. A recent report from the phase 2, randomized VERTICAL trial looked at quality of life, functional interference, and psychosocial aspects with

either 8 Gy single fraction conventional radiotherapy or single fraction SBRT to a total of 18 Gy. Twelve weeks after treatment completion, treatment with conventional radiation improved functional interference significantly more than SBRT (25.5 vs 14.1 points, P = 0.04). Similarly, psychosocial aspects scores also improved more with conventional radiation (12.2 vs 7.3, P = 0.04). A similar trial published by Canadian and Australian investigators compared 20 Gy of conventional radiation delivered in 5 fractions with SBRT given as 12 Gy times two. In comparing these regimens, the SBRT arm had significantly complete pain relief at 3 months compared to the lower dose fractionated conventional radiation (35% vs 14%, P < 0.0002). The updated ASTRO evidence-based guideline maintains that: “Advanced RT techniques such as SBRT as the primary treatment for painful spine bone lesions or for spinal cord compression should be considered in the setting of a clinical trial or with data collected in a registry given that insufficient data are available to routinely support this treatment currently.”

Repeat treatment

Following initial treatment with radiation therapy for bony metastasis, some patients will develop recurrent or progressive symptoms for which additional radiation therapy is indicated. Studies have shown repeat radiation therapy to be effective in reducing pain in approximately 48% of patients. Responders have been shown to have improved quality of life. When a given site is re-treated, the effect of prior irradiation on the surrounding normal tissues must be taken into account. This is especially important when treating vertebral lesions where the cumulative dose to the spinal cord must be minimized. The generally accepted maximum cumulative dose to the spinal cord is 50 Gy in 2 Gy fractions (or equivalent). If repeat radiation using 2D or 3D techniques would result in a cumulative dose to the spinal cord greater than 50 Gy in 2 Gy fractions then consideration should be given to intensity modulated radiation therapy (IMRT), stereotactic radiosurgery (SRS), or stereotactic body radiation therapy (SBRT).

Society Recommendations

ASTRO – The 2013 Choosing Wisely campaign included as one of its 5 recommendations that fractionation beyond 10 treatments should not be routinely used to treat bone metastases. They noted that 8 Gy in a single fraction results in equivalent pain relief compared to 20 Gy in 5 fractions or 30 Gy in 10 fractions. They suggested that strong consideration be given to 8 Gy in a single fraction for a patient with poor prognosis or transportation difficulties.

ACR – The American College of Radiology has published Appropriateness Criteria for both spinal and non-spinal bone metastases. They note that radiation therapy is the mainstay of treatment for bony metastatic lesions. They list several fractionation regimens including 30 Gy in 10 fractions, 24 Gy in 6 fractions, 20 Gy in 5 fractions, or a single 8 Gy fraction. They note that randomized clinical trials have shown equivalent pain relief for all of these regimens.

Clinical Indications

2D or 3D conformal External Beam Radiation Therapy (EBRT) is appropriate for bone metastases when ANY one of the following conditions are met:

- Pain at the site of metastasis
- Lytic lesion involving a weight bearing bone
- Spinal cord compression
- Post-operative treatment following surgical stabilization

Intensity Modulated Radiation Therapy (IMRT) is appropriate for bone metastases when ALL of the following conditions are met:

- To treat a previously irradiated field
- Re-treatment with EBRT would result in significant risk of adjacent organ injury

Stereotactic Radiosurgery (SRS) or Stereotactic Body Radiation Therapy (SBRT) is appropriate for bone metastasis when ALL of the following conditions are met:

- To treat a previously irradiated field
- Re-treatment with EBRT would result in significant risk of adjacent organ injury

Note: When SRS/SBRT is being requested to treat a patient with oligometastatic disease with potentially curative intent, please refer to separate criteria in the Oligometastatic Extracranial Disease section of the Guidelines.

Fractionation

Single fraction treatment is appropriate in individuals who meet the following criterion:

- Goal of therapy is pain relief

Fractionated radiotherapy, 2 to 10 fractions, is only appropriate in individuals who meet ANY of the following criteria:

- Pathologic fracture
- Soft tissue involvement by tumor
- Spinal cord compression
- Spine metastasis
- Presence of oligometastatic disease (1-5 lesions) when the goal of treatment is long term stabilization of disease

Fractionation beyond 10 treatments is not medically necessary

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

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2D and 3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms (3D Conformal treatment plan)
77402	Radiation treatment delivery, > 1 MeV; simple.
77407	Radiation treatment delivery, > 1 MeV; intermediate.
77412	Radiation treatment delivery, > 1 MeV; complex.
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV

G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (IMRT treatment plan)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking when performed; complex
G6015	Intensity modulated Treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

Stereotactic Body Radiation Therapy

CPT/HCPCS

63620	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); one spinal lesion
63621	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each add'l spinal lesion
77295	3-dimensional radiotherapy plan, including dose-volume histograms (3D Conformal treatment plan)
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (IMRT treatment plan)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image-guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image-guided robotic linear accelerator based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions; maximum five sessions per course of treatment

Stereotactic Radiosurgery

CPT/HCPCS

63620	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); one spinal lesion
63621	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each add'l spinal lesion
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (Listed once only)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77370	Special medical radiation physics consultation
77371	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; multi-source Cobalt 60 based
77372	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; linear accelerator based
77432	Stereotactic radiation treatment management of cranial lesion(s) (complete course of treatment consisting of 1 session)
G0339	Image-guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image-guided robotic linear accelerator based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions; maximum five sessions per course of treatment

All Modalities

ICD-10 Diagnoses

C79.51 - C79.52	Secondary malignant neoplasm of bone and bone marrow

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in the context of individual clinical circumstances to determine any patient’s care or treatment. The National Comprehensive Cancer Network makes no warranties of any kind whatsoever regarding their content, use or application and disclaims any responsibility for their application or use in any way.

Breast Cancer

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D and 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)

Radiation Oncology Considerations

General Considerations

Whole breast irradiation (WBI) is a well-established and integral component of breast conservation therapy (BCT). When given after lumpectomy, WBI has been shown to result in equivalent survival when compared to mastectomy. When compared to lumpectomy alone, the addition of radiation therapy significantly reduces the risk of local recurrence and has even been shown to improve overall survival in some patients. Conventionally fractioned WBI usually consists of treatment to doses of 45 to 50 Gy in daily doses of 1.8-2 Gy. Additional “boost” treatment to the tumor bed has been shown to further decrease the risk of local recurrence in several randomized trials, especially in younger women and those with high-grade lesions.

Adjuvant radiotherapy is an important component of treatment for ductal carcinoma in situ (DCIS). Several large randomized controlled clinical trials have demonstrated the benefit of postoperative radiotherapy after excision of DCIS. These have shown a reduction in overall local recurrences and have also shown a decrease in the proportion of recurrences which are invasive. Except where otherwise noted, guidelines for breast cancer radiotherapy will also apply to patients with DCIS.

In patients treated with mastectomy for invasive breast cancer, adjuvant radiation therapy has been shown to benefit patients with high-risk pathologic features including tumors greater than 5 cm, positive lymph nodes and when the surgical margin is positive. Radiotherapy may also be considered in patients with a constellation of high-risk features including but not limited to tumor greater than 2 cm, extensive lymphovascular invasion and close surgical margins.

Treatment Planning

For external beam WBI, 3D conformal planning techniques are commonly used to achieve a uniform dose distribution throughout the breast. Reasonable cosmesis can be achieved and toxicity can be limited using standard wedges, electronic compensation, or forward planned field-in-field segments with custom blocking. Several randomized trials of “simple IMRT” for early stage breast cancer have been reported and have shown a decrease in moist desquamation, overall cosmesis and telangiectasia when compared to 2D conventionally wedged techniques. Of note, both of these studies employed field-in-field techniques to achieve homogeneity which do not meet the CPT definition for IMRT planning and delivery.

There is evidence that radiation dose to the heart contributes to late cardiac toxicity in patients with left sided breast cancer. Gagliardi et al. have developed dose response model to predict the risk of cardiac mortality using data sets from several trials of radiotherapy for both Hodgkin’s disease and breast cancer. They predict that using the most conservative model, when the volume of heart receiving 25 Gy is less than 10% that the risk cardiac mortality from radiation is less than 1% at 15 years. Whenever possible, care should be taken to exclude the heart from the primary radiation beam. Cardiac exposure can be limited through alternate patient positioning (such as the prone position) or through the use of deep inspiration breath hold technique. Limitations that would require inverse-planned IMRT or volumetric arc therapy should be rare. IMRT may be of benefit in highly selected cases

where the anatomy is unfavorable or the targets closely approximate the heart, however, the use of this technology has not demonstrated a significant clinical advantage in routine cases.

Radiation to the high axilla and supraclavicular region should be considered in cases where there are involved axillary lymph nodes. Treatment of the internal mammary node chain should be considered when those nodes are pathologically enlarged and/or PET avid on imaging studies. Inclusion of the internal mammary nodes in the treatment field may also be indicated when there are four or more positive axillary nodes or when the primary tumor is located in the medial portion of the breast.

Accelerated Whole Breast Irradiation (AWBI)

There is a growing body of evidence that selected women with early stage breast cancer and favorable anatomy are suitable candidates for accelerated whole breast irradiation (AWBI). This approach has been studied in several randomized prospective clinical trials as well as a large meta-analysis. Included patients were mostly age 50 or greater, had tumors less than 4 cm, frequently did not receive chemotherapy, were generally node-negative and had a chest wall separation of < 25 cm. Patients were randomized to receive either 40-42.5 Gy in 15-16 fractions or standard radiation consisting of 50 Gy in 25 fractions. With a median follow-up of 10 - 12 years, there were no significant differences seen in local control, disease-free survival or overall survival. The most recent report from the UK START trials as well as the meta-analysis have demonstrated that some hypofractionated regimens yielded improved cosmetic outcome including reduced incidence of breast shrinkage, telangiectasias and breast edema in the AWBI patients compared to standard fractionation. Additional benefits of AWBI include a decrease in the number of visits for daily treatment and a reduction in the overall cost of care. These results have prompted recommendations that AWBI should be favored for the endorsed cohort and considered for other selected patients. There is evidence that administration of concurrent trastuzumab increases the risk of left ventricular dysfunction, and it is unknown if this effect is more pronounced in patients treated with AWBI. For patients treated with prior chemotherapy, higher acute toxicity has been documented only in individuals whose radiotherapy began less than 20 days after chemotherapy was completed. In 2013, the American Society for Radiation Oncology (ASTRO) included AWBI as one of its featured recommendations as part of the 2013 Choosing Wisely campaign. ASTRO recently published updated consensus criteria for who should be treated with AWBI to include all age groups, any stage as long as a separate nodal field is not used, and patients who have received chemotherapy. The dose inhomogeneity exclusion has also been restated to indicate that the volume of breast tissue receiving > 105% should be minimized regardless of dose-fractionation.

Ultrahypofractionated regimens have also been studied for whole breast irradiation. The FAST-Forward trial compared 26 and 27 Gy treatments given over one week with moderately hypofractionated treatment of 40 Gy over 3 weeks. A total of 2,018 women with early stage breast cancer were randomized 1:1:1 to the three arms. The median follow-up was 71 months. Both one-week treatments were non-inferior compared to 3-week WBI with local recurrence rates slightly lower than the 2.1% rate at 5 years seen with 3-week treatment. The higher dose 27 Gy arm showed worse cosmesis than the 40 Gy in 3 weeks arm while the 26 Gy arm was not statistically different.

Accelerated Partial Breast Irradiation (APBI)

Although the randomized clinical trials supporting radiotherapy have relied on whole breast irradiation, the majority of the benefit came from reducing recurrence in and immediately adjacent to the lumpectomy site. This observation has prompted investigation of whether local radiation, delivered only to the tumor bed and immediately adjacent tissue, could achieve similar results in selected patients. Accelerated partial breast irradiation (APBI) describes the treatment of the tumor bed alone with an accelerated treatment delivery schedule. Treatment can be given with brachytherapy delivered via implanted single or multi-lumen catheters, with external beam radiotherapy, or with intraoperative radiotherapy given at the time of surgery.

A large cohort of patients who received APBI using the MammoSite applicator has been studied, and the 5-year actuarial rate of ipsilateral breast tumor recurrence was 3.8%. More than 90% of patients in this study reported good to excellent cosmesis. Long term high-quality data for APBI is currently lacking. Results from the prospective, randomized, phase III NSABP B-39/RTOG 0413 trial were recently reported. The study randomized patients to WBI or APBI delivered via brachytherapy or with 3D conformal techniques. The primary outcome was ipsilateral breast-tumor recurrence. With a median follow-up of 10.2 years, ipsilateral breast-tumor recurrence was 3% in the WBI group vs 4% for APBI. Survival and toxicities were similar. Although APBI did not meet the statistical criteria for equivalence to WBI and the overall difference in recurrence rate was 1%, the authors

concluded that ABPI might be an acceptable alternative for some women. In the RAPID trial comparing WBI with 3D conformal APBI, Canadian investigators found that 17% of WBI patients vs 29% of 3D conformal APBI patients had adverse cosmetic outcomes. In contrast, fewer adverse events were reported from women treated with lower dose and partial breast irradiation compared to whole breast irradiation in a longitudinal analysis of the IMPORT LOW phase III randomized controlled trial.

The results of the APBI-IMRT Florence trial were recently reported. Eligible patients were over 40 and had tumors measuring 2.5 cm or less. A total of 520 patients were randomized to receive 50 Gy whole breast irradiation in 25 fractions or 30 Gy in 5 fractions using IMRT-based APBI. The 10-year ipsilateral breast tumor recurrence rates were 2.5% for WBI vs 3.7% for APBI (P = .4). The overall 10-year survival was similar in both arms at 92%. Of note, the APBI treatment was associated with lower acute toxicity and improved cosmesis compared to WBI (P = .0001).

A recent prospective, phase III trial compared self-reported breast pain and cosmesis in patients randomized to either IMRT or 3D conformal bases APBI. Both groups were treated to 38.5 Gy in 10 fractions given twice daily. With 3-year follow-up, the IMRT treated patients reported significantly less pain at 2 years (P = 0.002) and 3 years (P = 0.045). There was no difference in patient-reported cosmesis.

Intraoperative radiotherapy (IORT) is a form of APBI in which the entire partial breast treatment is delivered at the time of lumpectomy. Several systems have been approved to deliver treatment with either electrons or 50 kV x-rays. Two large randomized trials of this approach have been published. The ELIOT trial compared electron-based IORT to WBI in women 48 years or older and tumors less than 2.5 cm. For all patients, the ipsilateral breast tumor recurrence rate was 4.4% for the IORT patients vs 0.4% for the WBI patients (P < .0001). A subsequent subset analysis looking only at patients who qualify as “suitable” for APBI using the ASTRO criteria revealed more favorable recurrence rates of 1.5% with electron IORT. Results of the TARGIT-A trial were recently updated and with a shorter median follow-up of 29 months, they reported a local recurrence rate of 3.3% for IORT vs 1.3% for WBI. When only the patients treated at the time of lumpectomy are considered, the local recurrence rates were 2.1% for IORT vs 1.1% for WBI. In these patients, if high-risk features such as positive margins, extensive intraductal component, lobular histology, high-grade histology, lymphovascular invasion or positive nodes were present on the final pathology, WBI was often added to the treatment. Survival was similar in both arms.

A meta-analysis comparing the oncologic efficacy of IORT with WBI was recently published by He et al. A total of 38 studies were reviewed. Relapse-free survival with IORT was 96.6% compared to 98% with whole breast irradiation. Distant metastasis free survival and overall survival were not significantly different between the two cohorts.

It is recommended that individuals considering APBI as an alternative to whole breast irradiation be counseled that whole breast irradiation is the more well-established treatment with documented long-term effectiveness and safety, and that treatment with APBI may be associated with an increased risk of local recurrence and need for mastectomy. Society recommendations regarding patient suitability have been published but are not all in agreement.

Regarding electronic brachytherapy, the American Brachytherapy Society states that “it is not recommended that electronic brachytherapy be utilized for accelerated partial breast irradiation, non-melanomatous skin cancers, or vaginal cuff brachytherapy outside prospective clinical trials at this time.”

Society Recommendations for AWBI

ASTRO – An update to the 2011 Guideline was published in early 2018. The new recommendations support the use of AWBI for all ages, all stages when nodes will not be treated separately, and in patients who have received any type of chemotherapy. The consensus was that when a boost is not given, a dose of 40 Gy in 15 fractions or 42.5 Gy in 16 fractions is favored. Inhomogeneity greater than 107% in the central axis is no longer an exclusion. The panel recommended that the volume of tissue receiving more than 105% should be minimized irrespective of dose schedule.

Society Recommendations for APBI

The National Comprehensive Cancer Network® (NCCN, 2020) – Guideline indicates that preliminary studies have shown that APBI may result in similar rates of local control in early breast cancer compared to WBI. They also note that cosmesis may be inferior and follow-up is limited. NCCN recommends treatment with APBI to be provided in a prospective clinical trial when possible. If APBI is provided off trial, then brachytherapy is recommended for those with a low risk of recurrence. They cite the ASTRO criteria for suitable candidates for APBI.

ASTRO – An update to the Evidence-Based Consensus statement was published in 2017. There were several changes in the criteria for who are "suitable" candidates for APBI. The age for the suitable group was lowered to 50 or older. The criteria were also broadened to include ductal carcinoma in situ (DCIS). The criteria are summarized below:

- Age > 50 years
- Surgical margins > 2 mm for invasive ductal cancer and > 3 mm for DCIS
- Size < 2 cm for invasive ductal cancer and < 2.5 cm for DCIS
- DCIS must be low to intermediate grade and non-palpable
- No lymphovascular invasion
- ER positive
- No invasive lobular cancer

American Society of Breast Surgeons recommends the following selection criteria when considering patients for treatment with APBI, as a sole form of radiation therapy in lieu of whole breast irradiation:

- Age 45 years old or older for invasive cancer and age 50 years or older for DCIS
- Invasive carcinoma or ductal carcinoma in situ
- Total tumor size (invasive and DCIS) less than or equal to 3 cm in size
- Negative microscopic surgical margins of excision
- Sentinel lymph node negative

Clinical Indications

2D or 3D conformal is appropriate for breast cancer when ANY of the following conditions are met:

- As an adjunct to surgical treatment after lumpectomy for localized breast cancer or DCIS
- As an adjunct to surgical treatment after mastectomy for locally advanced breast cancer
- To treat recurrent disease
- Palliative treatment of metastatic disease, including symptomatic breast or chest wall disease

Intensity Modulated Radiation Therapy (IMRT) is appropriate for breast cancer when ANY of the following conditions are met:

- For individuals with left-sided breast lesions where the risk of cardiac exposure would be excessive with 3D conformal treatment and when **ALL** of the following are met:
    - 3D planning has been done, with appropriate techniques to limit toxicity

    - Despite the use of all appropriate techniques, the dose-volume constraints would lead to unacceptable risk of cardiac toxicity (**EITHER constraint below is exceeded**):
        - More than 10% of the heart would receive 25 Gy or more (V25 > 10%)
        - More than 10% of the left anterior descending (LAD) artery would receive 15 Gy (V15 > 10%)
    - IMRT plan demonstrates improvement to tissue exposure to within safe ranges
- For individuals who will receive internal mammary node irradiation based on **ANY** of the following:
    - Pathologically enlarged (as reported based on imaging technique utilized) internal mammary lymph node(s) by CT, MRI, PET/CT, or CXR
    - Pathologically involved internal mammary lymph node(s) (based on aspiration cytology or tissue biopsy pathology)
    - For individuals at high risk of internal mammary lymph node involvement based on **ANY** of the following:
        - Four or more positive axillary lymph nodes
        - Medial quadrant tumor with at least one positive axillary lymph node
        - Medial quadrant T3 tumor
- For individuals where the 3D conformal plan results in hot spots (> 2 cm^3) receiving more than to 110% of the prescription dose despite the use of forward planned field-in-field blocking and/or mixed beam energy (6 MV and 10 MV/15 MV)
- For individuals being treated with accelerated partial breast irradiation (APBI)
- To treat a previously irradiated field

Note: "Forward planning IMRT" is a term used to describe field-in-field 3D conformal radiation therapy and should not be reviewed under IMRT constraints.

Brachytherapy is appropriate for breast cancer only when used to deliver ANY one of the following:

- **Intraoperative radiation therapy (IORT)** is appropriate only for individuals who meet **ALL of the following** criteria:
    - Age 50 or greater
    - Tumor less than or equal to 3 cm with grossly uninvolved surgical margins
    - Lymph nodes are grossly negative and negative on intraoperative frozen section if performed
    - Distance between the edge of the applicator and the skin will be at least 6 mm

Note: If intraoperative radiotherapy was used at the time of surgery but the final pathologic evaluation reveals indications for whole breast irradiation, the IORT will be considered the boost portion of the treatment.

- **Accelerated partial breast irradiation (APBI)** is appropriate only for individuals who meet **ALL of the following** criteria:
    - Age 45 or greater for invasive disease or greater than 50 for DCIS
    - Tumor less than or equal to 3 cm with pathologically negative surgical margins
    - Lymph nodes are negative or show only immunohistochemical involvement, N0 or N0(i+)
    - Distance between the edge of the applicator and the skin is at least 6 mm

Note: Electronic brachytherapy is considered not medically necessary.

Stereotactic Radiosurgery (SRS) or Stereotactic Body Radiation Therapy (SBRT) is appropriate for breast cancer when the following condition is met:

- To treat a previously irradiated field

Note: Five fraction APBI regimens should not be billed as SBRT as this is not an ablative dose and similar dose fractionation schedules can be safely delivered to the whole breast.

Hyperthermia is appropriate for breast cancer when the following condition is met:

- For individuals with a chest wall recurrence after prior radiation therapy to the chest or breast.

Fractionation

Whole breast irradiation (WBI) – 17 to 28 fractions of WBI are appropriate only for individuals who meet ANY one of the following criteria:

- Lymph node involvement requiring treatment of the supraclavicular or internal mammary nodal regions
- Mastectomy or breast reconstruction have been performed
- Treatment will be delivered with 3D conformal radiotherapy and the treatment plan results in dose inhomogeneity of greater than 7% in the central axis (for example, if the plan is normalized to 95%, the maximum dose is greater than 112%)
- Concurrent chemotherapy will be administered (does not include trastuzumab or endocrine therapy)

For individuals not meeting one of these criteria, up to 16 fractions of WBI are considered medically necessary.

Breast boost irradiation

- An additional boost of up to 8 fractions is appropriate when the individual has fulfilled the above criteria for 17-28 fractions of WBI
- For individuals not meeting the above criteria, an additional boost of up to 5 fractions is appropriate

More than 36 fractions, including WBI and boost irradiation, are considered not medically necessary.

Accelerated partial breast irradiation (APBI) delivered with up to 10 fractions delivered twice daily. More than 10 fractions are considered not medically necessary.

Intraoperative radiation therapy (IORT) is given as a single fraction. More than one fraction is considered not medically necessary.

Exclusions

Indications other than those addressed in this guideline are considered **not medically necessary** including, but not limited to:

- Electronic brachytherapy

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

2D and 3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms (3D Conformal treatment plan)
77402	Radiation treatment delivery, >1 MeV; simple.
77407	Radiation treatment delivery, > 1 MeV; intermediate.
77412	Radiation treatment delivery, > 1 MeV; complex.
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (IMRT treatment plan)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77385	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking when performed; Simple (includes breast cancer, prostate cancer and compensator-based IMRT)
G6015	Intensity modulated Treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session

G6016	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

Brachytherapy

CPT/HCPCS

19296	Placement of radiotherapy afterloading expandable catheter (single or multichannel) into the breast for interstitial radioelement application following partial mastectomy, includes image guidance
19297	Placement of radiotherapy afterloading expandable catheter (single or multichannel) into the breast for interstitial radioelement application following partial mastectomy, includes image guidance
19298	Placement of radiotherapy afterloading brachytherapy catheters (multiple tube and button type) into the breast for interstitial radioelement application following partial mastectomy, includes image guidance
77295	3-dimensional radiotherapy plan, including dose-volume histograms (3D conformal treatment plan)
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77770	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 1 channel
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 2-12 channels
77772	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; over 12 channels
77778	Interstitial radiation source application; complex, includes supervision, handling, loading of radiation source, when performed
0394T	HDR electronic brachytherapy, skin surface application, per fraction
0395T	HDR electronic brachytherapy, interstitial or intracavitary treatment, per fraction

Intraoperative Radiation Therapy

CPT/HCPCS

77424	Intraoperative radiation treatment delivery, x-ray, single treatment session
77425	Intraoperative radiation treatment delivery, electrons, single treatment session
77469	Intraoperative radiation treatment management
19294	Preparation of tumor cavity, with placement of a radiation therapy applicator for intraoperative radiation therapy (IORT) concurrent with partial mastectomy (List separately in addition to code for primary procedure)

Hyperthermia

CPT/HCPCS

77600	Hyperthermia, external generated; superficial
77605	Hyperthermia, external generated; deep
77610	Hyperthermia, interstitial probe(s); 5 or fewer interstitial applicators
77615	Hyperthermia, interstitial probes; more than 5 interstitial applicators
77620	Hyperthermia generated by intracavitary probe(s)

All Modalities

ICD-10 Diagnoses

C50.011-C50.929	Malignant neoplasm of the breast

C79.81	Secondary malignant neoplasm of the breast
D05.00 - D05.92	Carcinoma in-situ of the breast

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Central Nervous System Cancers: Intracranial, Spinal, Ocular, and Neurologic Indications

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D and 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)
- Stereotactic Radiosurgery (SRS)

Proton Beam Therapy: see separate Carelon Guidelines for Proton Beam Therapy

Radiation Oncology Considerations

Brain metastasis is the most common CNS malignancy. Patients with brain metastasis have a poor prognosis, with a median survival of 2 to 3 months when treated with steroids alone. The addition of whole brain radiation therapy (WBRT) generally extends median survival to 3 to 6 months. Individual results vary significantly based on the number of metastatic lesions, the performance status of the patient and the extent of extracranial disease. In recent years, there has been a trend away from the use of WBRT in patients with limited disease who are candidates for surgery or radiosurgery in order to minimize the neurocognitive complications of WBRT. Whole brain radiation therapy with standard 2D or 3D conformal radiation therapy is recommended for individuals with multiple brain metastases (greater than 4 treated in a given session) and should also be considered in individuals with brain metastases and any of the following: ECOG performance status greater than 2, presence of progressive and symptomatic visceral disease, or metastases significantly progressing after multiple treatment options. The RTOG has studied several different fractionation schedules for WBRT, and prolonged fractionation schedules did not improve outcomes compared to 30 Gy in 10 fractions.

A 2019 evidence-based review by the Congress of Neurological Surgeons on the role of whole brain radiotherapy recommends a dose of 30 Gy in 10 fractions to improve progression-free survival in patients with more than four metastases.

To minimize the neurocognitive toxicity, local therapy in the form of surgery or stereotactic radiosurgery is recommended for patients with four or fewer accessible lesions. When WBRT is used, 6 months of memantine therapy should be offered to potentially delay, lessen or prevent the associated neurologic toxicity. Results from the phase III NRG CC001 trial have recently been reported. There were 518 patients randomized to either hippocampal avoidance (HA-WBRT) or whole brain radiation therapy (WBRT). Both groups were treated with memantine. The HA-WBRT treated patients were found to have a lower risk of cognitive failure compared to standard WBRT (HR 0.74, P = .02) attributable to preservation of executive function, learning, and memory. There were no differences in OS, intracranial PFS or toxicity.

Historically, surgical resection has been performed in patients with solitary metastasis in accessible locations. Postoperative WBRT has been shown to reduce the risk of recurrence in a randomized trial. For brain metastases greater than 4 cm in diameter or causing mass effect, surgery is preferred over stereotactic radiosurgery.

In 2022, a combined practice guideline on treatment of brain metastases was published by the American Society of Clinical Oncology (ASCO), the Society for Neuro-Oncology (SNO) and the American Society of Radiation Oncology (ASTRO). They recommend that SRS should be offered to patients with 4 or fewer metastatic lesions.

They also recommend postoperative SRS for patients with 1 or 2 resected metastatic lesions. Patients with more lesions are recommended to receive whole brain irradiation unless they have poor KPS performance status of less than 50.

External beam radiation treatment is a common treatment for primary brain tumors as either definitive or adjuvant therapy after resection. For high-grade gliomas, concurrent temozolomide chemotherapy is generally recommended as it has been shown to increase survival compared to radiotherapy alone. In 2016, ASTRO published an evidence-based clinical practice guideline on radiation therapy for glioblastoma. For patients with reasonable performance status up to age 70, a dose of 60 Gy in 30 fractions should be given. For elderly patients, hypofractionated treatment such as 40 Gy in 15 fractions gives similar results. IMRT may provide better coverage for primary brain lesions, with decreased exposure of normal brain tissue. IMRT is recommended when a lesion is in close proximity to a critical or sensitive structure and 3D conformal radiation would result in unsafe exposure to these structures. The use of IMRT for hippocampal sparing is under active investigation and should only be used in the context of a clinical trial. IMRT is considered medically necessary in any case of repeat irradiation of overlapping or bordering treatment fields.

SRS has an excellent safety profile for many clinical situations when targets are localized, and it has applications for both benign and malignant lesions. It also often represents an alternative to surgical intervention when patients are not optimal surgical candidates. SRS has been extensively studied in the treatment of limited brain metastases. Control rates of approximately 90% are reported. Although recurrence elsewhere in the brain is common, the addition of WBRT to SRS does not improve survival. This has led to the ASTRO Choosing Wisely recommendation not to routinely add WBRT to SRS for limited brain metastasis. SRS is not recommended for the treatment of CNS lymphoma.

Stereotactic boost for high-grade gliomas has been studied in several randomized controlled clinical trials. RTOG 93-05 randomized patients with glioblastoma multiforme to upfront SRS followed by conventional radiotherapy and carmustine to the same treatment without SRS. With a median follow-up of 61 months, there was no difference in survival, pattern of failure or quality of life in the two groups. RTOG 0023 studied the use of a stereotactic conformal boost for supratentorial glioblastoma multiforme. In this study, four weekly stereotactic boost treatments were delivered to give a cumulative dose of 70-78 Gy to the postoperative enhancing tumor. There was no difference in survival compared to historical controls. Based on these studies, SRS or SBRT are considered investigational for the primary treatment of grade 3-4 gliomas.

For certain benign CNS abnormalities, SRS has been shown to be a safe and effective treatment. Soon after the development of the Gamma Knife by Leksell in the 1970s, it was studied for the treatment of arteriovenous malformations (AVM) where it has been shown to have an 80% obliteration rate. Based on this proof of concept, SRS has subsequently been shown to be an effective alternative to surgery for a wide variety of benign lesions including ocular melanoma, retinoblastoma, schwannoma, craniopharyngioma, pineal lesions and pituitary adenoma. SRS for the treatment of trigeminal neuralgia is medically necessary in cases refractory to medical management. SRS for the treatment of epilepsy, Parkinson’s disease and other movement disorders is listed as “insufficient evidence” in an evidence-based review by the American Academy of Neurology and therefore remains investigational at this time.

SRS is given as a single fraction. Cranial stereotactic treatment given in 2-5 fractions is billed as SBRT.

For metastatic lesions outside the brain, please refer to specific guidelines for the appropriate location (e.g., Lung Cancer for lung metastases).

Clinical Indications

2D or 3D conformal is appropriate for CNS cancers when ANY of the following conditions are met:

- Primary cranial, spinal, and ocular lesions
- Metastatic cranial, spinal, and ocular lesions
- Prophylactic cranial irradiation (PCI)

Intracranial Lesions

Primary malignant brain lesions

High-Grade Gliomas (grade 3-4)

Intensity Modulated Radiation Therapy (IMRT) is appropriate for high-grade gliomas in individuals when **EITHER** of the following conditions is met:

- Treatment is given with curative intent
- To treat a previously irradiated field

Stereotactic Radiosurgery (SRS) is appropriate for high-grade gliomas in individuals when **EITHER** of the following conditions is met:

- Recurrent disease
- To treat a previously irradiated field

Low-Grade Gliomas (grade 1-2)

Intensity Modulated Radiation Therapy (IMRT) is appropriate for low-grade gliomas in individuals when **EITHER** of the following conditions is met:

- Treatment is given with curative intent
- To treat a previously irradiated field

Stereotactic Radiosurgery (SRS) is appropriate for low-grade gliomas in individuals when **ONE** of the following conditions is met:

- Initial treatment
- Recurrent disease
- To treat a previously irradiated field

Medulloblastoma, Supratentorial, Primitive Neuroectodermal Tumors (PNET), Ependymoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for medulloblastoma, supratentorial, PNET, ependymoma when **ANY** of the following conditions are met:

- The lesion falls near a critical structure, such as the optic nerve, lens, retina, optic chiasm, cochlea, or brainstem and standard techniques such as 3D conformal radiotherapy would result in significant risk of damage to the critical structure
- In a pediatric patient, age less than 21
- To treat a previously irradiated field

Stereotactic Radiosurgery (SRS) is appropriate for medulloblastoma, supratentorial PNET, ependymoma when the following condition is met:

- Only to treat a previously irradiated field

CNS Lymphoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for CNS lymphoma when **EITHER** of the following conditions is met:

- The lesion falls near a critical structure, such as the optic nerve, lens, retina, optic chiasm, cochlea, or brainstem and standard techniques such as 3D conformal radiotherapy would result in significant risk of damage to the critical structure
- To treat a previously irradiated field

Stereotactic Radiosurgery (SRS) is appropriate for CNS lymphoma when the following condition is met:

- Only to treat a previously irradiated field

Metastatic Brain Lesions

Intensity Modulated Radiation Therapy (IMRT) is appropriate for metastatic brain lesions in individuals when **ONE** of the following conditions is met:

- The lesion falls near a critical structure, such as the optic nerve, lens, retina, optic chiasm, cochlea, or brainstem, and standard techniques such as 3D conformal radiotherapy would result in significant risk of damage to the critical structure
- To deliver hippocampal sparing whole brain radiotherapy
- To treat a previously irradiated field

Stereotactic Radiosurgery (SRS/SBRT) is appropriate for metastatic brain lesions when **ANY** of the following conditions are met:

- Primary treatment of 4 or fewer unresected brain metastases
- Postoperative treatment of 1-2 brain metastases
- To treat a previously irradiated field

Note: Treatment of multiple lesions with SRS on different days within the same course of therapy should be billed as SBRT with a maximum of 5 units.

Benign brain lesions

Intracranial Arteriovenous Malformations (AVMs)

Intensity Modulated Radiation Therapy (IMRT) is appropriate for AVMs when the following condition is met:

- Only to treat a previously irradiated field

Stereotactic radiosurgery (SRS) is appropriate for AVMs when the following condition is met:

- For treatment of intracranial arteriovenous malformations

Pituitary Adenomas

Intensity Modulated Radiation Therapy (IMRT) is appropriate for pituitary adenomas when **EITHER** of the following conditions is met:

- The lesion falls near a critical structure, such as the optic nerve, lens, retina, or optic chiasm, and standard techniques such as 3D conformal radiotherapy would result in significant risk of damage to the critical structure
- To treat a previously irradiated field

Stereotactic radiosurgery (SRS) is appropriate for pituitary adenomas when **EITHER** of the following conditions is met:

- When individual is symptomatic
- To treat a previously irradiated field

Meningioma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for meningioma when **EITHER** of the following conditions is met:

- The lesion falls near a critical structure, such as the optic nerve, lens, retina, optic chiasm, cochlea, or brainstem, and standard techniques such as 3D conformal radiotherapy would result in significant risk of damage to the critical structure
- To treat a previously irradiated field

Stereotactic radiosurgery (SRS) is appropriate for meningioma when **ANY** of the following conditions are met:

- When lesion is unresectable or recurrent, or if there is residual disease following surgery
- To treat a previously irradiated field

Other Benign Brain Tumors: Acoustic Neuroma, Craniopharyngioma, Pineal Gland Tumor, Schwannoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for other benign brain tumors when **ANY** of the following conditions are met:

- The lesion falls near a critical structure, such as the optic nerve, lens, retina, optic chiasm, cochlea, or brainstem and standard techniques such as 3D conformal radiotherapy would result in significant risk of damage to the critical structure
- To treat a previously irradiated field

Stereotactic radiosurgery (SRS) is appropriate for other benign brain tumors when the following condition is met:

- For treatment of other benign brain tumors, including acoustic neuromas, craniopharyngiomas, pineal gland tumors, schwannomas

Ocular Lesions

Uveal melanoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for uveal melanoma when the following condition is met:

- Only to treat a previously irradiated field

Stereotactic Radiosurgery (SRS) is appropriate for uveal melanoma when **ANY** of the following conditions are met:

- For treatment of melanoma of the choroid
- To treat a previously irradiated field

Brachytherapy is appropriate for uveal melanoma when **BOTH** of the following conditions are met:

- When apical height of the tumor is up to 10.0 mm
- The maximal base diameter is 18.0 mm or less

Retinoblastoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for retinoblastoma when **ANY** of the following conditions are met:

- In pediatric individuals (age less than 21)
- To treat a previously irradiated field

Brachytherapy is appropriate for retinoblastoma when **BOTH** the following conditions are met:

- When apical height of the tumor is up to 10.0 mm
- The maximal base diameter is 18.0 mm or less

Spine Lesions; Primary or Metastatic Lesions of the Spine

Intensity Modulated Radiation Therapy (IMRT) is appropriate for spine lesions when the following condition is met:

- Only to treat a previously irradiated field

Stereotactic Body Radiation therapy (SBRT) is appropriate for spine lesions when EITHER of the following conditions is met:

- When other treatment options are not available **(BOTH must be met)**
    - Not amenable to surgical resection **(at least ONE must apply)**
        - Related to prior surgery, tumor location, or surgical candidacy
        - Surgery alone is not an option
    - When lesions are not amenable to 3D conformal techniques
- To treat a previously irradiated field

Note: When SRS/SBRT is being requested to treat a patient with oligometastatic disease with potentially curative intent, please refer to separate criteria in the Oligometastatic Extracranial Disease section of the Guidelines.

Other Neurologic Conditions; Trigeminal Neuralgia

Intensity Modulated Radiation Therapy (IMRT) is appropriate for trigeminal neuralgia when the following condition is met:

- To treat a previously irradiated field

Stereotactic radiosurgery (SRS) is appropriate for trigeminal neuralgia when ANY of the following conditions are met:

- When symptoms are refractory to standard medical management
- To treat a previously irradiated field

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms

ICD-10 Diagnoses

Not specified

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (Listed once only)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
G6015	Intensity modulated Treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

C69.20 - C69.22	Retinoblastoma
C69.40 - C69.42	Malignant neoplasm uveal tract
C71.0 - C71.9	Malignant neoplasm brain
C79.31 - C79.49	Secondary malignant neoplasm brain and spinal cord
C85.81	CNS lymphoma
D33.0 - D33.2	Benign brain lesions
D35.2	Pituitary adenoma
D35.4	Benign pineal tumor
G50.0	Trigeminal neuralgia
Q28.2	Intracranial AVM

Stereotactic Body Radiation Therapy

CPT/HCPCS

61796	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); 1 simple cranial lesion
61797	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each additional cranial lesion, simple
61798	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); 1 complex cranial lesion
61799	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each additional cranial lesion, complex
63620	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); one spinal lesion
63621	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each add'l spinal lesion
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (Listed once only)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77370	Special medical radiation physics consultation
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

Stereotactic Radiosurgery

CPT/HCPCS

61796	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); 1 simple cranial lesion
61797	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each additional cranial lesion, simple
61798	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); 1 complex cranial lesion

61799	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each additional cranial lesion, complex
61800	Application of stereotactic headframe for stereotactic radiosurgery
63620	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); one spinal lesion
63621	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each add'l spinal lesion
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (Listed once only)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77370	Special medical radiation physics consultation
77371	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; multi-source Cobalt 60 based
77372	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; linear accelerator based
77432	Stereotactic radiation treatment management of cranial lesion(s) (complete course of treatment consisting of 1 session)
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses (SBRT/SRS)

C41.2	Malignant neoplasm vertebral column
G50.0	Trigeminal neuralgia
C69.30 - C69.32	Melanoma of choroid
C71.0 - C71.9	Malignant neoplasm of brain
C79.31 - C79.49	Secondary malignant neoplasm brain and spinal cord
D33.0 - D33.2	Benign brain lesions
D35.2	Pituitary adenoma
D35.4	Benign pineal tumor
Q28.2	Intracranial AVM

Brachytherapy

CPT/HCPCS

67218	Destruction of localized lesion of retina (eg, macular edema, tumors), 1 or more sessions; radiation by implantation of source (includes removal of source)
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77778	Interstitial radiation source application, complex, includes supervision, handling, loading of radiation source, when performed
77790	Supervision, handling, loading of radiation source

ICD-10 Diagnoses

C69.20 - C69.22	Retinoblastoma
C69.40 - C69.42	Uveal melanoma

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Colorectal and Anal Cancers

General Information

Commonly Used Modalities

External Beam Radiation Therapy

- 2D or 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)

Radiation Oncology Considerations

Anal Cancer

Cancers of the anal region are relatively rare, accounting for less than 3% of all digestive system cancers. They are almost always squamous cell carcinomas and are frequently associated with HPV infection. Because of the lymphatic drainage of this area, the inguinal lymph nodes are at risk and are commonly involved when lesions involve the area below the dentate line. Although these cancers have been treated with abdominoperineal resection in the past, the current standard of care is concomitant chemoradiotherapy with a fluoropyrimidine and either mitomycin or cisplatin. Doses of 45 Gy are given for early stage tumors. More advanced and node positive cancers are treated to doses of 54-59.4 Gy. IMRT techniques, which can reduce the toxicity associated with radiation, are preferred over 3D conformal techniques for the treatment of anal cancer and cancers of the anal canal. The radiation field includes the pelvis, the anus, the perineum, and the inguinal lymph nodes. Definitive treatment of anal cancers typically involves concurrent radiation and chemotherapy.

Palliative radiation with 3D conformal techniques is recommended for metastatic disease or to enhance local control of a symptomatic bulky primary.

Rectal Cancer

Colorectal cancer is much more common than anal cancer and is the second most common cause of cancer death. Rectal cancers, which occur below the peritoneal reflection, benefit from radiation therapy which has been shown to reduce local recurrence and improve survival. Radiation is generally given with 5-fluorouricil or capecitabine chemotherapy. Preoperative chemoradiation is preferable because it is better tolerated and improves the chance of sphincter sparing surgery in marginally resectable patients. Precision techniques like 3D conformal radiotherapy and IMRT have been shown to reduce the dose to bowel and minimize side effects. The radiation field should include the presacral nodes, internal iliac nodes, and external iliac nodes for T4 tumors. Typically, 45 Gy is given to the initial field with an additional 5.4 – 9 Gy being given to a cone down boost field. Short-course preoperative radiotherapy to a dose of 25 Gy is another alternative.

Colon Cancer

Radiation is not a standard part of local treatment for colon cancer but is incorporated into treatment for selected patients. It is generally used in situations where there is an elevated risk of local recurrence due to local invasion of the surrounding tissues. 3D conformal radiation is the standard option, and IMRT is reserved for repeat irradiation of previously treated patients.

Stereotactic radiation techniques have been considered in highly selected cases of limited hepatic metastases; however, surgical resection is the standard of care. Please see the section on hepatobiliary cancers for more guidance on the treatment of liver metastases.

For review of metastatic sites, please refer to specific guidelines for the appropriate location (e.g., CNS Cancers for brain metastases, Lung Cancer for lung metastases).

Clinical Indications

2D or 3D conformal is appropriate for colorectal cancers when ANY of the following conditions are met:

- Primary treatment of colon, rectal, and anal cancers (often in combination with chemotherapy)
- Palliation of metastatic disease, particularly to control symptoms

Anal cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for anal cancer when the following condition is met:

- Treatment of cancer of the anus and anal canal

Stereotactic Body Radiation Therapy (SBRT) is appropriate for anal cancer when the following condition is met:

- Only to treat a previously irradiated field

Rectal cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for rectal cancer when the following condition is met:

- Treatment of rectal adenocarcinoma

Stereotactic Body Radiation Therapy (SBRT) is appropriate for rectal cancer when the following condition is met:

- Only to treat a previously irradiated field

Colon cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for colon cancer when the following condition is met:

- Only to treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for colon cancer when the following condition is met:

- Only to treat a previously irradiated field

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms (3D Conformal treatment plan)

ICD-10 Diagnoses

Not specified

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (Listed once only)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
G6015	Intensity modulated Treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

C18.0 - C18.9	Malignant neoplasm of colon
C19 - C21.8	Malignant neoplasm rectum, rectosigmoid junction and anus
Z92.3	Personal history of irradiation

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (Listed once only)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses (SBRT/SRS)

Z92.3	Personal history of irradiation

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Gastrointestinal Cancers, Non-Colorectal: Cholangiocarcinoma, Esophageal, Gastric, Liver, Pancreatic

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D or 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)

Radiation Oncology Considerations

Esophageal Cancer

Esophageal cancers can be histologically classified as squamous cell carcinoma or adenocarcinoma. Squamous cancers are more common in the cervical and mid-thoracic esophagus while adenocarcinomas are more common in the distal esophagus and gastroesophageal junction. The latter are more common in Western countries and are associated with gastroesophageal reflux and Barrett's esophagus. Radiation therapy is a common part of the multidisciplinary treatment of esophageal cancers. Radiation can be used preoperatively, post-operatively, as primary therapy in conjunction with chemotherapy or as a palliative modality to improve swallowing. Long-term results of the CROSS randomized controlled trial of neoadjuvant chemoradiation followed by surgery showed improved survival compared to surgery alone. Radiation in that study was given with 3D conformal techniques. IMRT is still under active investigation for treatment of esophageal cancer. Retrospective comparisons have not demonstrated improved survival but have shown a decrease in grade 3 toxicities such as hospitalization, feeding tube placement and greater than 20% weight loss. IMRT should only be used in curative cases.

Gastric Cancer

Gastric cancer is relatively uncommon in the U.S. but is a common cause of cancer and cancer mortality worldwide. It is associated with Helicobacter pylori infection, smoking and heavy drinking. Gastric cancer frequently presents at an advanced stage. Chemoradiation has an established role in the adjuvant treatment of resected tumors based on the results of intergroup study 0116. Patients in that randomized study who received chemoradiation had improved survival compared to patients treated with surgery alone. Use of 3D treatment planning is recommended. Treatment recommendations depend on the tumor location and lymph node involvement. In addition to adjuvant post-operative treatment, radiation is used in a variety of clinical situations including preoperative treatment, in combination with chemotherapy, and as palliative therapy. Significant supportive care is required during a full course of treatment. No prospective studies of IMRT in gastric cancer have been published. Several institutions have noted improved dose distribution and better organ sparing with IMRT for stomach cancer. No survival advantage with IMRT has been reported.

Hepatobiliary Cancer

Hepatocellular carcinoma (HCC) and cholangiocarcinomas of the gallbladder, intrahepatic and extrahepatic bile ducts are relatively rare but lethal cancers of the liver and bile ducts. HCC is commonly associated with cirrhosis due to hepatitis and other factors. Although there are no prospective data on the use of IMRT for the treatment of these cancers, the liver is very sensitive to radiation therapy. IMRT may have a limited role in the treatment of

HCC and cholangiocarcinoma when 3D conformal therapy would result in unacceptable toxicity due to exposure of the liver and other surrounding normal tissues. There is growing literature support for the use of SBRT as a local treatment option for hepatocellular cancer. This technology remains under active investigation in many clinical situations, and more data is needed to clarify the role of SBRT. Patients should first be evaluated for potential curative therapy, such as resection, radiofrequency ablation (RFA), transcatheter arterial chemoembolization (TACE) or transplantation. Several studies have recently reported improved local control and PFS with SBRT versus treatment with RFA.

Selective Internal Radiation Therapy (SIRT) is also known as radioembolization. This technique targets the delivery of small beads or microspheres containing yttrium-90 to the tumor. It is used for palliation of liver tumors and is sometimes used as a bridge to liver transplantation.

Liver Metastases

Metastatic involvement of the liver can occur with many cancer types, especially in gastrointestinal malignancies. For limited disease, treatment options include surgical resection, radiofrequency ablation (RFA) and SBRT. There is also a role for palliative radiotherapy in more advanced disease. The use of stereotactic techniques to treat liver metastases is the subject of clinical trials. There are no randomized comparisons between RFA and SBRT. A single institution retrospective comparison of RFA (112 patients) with SBRT (170 patients) looked at freedom from local progression (FFLP). The median follow-up was 24.6 months. For tumors less than 2 cm, the two-year FFLP rate was 88.2% with SBRT vs 73.9% with RFA (P = .06). For lesions equal or greater than 2 cm, treatment with SBRT showed improved FFLP compared to RFA with a hazard ratio of 0.21 (P = .005). Survival and toxicity were similar. The authors concluded for tumors less than 2 cm both SBRT and RFA yield equivalent control but that for tumors 2 cm or greater SBRT is preferred over RFA.

Pancreatic Cancer

For the treatment of pancreatic cancer, radiation is recommended in the setting of unresectable or borderline resectable disease (neoadjuvant or definitive), adjuvant treatment after surgery, and palliation of symptoms. Outside of palliative care, radiation is traditionally administered concurrently with chemotherapy. There is no clear standard for neoadjuvant therapy, and multiple chemoradiotherapy options are available. 3D conformal radiation techniques are considered standard. A recent systematic review by Bittner compares outcomes and toxicity in patients treated with IMRT and 3D conformal radiotherapy for pancreatic adenocarcinoma. There were no apparent differences in overall or progression-free survival. Both nausea/vomiting and diarrhea were statistically lower with IMRT compared to 3D conformal, although the differences were modest (7.8% vs 13% and 2% vs 11.6%, respectively; P < .001 for both). Long-term grade 3 or greater GI toxicity was 5% with IMRT vs 10.6% with 3D (P = .017). Given the lack of improved outcomes, IMRT should only be used in curative cases where 3D conformal planning would result in unacceptable doses to surrounding normal tissues. Care should be taken to adhere to recommended target coverage and dose specifications as radiation quality has been shown to impact survival in several studies.

Initial experience with single fraction SBRT for unresectable pancreatic cancer resulted in favorable local control rates but high rates of late gastrointestinal complications. Subsequent studies using fractionated SBRT have shown lower rates of late toxicity. A recent retrospective review of locally advanced pancreatic cancer cases in the National Cancer Database (NCDB) compared outcomes between 7,819 patients treated with conventional radiation with outcomes in 631 patients treated with SBRT. Two-year overall survival was 16.3% with conventional radiation vs 20.3% in patients treated with SBRT (P < .001). This benefit was maintained in the propensity matched analysis. Another retrospective study compared outcomes in the NCDB between chemo alone, chemo plus EBRT, chemo plus IMRT and chemo plus SBRT. Median overall survival results were 9.9 months, 10.9 months, 12 months and 13.9 months, respectively. For the match propensity cohort, overall survival was superior with SBRT vs chemotherapy alone (P < .018). A recent systematic review and meta-analysis comparing conventional radiation with SBRT confirms these findings. The SBRT treated patients had a 2-year overall survival of 26.9% compared to 13.7% with conventionally fractionated radiotherapy. Acute toxicity was significantly lower for SBRT and late toxicity was equivalent. SBRT is considered medically necessary for the treatment of locally advanced, non-metastatic adenocarcinoma of the pancreas.

For review of other metastatic sites, please refer to specific guidelines for the appropriate location (e.g., CNS for brain metastases, Lung for lung metastases).

Clinical Indications

2D or 3D conformal is appropriate when ANY of the following conditions are met:

- Primary disease, with or without chemotherapy
- Metastatic disease, particularly for palliation of symptoms

Cholangiocarcinoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for curative treatment of cholangiocarcinoma when **EITHER** of the following conditions is met:

- Primary or postoperative treatment when there is no evidence of distant metastasis
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for cholangiocarcinoma when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy is appropriate for cholangiocarcinoma when the following condition is met:

- As adjuvant treatment after surgery for individuals with **ANY** of the following:
    - R1 resection (positive margin)
    - R2 resection (gross residual disease after resection)
    - Carcinoma in situ found at the surgical specimen margin

Esophageal cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for the curative treatment of esophageal cancer when **EITHER** of the following conditions is met:

- Primary or postoperative treatment when there is no evidence of distant metastasis
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for esophageal cancer when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy is appropriate for esophageal cancer when **ANY** of the following conditions are met:

- To treat a gross residual tumor or unresectable luminal lesion
- For palliative treatment of an obstructing tumor

Gastric cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for curative treatment of gastric cancer when **EITHER** of the following conditions is met:

- Primary or postoperative treatment when there is no evidence of distant metastasis
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for gastric cancer when the following condition is met:

- Only to treat a previously irradiated field

Liver cancer

Hepatocellular Carcinoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for the curative treatment of liver cancer when **EITHER** of the following conditions is met:

- Primary or postoperative treatment when there is no evidence of distant metastasis
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate when **ANY** of the following conditions are met:

- As palliative treatment for individuals with liver-related symptoms
- As treatment of up to 3 lesions, as an option to surgery or embolization when these therapies have been done and have failed, or are contraindicated, when **BOTH** of the following conditions are met:
    - Diameter less than 6 cm
    - Patients with Child-Pugh category A or B *(Note: SBRT has not been established as a safe treatment option in patients with Child-Pugh category C cirrhosis)*
- To treat a previously irradiated field

Liver Metastases

Intensity Modulated Radiation Therapy (IMRT) is appropriate for liver metastases when the following condition is met:

- Only to treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for liver metastases when **EITHER** of the following conditions is met:

- As palliative treatment for individuals with liver-related symptoms
- To treat a previously irradiated field

Pancreatic cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for the curative treatment of pancreatic cancer when **EITHER** of the following conditions is met:

- Primary or postoperative treatment when there is no evidence of distant metastasis
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for pancreatic cancer when **EITHER** of the following conditions is met:

- To treat locally advanced or recurrent disease without evidence of distant metastasis
- To treat a previously irradiated field

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms (3D Conformal treatment plan)

ICD-10 Diagnoses

Not specified

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
G6015	Intensity modulated Treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

C15.3 - C15.9	Malignant neoplasm esophagus
C16.0 - C16.9	Malignant neoplasm stomach
C22.0	Hepatocellular carcinoma
C22.1	Cholangiocarcinoma
C24.0	Malignant neoplasm extrahepatic bile ducts
C25.0 - C25.9	Malignant neoplasm pancreas
C78.7	Secondary malignancy, liver
Z92.3	Personal history of irradiation

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (Listed once only)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses (SBRT/SRS)

C22.0	Hepatocellular carcinoma
C78.7	Secondary malignancy, liver
Z51.5	Encounter for palliative care
Z92.3	Personal history of irradiation

Brachytherapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77761	Intracavitary radiation source application; simple
77762	Intracavitary radiation source application; intermediate
77763	Intracavitary radiation source application; complex
77770	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 1 channel
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 2-12 channels
77772	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; over 12 channels

ICD-10 Diagnoses

C15.3 - C15.9	Malignant neoplasm esophagus
C22.1	Cholangiocarcinoma
C24.0	Malignant neoplasm extrahepatic bile ducts
D00.1	Carcinoma in-situ, esophagus

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Genitourinary Cancers: Bladder, Penile, and Testicular

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D and 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)

Radiation Oncology Considerations

Bladder Cancer

Bladder cancers arise in the transitional urothelium which lines the urinary bladder. About two-thirds of these do not invade the muscle layer at the time of diagnosis and are treated with transurethral resection (TURBT) with or without instillation of an intravesical adjuvant therapy such as BCG, mitomycin or gemcitabine. Muscle invasive cancer requires more aggressive treatment. The standard of care is radical cystectomy. Postoperative radiotherapy is indicated for T3 or T4 tumors and when there is involvement of the pelvic lymphatics. Bladder preservation therapy with concurrent chemoradiotherapy is an alternative for highly motivated patients after maximal TURBT and results in 60%-80% rates of functional bladder sparing. In the palliative setting, radiation alone is an effective treatment for hematuria. For definitive therapy, it is recommended to treat the whole bladder to 40-45 Gy followed by a boost to the bladder tumor to a total dose up to 66 Gy excluding, if possible, normal areas of the bladder from the boost volume. When high doses of radiotherapy are given, IMRT is often indicated to minimize the dose to pelvic organs at risk, especially the small bowel.

Penile Cancer

Penile cancer is rare and requires multidisciplinary management. Brachytherapy is the preferred approach in selected cases of early stage penile cancers. Concurrent chemoradiotherapy as primary treatment, or after surgery is recommended for larger tumors and when there is nodal involvement. Radiation may also be used when surgical margins are positive.

Testicular Cancer

Following inguinal orchiectomy for early stage pure seminoma, there is an approximately 15% risk of recurrence in the para- aortic lymph nodes. External beam radiation significantly reduces this risk and is an option to surveillance or single agent chemotherapy in stage I disease. Radiation to the para-aortic and ipsilateral iliac nodes is an alternative to chemotherapy in individuals with stage IIA and IIB disease. IMRT is not recommended for treatment of pure testicular seminomas due to the low doses given and the increased risk of secondary malignancy in the kidney, liver, or bowel with IMRT. Radiation is not a standard component in the treatment of non-seminomatous testicular cancer. For review of metastatic sites, please refer to specific guidelines for the appropriate location (e.g., Central Nervous System Cancers for brain metastases, Lung Cancer for lung metastases).

Clinical Indications

2D or 3D conformal is appropriate for genitourinary cancers when ANY of the following conditions are met:

- Primary disease, with or without chemotherapy, particularly to irradiate inguinal and/or pelvic lymph nodes
- Metastatic disease, particularly for palliation of symptoms

Bladder cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for bladder cancer when **ALL** of the following conditions are met:

- To treat primary, non-metastatic bladder carcinoma
- Treatment intent is curative

Stereotactic Body Radiotherapy (SBRT) is appropriate for bladder cancer when the following condition is met:

- Only to treat a previously irradiated field

Penile cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for penile cancer when the following condition is met:

- Only to treat a previously irradiated field

Stereotactic Body Radiotherapy (SBRT) is appropriate for penile cancer when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy is appropriate for penile cancer when the following condition is met:

- Squamous cell carcinoma, confined to the glans or prepuce when (**BOTH must be met**)
    - Tumor size is less than or equal to 4 cm
    - Inguinal lymph nodes are uninvolved or unable to be assessed (NO or NX)

Testicular cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for testicular cancer when the following condition is met:

- Only to treat a previously irradiated field

Stereotactic Body Radiotherapy (SBRT) is appropriate for testicular cancer when the following condition is met:

- Only to treat a previously irradiated field

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms

ICD-10 Diagnoses

Not specified

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
G6015	Intensity modulated Treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

C67.0 - C67.9	Malignant neoplasm bladder
Z92.3	Personal history of irradiation

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (Listed once only)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses (SBRT/SRS)

Z92.3	Personal history of irradiation

Brachytherapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77761	Intracavitary radiation source application; simple
77762	Intracavitary radiation source application; intermediate
77763	Intracavitary radiation source application; complex
77770	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 1 channel
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, performed; 2-12 channels
77772	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; over 12 channels
77778	Interstitial radiation source application, complex, includes supervision, handling, loading of radiation source, when performed

ICD-10 Diagnoses

C60.0 - C60.9	Malignant neoplasm penis and other male genital organs

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Gynecologic Cancers: Cervical, Fallopian Tube, Ovarian, Uterine, and Vulvar/Vaginal

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D or 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)

Radiation Oncology Considerations

Brachytherapy is considered standard of care in the treatment of many gynecologic malignancies, and both high dose rate (HDR) and low dose rate (LDR) brachytherapy treatments are used.

External beam radiation is used in many clinical situations to treat pelvic tissues and regional lymph nodes. With significant toxicity constraints, particularly gastrointestinal and urologic toxicity, IMRT is often the recommended modality.

IMRT is not routinely recommended for palliative treatment of symptoms in the setting of advanced disease.

Cervical Cancer

In the U.S., cervical cancer is relatively uncommon. About 80% of cases are squamous cell carcinoma. Human papilloma virus (HPV) infection is known to increase the risk of cervical cancer and this had led to development of a vaccine to prevent the disease. Early stage cervical cancer can be treated with either surgery or radiation. More advanced disease is treated with concurrent chemoradiotherapy followed by brachytherapy. If high risk features are found at the time of surgery, adjuvant postoperative radiotherapy is indicated. IMRT is helpful in minimizing radiation dosage to the critical structures in the pelvis, particularly the bowel. Compared to 3D conformal radiotherapy, IMRT has been shown to reduce the incidence of acute and chronic gastrointestinal side effects and also lower the risk of bowel obstruction.

External beam radiation techniques should not be considered alternatives to brachytherapy for an intact cervix.

Brachytherapy is commonly incorporated into the definitive management of cervical cancer. For treatment of the intact cervix, tandem and ovoid or tandem and ring applicators are most often used. For more advanced cases, interstitial implants may be required. Brachytherapy can be delivered with either low dose rate (LDR) or high dose rate (HDR) techniques. When LDR brachytherapy is used, two applications are typically performed. For HDR treatment, up to six fractions are appropriate. Brachytherapy can be used alone for very early stage cervical cancer. More commonly, brachytherapy is used as a boost following external beam radiotherapy. When tumors are not adequately dosed with brachytherapy, completion hysterectomy may be of benefit. Concurrent platinum-based chemotherapy has been shown to improve survival compared to radiotherapy alone for early stage high-risk disease as well as advanced stage disease. Chemoradiotherapy has been shown to be more effective than radiotherapy alone in the adjuvant setting in intermediate and high-risk patients but with increased toxicity.

Uterine Neoplasms

Endometrial cancers arise in the uterine lining and commonly present as post-menopausal bleeding. They are more common than cervical cancer with approximately 55,000 cases per year. The primary treatment for endometrial cancer is surgery. Primary radiation can be used in patients who are not surgical candidates.

Adjuvant radiation therapy has been shown to decrease recurrences in women at risk. Risk factors for recurrence include age, depth of myometrial invasion, tumor grade and presence of lymphovascular invasion. Most recurrences are in the vaginal cuff. External beam radiation therapy targets any gross disease present, the parametrial regions, upper vaginal and paravaginal tissues, as well as pelvic lymph nodes (lower common iliac, external iliac, internal iliac, presacral). IMRT techniques reduce the radiation dose to nearby critical pelvic structures, such as small bowel. The use of IMRT was associated with a significant decrease in grade 3 late effects and other adverse events in both the PARCER and PORTEC-3 studies comparing IMRT to 3-dimensional conformal radiotherapy. External pelvic radiotherapy is the preferred treatment for stage IB grade 3 lesions and patients with involved nodes. A brachytherapy boost is appropriate for patients with endocervical or cervical stromal involvement. Whether external radiotherapy can be replaced by vaginal brachytherapy and chemotherapy for high-risk stage I and stage II patients is currently being studied by the GOG. Vaginal brachytherapy alone is preferred for most other stage I patients based on the results of the PORTEC-2 randomized trial, although EBRT may be reasonable for those at especially high risk of LRR. As advocated in the 2014 Choosing Wisely campaign, stage IA patients with grade 1 or 2 disease and no other risk factors should be observed.

Regarding electronic brachytherapy, the American Brachytherapy Society states that “it is not recommended that electronic brachytherapy be utilized for accelerated partial breast irradiation, non-melanomatous skin cancers, or vaginal cuff brachytherapy outside prospective clinical trials at this time.”

Uterine sarcomas are rare tumors arising in muscle or connective tissue. Postoperative radiation therapy is recommended for patients at high risk for pelvic recurrence after surgery. As with other gynecologic cancers, IMRT may be used to reduce the dose to the small bowel.

Ovarian Cancer

Radiation therapy is no longer a common component of initial treatment or consolidative therapy for primary epithelial ovarian cancer treatment. Standard of care includes surgical resection or debulking and systemic chemotherapy. Palliative radiation remains an option to manage symptoms in recurrent or metastatic disease.

For review of metastatic sites, please refer to specific guidelines for the appropriate location (e.g., Central Nervous System Cancers for brain metastases and Lung Cancer for lung metastases).

Clinical Indications

2D or 3D conformal is appropriate for gynecologic cancers when ANY of the following conditions are met:

- Primary disease, with or without chemotherapy, particularly to irradiate inguinal and/or pelvic lymph nodes
- Metastatic disease, particularly for palliation of symptoms

Cervical cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for cervical cancer when the following condition is met:

- To treat primary cervical cancer

Stereotactic Body Radiation Therapy (SBRT) is appropriate for cervical cancer when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy is appropriate for cervical cancer when the following condition is met:

- To treat primary cervical cancer

Note: Electronic brachytherapy is considered not medically necessary.

Fallopian tube cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for fallopian tube cancer when the following condition is met:

- To treat primary fallopian tube cancer

Stereotactic Body Radiation Therapy (SBRT) is appropriate for fallopian tube cancer when the following condition is met:

- Only to treat a previously irradiated field

Ovarian cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for ovarian cancer when the following condition is met:

- To treat primary ovarian cancer

Stereotactic Body Radiation Therapy (SBRT) is appropriate for ovarian cancer when the following condition is met:

- Only to treat a previously irradiated field

Uterine neoplasms (endometrial carcinoma, uterine sarcoma, uterine carcinosarcoma)

Intensity Modulated Radiation Therapy (IMRT) is appropriate for uterine neoplasms when the following condition is met:

- To treat individuals with cancer of the uterus, including uterine sarcoma and endometrial carcinoma

Stereotactic Body Radiation Therapy (SBRT) is appropriate for uterine neoplasms when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy is appropriate for uterine neoplasms when the following condition is met:

- To treat individuals with cancer of the uterus, including uterine sarcoma and endometrial carcinoma

Note: Electronic brachytherapy is considered not medically necessary.

Vulvar/Vaginal cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for vulvar/vaginal cancer when the following condition is met:

- To treat vulvar/vaginal cancer

Stereotactic Body Radiation Therapy (SBRT) is appropriate for vulvar/vaginal cancer when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy is appropriate for vulvar/vaginal cancer when the following condition is met:

- To treat individuals with vaginal or vulvar cancer

Exclusions

Indications other than those addressed in this guideline are considered **not medically necessary** including, but not limited to:

- Electronic brachytherapy

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms

ICD-10 Diagnoses

Not specified

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
G6015	Intensity modulated Treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

C51.0 - C51.9	Malignant neoplasm vulva
C52	Malignant neoplasm vagina
C53.0 - C53.9	Malignant neoplasm cervix
C54.0 - C55	Malignant neoplasm uterus
C56.1 - C56.9	Malignant neoplasm ovary
C57.00 - C57.02	Malignant neoplasm fallopian tube
C57.7 - C57.9	Malignant neoplasm other and unspecified female genital organs
Z92.3	Personal history of irradiation

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation

77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses

Z92.3	Personal history of irradiation

Brachytherapy

CPT/HCPCS

55920	Placement of needles or catheters into pelvic organs and/or genitalia (except prostate) for subsequent interstitial radioelement application
57155	Insertion of uterine tandem and/or vaginal ovoids for clinical brachytherapy
57156	Insertion of a vaginal radiation afterloading apparatus for clinical brachytherapy
58346	Insertion of Heyman capsules for clinical brachytherapy
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77761	Intracavitary radiation source application; simple
77762	Intracavitary radiation source application; intermediate
77763	Intracavitary radiation source application; complex
77770	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 1 channel
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 2-12 channels
77772	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; over 12 channels
77778	Interstitial radiation source application, complex, includes supervision, handling, loading of radiation source, when performed
0394T	HDR electronic brachytherapy, skin surface application, per fraction
0395T	HDR electronic brachytherapy, interstitial or intracavitary treatment, per fraction

ICD-10 Diagnoses

C51.0 - C51.9	Malignant neoplasm vulva
C52	Malignant neoplasm vagina
C53.0 - C53.9	Malignant neoplasm cervix
C54.0 - C55	Malignant neoplasm uterus
D06.0 - D06.9	Carcinoma in situ of cervix uteri
D07.0	Carcinoma in situ of endometrium
D07.1	Carcinoma in situ of vulva
D07.2	Carcinoma in situ of vagina
D07.39	Carcinoma in situ of other female genital organs [uterus]

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Head and Neck Cancers (including Thyroid)

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D or 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)

Radiation Oncology Considerations

Head and Neck Cancers are defined as cancers of the lip, oral cavity, oropharynx, hypopharynx, nasopharynx, glottic larynx, supraglottic larynx, ethmoid and maxillary sinus, nasal cavity, salivary glands (including Parotid), Mucosal Melanoma, and Head and Neck occult primary.

IMRT has demonstrated improvement for Head and Neck cancer irradiation by reducing long-term side effects in the oropharyngeal, paranasal sinus, and nasopharyngeal cancers by reducing the dose to salivary glands, temporal lobes, auditory and optic structures. The use of IMRT to other regions has similar benefits and may be administered at the discretion of the ordering physician. However, the use of IMRT for early stage (stages I, II) glottic cancer has not been well established. Definitive or consolidative radiation for head and neck lymphomas often includes similar anatomic targets the other head and neck malignancies and IMRT may be considered medically necessary to spare salivary function and prevent permanent xerostomia.

Differentiated thyroid cancers are most often treated with surgical resection, with or without radioactive iodine (RAI). External beam radiation is used in a variety of clinical situations, including inadequate RAI uptake, unresectable or incompletely resected disease, locoregional recurrence, and metastatic disease.

Anaplastic thyroid cancer represents a highly lethal malignancy, with no clearly effective treatment protocols. External beam radiation, with or without chemotherapy, may improve short-term survival, and can be used to palliate symptoms, particularly airway obstruction. IMRT techniques have been shown to reduce toxicity.

For review of metastatic sites, please refer to specific guideline section for the appropriate location (e.g., Central Nervous System Cancers for brain metastases, Lung Cancers for lung metastases).

Clinical Indications

2D or 3D conformal is appropriate for head and neck cancer when ANY of the following conditions are met:

- Primary disease, with or without chemotherapy
- Metastatic disease, particularly for palliation of symptoms

Head and neck

Intensity Modulated Radiation Therapy (IMRT) is appropriate for head and neck cancers when **ANY** of the following conditions are met:

- Glottic cancer, stage III and IV
- Other advanced head and neck cancers
- Lymphomas of the head and neck region
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for head and neck cancer when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy is appropriate for head and neck cancer when the following condition is met:

- To treat cancers including cancers of the lip, oral cavity, tongue (particularly base of tongue), tonsils, sinuses, nasopharynx, pharynx, and other neck cancers

Neutron therapy is appropriate for head and neck cancer when the following condition is met:

- To treat a primary salivary gland cancer which is inoperable or recurrent

Thyroid

Intensity Modulated Radiation Therapy (IMRT) is appropriate for head and neck cancer when **ANY** of the following conditions are met:

- Anaplastic thyroid cancer
- To treat node-positive or node-recurrent thyroid cancer requiring external beam radiation treatment
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for head and neck cancer when the following condition is met:

- Only to treat a previously irradiated field

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms

ICD-10 Diagnoses

Not specified

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

Neutron Therapy

CPT/HCPCS

77423	High energy neutron radiation treatment delivery, 1 or more isocenter(s)

Brachytherapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77761	Intracavitary radiation source application; simple
77762	Intracavitary radiation source application; intermediate
77763	Intracavitary radiation source application; complex
77770	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 1 channel
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 2-12 channels
77772	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; over 12 channels

77778	Interstitial radiation source application, complex, includes supervision, handling, loading of radiation source, when performed

All Modalities except Stereotactic Body Radiation Therapy

ICD-10 Diagnoses

**Note: Neutron therapy only applies to C07 - C08.9 and Z92.3.*

C00.0 - C00.9	Malignant neoplasm of the lip
C01 - C02.9	Malignant neoplasm of tongue
C03.0 - C03.9	Malignant neoplasm of gum
C04.0 - C04.9	Malignant neoplasm of floor of mouth
C06.0 - C06.9	Malignant neoplasm of other and unspecified parts of mouth
*C07 - C08.9	Malignant neoplasm of major salivary glands
C09.0 - C10.9	Malignant neoplasm of tonsil and oropharynx
C11.0 - C11.9	Malignant neoplasm of nasopharynx
C13.0 - C14.8	Malignant neoplasm of hypopharynx, other and ill-defined sites in the lip, oral cavity and pharynx
C30.0 - C31.9	Malignant neoplasm of nasal cavity, middle ear and accessory sinuses
C32.0 - C32.9	Malignant neoplasm of larynx
C73	Malignant neoplasm of thyroid gland
C76.0	Malignant neoplasm of other and ill-defined sites of head, face and neck
*Z92.3	Personal history of irradiation

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Lung Cancer: Small Cell and Non-Small Cell

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D or 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)

Radiation Oncology Considerations

Radiation therapy has a potential role for the treatment of lung cancers in all stages of disease.

For non-small cell lung cancer, radiation may be used as an adjunct to surgery. It may also serve as definitive therapy in unresectable disease. For unresectable stage II and III disease, concurrent chemoradiotherapy is considered standard of care, when tolerated. 3D conformal radiation typically provides optimal coverage of tumor volumes. IMRT may improve dose-volume constraints, but at the expense of increasing the volume of normal tissue exposed to low doses of radiation. If normal tissue tolerances would be exceeded with 3D conformal planning, IMRT is considered medically necessary.

The optimal dose and fractionation for both definitive and palliative treatment of non-small cell lung cancer has been the subject of numerous clinical investigations. Based on several earlier phase I/II trials of dose escalation, RTOG 0617 compared standard-dose (60 Gy) with high-dose (74 Gy) conformal radiotherapy given concurrently with carboplatin and paclitaxel chemotherapy with and without the addition of cetuximab. There was no benefit from the use of cetuximab in either arm. Overall survival was better in the standard-dose arms (28.7 vs 20.3 mos, $P < .004$). Standard-dose radiotherapy also resulted in better median progression-free survival (11.8 vs 9.8 mos), lower risk of severe esophagitis (7% vs 21%; $P < .0001$) and fewer treatment-related deaths. ASTRO recently published an evidence-based clinical practice guideline which concluded that the ideal external beam dose fractionation for curative intent chemoradiotherapy for non-small cell lung cancer is 60 Gy given in 2 Gy once daily fractions over 6 weeks. Dose escalation beyond 60 Gy was not recommended outside the setting of clinical trial. This guideline has also been endorsed by ASCO. When used without concurrent chemotherapy, the guideline recommends a minimum dose of 60 Gy.

In metastatic NSCLC where palliative treatment is being considered, the goal is to strike a balance between symptom relief, local control and treatment toxicity. ASTRO published a comprehensive evidence-based guideline on palliative radiotherapy in lung cancer. The guideline concluded that higher-dose/fractionation regimens (30-Gy/10-fraction or higher) may benefit patients with good performance status. These higher dose regimens are associated with significant adverse effects such as esophagitis. Shorter course treatment is recommended for patients with poor performance status. Despite this recommendation, Koshy et al. found that almost half of stage IV lung cancer patients received inappropriately high doses of radiation (defined as more than 15 fractions). A recent update of the ASTRO guideline now supports concurrent chemoradiotherapy with a platinum doublet in stage III patients with ECOG performance status of 0-2 and a life expectancy of at least 3 months.

Stereotactic radiation may be used as definitive therapy in earlier stages of disease for patients who may not be candidates for invasive surgery. Even for operable patients, stereotactic radiation has been shown to be non-inferior to video-assisted thoracoscopic resections with mediastinal lymph node dissections (VATS L-MLND). Chang et al. reported a 3-year overall survival rate of 91% with SBRT which was the same OS rate reported with VATS L-MLND. Stereotactic radiation may also be recommended for local palliation or prevention of symptoms

such as hemoptysis, obstruction, or pain. There is an emerging role for SBRT to treat oligometastatic disease (3 or fewer metastatic lesions). Please refer to the Oligometastatic Disease section for further discussion.

Radiation therapy is also used in all stages of small cell lung cancer, either as definitive treatment in combination with chemotherapy, or as palliative therapy. Concurrent chemotherapy is preferred to sequential chemotherapy with RT. Target volumes are best defined with pretreatment PET/CT obtained at the time of radiotherapy planning. Consolidative thoracic radiation may be beneficial to select patients with extensive stage disease who have significant responses to standard chemotherapy. Hyperfractionated radiation given twice daily has been shown to improve survival compared to conventionally fractionated treatment.

ASTRO has published a clinical guideline on the use of radiation therapy to treat small cell lung cancer. In that guideline, there is a strong recommendation based on moderate quality evidence that inoperable patients with stage I or node negative stage II disease can be treated with either SBRT or conventionally fractionated radiotherapy.

The utility of 2D radiation is likely limited to palliative treatment of metastatic disease.

The minimum standard used to treat intrapulmonary lesions is 3D conformal, with CT planning. PET/CT is noted to significantly improve targeting accuracy. Tumor motion should be accounted for.

The clinically appropriate use of more advanced modalities, such as IMRT and SBRT, are limited to specific clinical scenarios. It is the responsibility of the Radiation practice to create optimal treatment plans when evaluating modality choices for treatment.

For review of metastatic sites, please refer to specific guideline section for the appropriate location (e.g., Central Nervous System Cancers for brain metastases and Lung Cancer for lung metastases).

Clinical Indications

2D or 3D conformal is appropriate for lung cancer when ANY of the following conditions are met:

- Primary lung cancers, for adjuvant, neoadjuvant, or definitive local treatment
- Palliation of metastatic lesions in the lung particularly symptomatic tumors requiring local control
- Prophylactic cranial irradiation (PCI), when indicated (see also CNS guideline)

Primary Lung Cancers

Non-small cell lung cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for non-small cell lung cancer when **ANY** of the following conditions are met:

- For adjuvant or definitive treatment of stage I and II disease in the curative setting
    - When a 3D plan has been performed and dose-volume constraints would lead to unacceptable risk for normal lung tissue toxicity such that (**ALL must apply**)
        - V20 exceeds 30% with 3D conformal plan (the percent of normal tissues receiving 20 Gy or more accounts for more than 30% of normal lung)
        - The comparison of the 3D conformal plan and the IMRT plan demonstrates that the IMRT plan will reduce the V20 by 10% as compared to the 3D conformal plan
        - V5 would be less than 65% (the percent of normal tissues receiving 5 Gy or more accounts for less than 65% of normal lung) with IMRT
        - Tumor motion has been accounted for during planning

    - When a 3D plan has been performed and dose-volume constraints would lead to unacceptable risk of cardiac toxicity (**ANY constraint below is exceeded**)
        - More than 50% of the heart receives 30 Gy (V30 > 50%)
        - More than 35% of the heart receives 45 Gy (V45 > 35%)
        - More than 25% of the heart receives 50 Gy (V50 > 25%)
        - More than 10% of the left anterior descending artery (LAD) receives 15 Gy (V15 > 10%)
- For adjuvant or definitive treatment of stage III disease in the curative setting
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for non-small cell lung cancer when **ANY** of the following conditions are met:

- As an alternative to surgical resection when (**ALL must apply**)
    - Treatment intent is cure
        - There is no evidence of nodal or distant metastases based on conventional staging techniques (Stage IA, IB, or IIA with negative lymph nodes)
    - Single lesion measuring less than or equal to 5 cm
    - Lesion is inoperable for **EITHER** of the following reasons:
        - Tumor location
        - Individual is not a surgical candidate
- To treat a previously irradiated field

Endobronchial Brachytherapy is appropriate for non-small cell lung cancer when **ANY** of the following conditions are met:

- Treatment of unresectable primary bronchial tumors that cannot be addressed by standard external beam radiotherapy techniques
- Palliative treatment of obstructing endobronchial tumors

Small cell lung cancer

Intensity Modulated Radiation Therapy (IMRT) is appropriate for small cell lung cancer when **ANY** of the following conditions are met:

- For definitive treatment in the curative setting
    - When a 3D plan has been performed and dose-volume constraints would lead to unacceptable risk for normal lung tissue toxicity such that (all must apply)
        - V20 exceeds 30% with 3D conformal plan (the percent of normal tissues receiving 20 Gy or more accounts for more than 30% of normal lung)
        - The comparison of the 3D conformal plan and the IMRT plan demonstrates that the IMRT plan will reduce the V20 by 10% as compared to the 3D conformal plan
        - V5 would be less than 65% (the percent of normal tissues receiving 5 Gy or more accounts for less than 65% of normal lung) with IMRT
        - Tumor motion has been accounted for during planning
    - When a 3D plan has been performed and dose-volume constraints would lead to unacceptable risk of cardiac toxicity (**ANY constraint below is exceeded**)
        - More than 50% of the heart receives 30 Gy (V30 > 50%)

        - More than 35% of the heart receives 45 Gy (V45 > 35%)
        - More than 25% of the heart receives 50 Gy (V50 > 25%)
        - More than 10% of the left anterior descending artery (LAD) receives 15 Gy (V15 > 10%)
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for small cell lung cancer when **ANY** of the following conditions are met:

- As an alternative to surgical resection when (**ALL must apply**)
    - Treatment intent is cure
        - There is no evidence of nodal or distant metastases based on conventional staging techniques (Stage IA, IB, or IIA with negative lymph nodes)
    - Single lesion measuring less than or equal to 5 cm
    - Lesion is inoperable for **EITHER** of the following reasons:
        - Tumor location
        - Individual is not a surgical candidate
- To treat a previously irradiated field

Endobronchial Brachytherapy is appropriate for small cell lung cancer when **ANY** of the following conditions are met:

- Treatment of unresectable primary bronchial tumors that cannot be addressed by standard external beam radiotherapy techniques
- Palliative treatment of obstructing endobronchial tumors

Metastatic Lesions in the Lung

Intensity Modulated Radiation Therapy (IMRT) is appropriate for metastatic lesions in the lung when the following condition is met:

- Only to treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for metastatic lesions in the lung when **EITHER** of the following conditions is met:

- To treat oligometastatic disease (see separate section)
- To treat a previously irradiated field

Note: When SRS/SBRT is being requested to treat a patient with oligometastatic disease with potentially curative intent, please refer to separate criteria in the Oligometastatic Extracranial Disease section of the Guidelines.

Endobronchial Brachytherapy is appropriate for metastatic lesions in the lung when the following condition is met:

- For palliative treatment of obstructing endobronchial tumors

Fractionation

For the treatment of stage I–III non-small cell lung cancer with concurrent chemoradiotherapy, up to 35 fractions of thoracic radiotherapy are considered medically necessary.

For the palliative treatment of stage IV non-small cell lung cancer, up to 15 treatments of thoracic radiotherapy are considered medically necessary.

For the curative treatment of stage IV non-small cell lung cancer in a patient with oligometastatic disease, up to 35 treatments of thoracic radiotherapy are considered medically necessary.

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77402	Radiation treatment delivery, > 1 MeV; simple.
77407	Radiation treatment delivery, > 1 MeV; intermediate.
77412	Radiation treatment delivery, > 1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV

G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

ICD-10 Diagnoses

C34.00 - C34.92	Malignant neoplasm of bronchus and lung
C78.00 - C78.02	Secondary malignant neoplasm of lung

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
G6015	Intensity modulated treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

C34.00 - C34.92	Malignant neoplasm of bronchus and lung
C78.00 - C78.02	Secondary malignant neoplasm of lung

Stereotactic Body Radiation Therapy

CPT/HCPCS

32701	Thoracic target(s) delineation for stereotactic body radiation therapy (SRS/SBRT)
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses

C34.00 - C34.92	Malignant neoplasm of bronchus and lung
C78.00 - C78.02	Secondary malignant neoplasm of lung
D02.20 - D02.22	Carcinoma in situ bronchus and lung
Z51.5	Encounter for palliative care
Z53.09	Surgery contraindicated

Z92.3	Personal history of irradiation

Brachytherapy

CPT/HCPCS

31643	Bronchoscopy, rigid or flexible, including fluoroscopic guidance, when performed; with placement of catheter(s) for intracavitary radioelement application
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77761	Intracavitary radiation source application; simple
77762	Intracavitary radiation source application; intermediate
77763	Intracavitary radiation source application; complex
77770	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 1 channel
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 2-12 channels

ICD-10 Diagnoses

C34.00 - C34.	Malignant neoplasm of bronchus and lung
C78.00 - C78.02	Secondary malignant neoplasm of lung
Z51.5	Encounter for palliative care

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Lymphoma: Hodgkin and Non-Hodgkin

General Information

Commonly Used Modalities

External Beam Radiation Therapy

- 2D or 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)
- Stereotactic Radiosurgery (SRS)

Radiation Oncology Considerations

Hodgkin Lymphoma

Hodgkin lymphoma is a malignancy of the lymphatic system with distinct clinical and pathologic features which set it apart from non-Hodgkin lymphoma. The disease commonly affects lymph nodes in the mediastinum but can affect nodes and other lymphatic organs throughout the body. Occasionally, the bone marrow and liver are also involved. Pathologically, Hodgkin lymphoma is characterized by the presence of characteristic lymphocytes called Reed-Sternberg cells.

There are four distinct subtypes of Hodgkin lymphoma. About 80% of cases are termed nodular sclerosis Hodgkin lymphoma. The other types include lymphocyte-predominant, mixed cellularity and lymphocyte-depleted Hodgkin lymphoma. Over the years, treatment has evolved from radiotherapy or chemotherapy alone to a risk adapted approach of chemotherapy and involved site radiotherapy. Treatment intensity is also guided by treatment response on PET scan performed after multiple cycles of chemotherapy.

For favorable stage I and II disease, 20-30 Gy of involved site radiotherapy is given after chemotherapy. For bulky disease at presentation, doses of 30-36 Gy are appropriate. Although these doses are generally below the dose tolerance of the surrounding normal tissues, there are situations where advanced planning techniques are likely to result in a meaningful decrease in late toxicity from radiotherapy. Koeck et al. published a planning comparison of 3D vs IMRT for patients with unfavorable mediastinal Hodgkin lymphoma and found reduced mean heart and spinal cord doses with IMRT. Doses to the lungs and breasts were higher with 3D conformal radiation. The most pronounced benefits were seen in patients with lymph nodes anterior to the heart. Since IMRT has been shown to increase low dose exposure to the breasts and lungs, the potential benefit of cardiac sparing needs to be weighed against increased risks of breast and lung cancer, especially in female patients. The role of IMRT in the treatment of non-mediastinal Hodgkin lymphoma has not been studied and therefore IMRT in these cases is considered not medically necessary.

Non-Hodgkin Lymphoma

Non-Hodgkin lymphoma (NHL) is a cancer arising in lymphocytes and includes all subtypes except Hodgkin lymphoma (described below). The disease most commonly involved B-cells but can involve other types of lymphocytes. Historically, lymphomas have been grouped based on histology into low grade, intermediate grade and high grade. Advances in tumor phenotyping have allowed more sophisticated subtyping to guide treatment.

Specific treatment depends on the grade and extent of disease. Treatments may include chemotherapy, immunotherapy or other targeted therapy, radiation therapy and stem cell transplantation. Some asymptomatic follicular (low grade) lymphomas may not require active treatment. In other cases, involved site radiotherapy alone or in combination with systemic therapy is used. Doses range from 20-36 Gy. Stage I and II diffuse large B-cell lymphoma is typically treated with combined chemotherapy and radiotherapy. The dose to the involved site is guided by the response to 3-6 cycles of R-CHOP chemotherapy. Doses of 30-36 Gy are given to consolidate

complete responses while doses of 40-50 Gy are used to treat partial responses. Radiotherapy is also applied to bulky sites of involvement after chemotherapy in stage III and IV lymphoma. Lymphoma including mucosal associated (MALT) lymphomas, mantle cell lymphoma, Burkitt's lymphoma and others may involve radiotherapy with doses up to 45 Gy as part of the treatment.

Because the doses of radiation needed for non-Hodgkin lymphoma are lower than doses used for most other types of cancer, the need for advanced planning techniques such as intensity modulated radiation therapy (IMRT) is limited. As with Hodgkin lymphoma, IMRT is appropriate for mediastinal disease and head and neck presentations due to the proximity of the target to sensitive normal structures. For other sites there are limited data regarding IMRT; therefore, it is considered not medically necessary.

Clinical Indications

2D or 3D conformal

2D or 3D conformal is appropriate for Hodgkin and non-Hodgkin lymphoma when **ANY** of the following conditions are met:

- Primary therapy
- Consolidative treatment after chemotherapy

Intensity Modulated Radiation Therapy (IMRT)

Intensity Modulated Radiation Therapy (IMRT) is appropriate for Hodgkin and non-Hodgkin lymphoma when **ANY** of the following conditions are met:

- Hodgkin lymphoma involving the mediastinum
- Non-Hodgkin lymphoma involving the mediastinum
- Lymphomas of the head and neck region (see Head and Neck section)

Stereotactic Body Radiation Therapy (SBRT) or Stereotactic Radiosurgery (SRS)

Stereotactic Body Radiation Therapy (SBRT) or Stereotactic Radiosurgery (SRS) is appropriate for Hodgkin and non-Hodgkin lymphoma when the following condition is met:

- To treat a previously irradiated field

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms

ICD-10 Diagnoses

Not specified

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
G6015	Intensity modulated treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

Hodgkin lymphoma, intrathoracic lymph nodes

C81.02	Nodular lymphocyte predominant Hodgkin lymphoma, intrathoracic lymph nodes
C81.12	Nodular sclerosis Hodgkin lymphoma, intrathoracic lymph nodes
C81.22	Mixed cellularity Hodgkin lymphoma, intrathoracic lymph nodes
C81.32	Lymphocyte depleted Hodgkin lymphoma, intrathoracic lymph nodes
C81.42	Lymphocyte-rich Hodgkin lymphoma, intrathoracic lymph nodes
C81.72	Other Hodgkin lymphoma, intrathoracic lymph nodes
C81.92	Hodgkin lymphoma, unspecified, intrathoracic lymph nodes

Follicular lymphoma, intrathoracic lymph nodes

C82.02	Follicular lymphoma grade I, intrathoracic lymph nodes
C82.12	Follicular lymphoma grade II, intrathoracic lymph nodes
C82.22	Follicular lymphoma grade III, unspecified, intrathoracic lymph nodes
C82.32	Follicular lymphoma grade IIIa, intrathoracic lymph nodes
C82.42	Follicular lymphoma grade IIIb, intrathoracic lymph nodes
C82.52	Diffuse follicle center lymphoma, intrathoracic lymph nodes
C82.62	Cutaneous follicle center lymphoma, intrathoracic lymph nodes
C82.82	Other types of follicular lymphoma, intrathoracic lymph nodes
C82.92	Follicular lymphoma, unspecified, intrathoracic lymph nodes

Non-follicular lymphoma, intrathoracic lymph nodes

C83.02	Small cell B-cell lymphoma, intrathoracic lymph nodes
C83.12	Mantle cell lymphoma, intrathoracic lymph nodes
C83.32	Diffuse large B-cell lymphoma, intrathoracic lymph nodes
C83.52	Lymphoblastic (diffuse) lymphoma, intrathoracic lymph nodes
C83.72	Burkitt lymphoma, intrathoracic lymph nodes
C83.82	Other non-follicular lymphoma, intrathoracic lymph nodes
C83.92	Non-follicular (diffuse) lymphoma, unspecified, intrathoracic lymph nodes

Other lymphomas, intrathoracic lymph nodes

C84.02	Mycosis fungoides, intrathoracic lymph nodes
C84.12	Sézary disease, intrathoracic lymph nodes
C84.42	Peripheral T-cell lymphoma, not classified, intrathoracic lymph nodes
C84.62	Anaplastic large cell lymphoma, ALK-positive, intrathoracic lymph nodes

C84.72	Anaplastic large cell lymphoma, ALK-negative, intrathoracic lymph nodes
C84.92	Mature T/NK-cell lymphomas, unspecified, intrathoracic lymph nodes
C84.A2	Cutaneous T-cell lymphoma, unspecified, intrathoracic lymph nodes
C84.Z2	Other mature T/NK-cell lymphomas, intrathoracic lymph nodes
C85.12	Unspecified B-cell lymphoma, intrathoracic lymph nodes
C85.22	Mediastinal (thymic) large B-cell lymphoma, intrathoracic lymph nodes
C85.82	Other specified types of non-Hodgkin lymphoma, intrathoracic lymph nodes
C85.92	Non-Hodgkin lymphoma, unspecified, intrathoracic lymph nodes

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses

Z92.3	Personal history of irradiation

Stereotactic Radiosurgery

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation
77371	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; multi-source Cobalt 60 based
77372	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; linear accelerator based
77432	Stereotactic radiation treatment management of cranial lesion(s) (complete course of treatment consisting of 1 session)
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses

Z92.3	Personal history of irradiation

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Oligometastatic Extracranial Disease

General Information

Radiation Oncology Considerations

Metastasis can occur when one or more cancer cells develop the capacity to enter the bloodstream and establish secondary tumors in distant organs such as the brain, lungs, liver and bone. While widespread metastatic disease is generally considered incurable, there exists a subset of patients with limited metastatic involvement who can potentially be cured of their disease. This state has been termed “oligometastatic” and is most commonly defined as having 3 or fewer metastatic lesions. In the past, aggressive metastasis-directed therapy largely consisted of surgical resection of lung and liver lesions. Radiotherapy was generally reserved for palliation of symptoms. Advances in system therapy and the widespread availability of stereotactic body radiation therapy have renewed interest in ablative therapy for oligometastatic disease.

Much of the data on treatment of oligometastatic cancer consist of single institution retrospective reviews. Several series have shown long-term benefit from resection of limited liver metastases in patients with colorectal cancer. Five-year disease-free survival rates approach 30% in this setting. Similarly, radiofrequency ablation of limited hepatic metastases from colorectal cancer has been shown to improve survival. A phase II randomized EORTC trial studied the addition of radiofrequency ablation to standard systemic therapy in 119 patients without extrahepatic disease. Ruers et al. recently reported an 8-year overall survival rate of 36% for patients randomized to radiofrequency ablation of liver lesions compared to 9% for patients receiving systemic therapy alone.

Stereotactic body radiation therapy (SBRT), also termed stereotactic ablative radiation therapy (SABR), has also been studied in the treatment of oligometastatic cancer. Control rates with this ablative technology approach 90%. Several prospective phase II studies have examined the potential benefit of SABR in oligometastatic disease. Gomez et al. reported results of a multi-institutional phase II randomized study of local consolidative therapy (LCT) vs maintenance therapy or observation. Patients with non-small cell lung cancer and 1-3 metastatic lesions were eligible for randomization only if disease had not progressed on chemotherapy. The study was stopped early due to a significant improvement in progression-free survival with LCT (11.9 months) vs maintenance only (3.9 mos) yielding a hazard ratio of 0.35 ($P < .005$). Iyengar et al. studied whether consolidative radiotherapy to the primary and up to 5 metastatic lesions would improve disease-free survival in NSCLC compared to maintenance chemotherapy alone. Twenty-nine patients were randomized. Disease-free survival in SABR-treated patients was 9.7 months compared to 3.5 months in the maintenance group ($P < .01$).

In a single-arm phase II study of SABR in 147 patients with up to 5 metastatic lesions, Sutera et al. report a 5-year overall survival rate of 43%. In addition to lung cancer, they treated colorectal, head and neck, breast, and prostate cancers among others. Although they allowed up to 5 metastatic lesions, 96.5% of patients had 3 or fewer lesions. On multivariate analysis, patients with a Karnofsky Performance Status (KPS) of 80 or less was associated with worse survival.

The phase II STOMP trial randomized men with castration-sensitive, oligometastatic prostate cancer recurrence to either ablative metastasis-directed therapy (MDT) or surveillance. There were 62 patients studied using androgen deprivation therapy (ADT)-free survival as the primary endpoint. Up to 3 metastatic lesions were allowed in either nodal or non-nodal sites and MDT included either surgery or SABR. At a median follow-up of 3 years, MDT resulted in a median ADT-free survival of 21 months vs 13 months with surveillance (HR 0.6, $P = .11$). Quality of life was similar in both groups at baseline, 3 months, and one year.

Long-term results of the SABR-COMET (NCT01446744) trial were recently reported. This randomized trial compared overall survival in patients with a controlled primary cancer and up to 5 metastatic lesions treated with either SABR to all oligometastatic lesions or palliative standard of care (SOC). Eligible patients had ECOG PS 0-1 and an estimated life expectancy of at least 6 months. A total of 99 patients were treated using a 1:2 ratio of SOC vs SABR. The most common primary cancer types included breast, colorectal, lung, and prostate, and the most commonly treated sites were lung, bone, liver, and adrenal gland. Although up to 5 oligometastatic lesions were allowed, 93% had 1-3 metastases. Five-year overall survival for the SABR-treated patients was 42.3% vs 17.7%

in the palliative SOC patients (P = .006). Five-year progression-free survival was 17.3% with MDT compared to zero in the palliative standard of care group (P = 0.001). Compared with SOC, treatment with SBRT was not associated with decreased quality of life.

A phase 2 randomized trial (SAFRON II) compared single fraction SBRT to 28 Gy with fractionated SBRT of 48Gy in 4 fractions in 87 patients with 1-3 pulmonary oligometastases. There were no differences in local control, disease-free survival, or overall survival at 2 years. Toxicities and adverse events were not significantly different between the groups.

Clinical Indications

Stereotactic Body Radiation Therapy (SBRT) is considered medically necessary for extracranial oligometastatic disease when ALL of the following conditions are met:

- One (1) to three (3) metastatic lesions involving the lungs, liver, adrenal glands, or bone
- Primary tumor is breast, colorectal, melanoma, non-small cell lung, prostate, renal cell, or sarcoma
- Primary tumor is controlled
- No prior history of metastatic disease

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

Stereotactic Radiosurgery

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation
77371	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; multi-source Cobalt 60 based
77372	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; linear accelerator based
77432	Stereotactic radiation treatment management of cranial lesion(s) (complete course of treatment consisting of 1 session)
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery

ICD-10 Diagnoses

C18.0 - C18.9	Malignant neoplasm of colon
C19 - C20	Malignant neoplasm of rectum and rectosigmoid junction
C34.90 - C34.92	Malignant neoplasm of unspecified part of bronchus or lung
C40.0 - C40.92	Malignant neoplasm of bones of limb
C43.0 - C43.9	Malignant melanoma
C49.0 - C49.9	Malignant neoplasm of connective and soft tissue
C50.011-C50.929	Malignant neoplasm of breast
C61	Malignant neoplasm of prostate
C64.1 - C64.9	Malignant neoplasm of kidney, except renal pelvis
C68.8 - C68.9	Malignant neoplasm of urinary organ(s)
C78.5	Secondary malignant neoplasm of large intestine and rectum
C79.81	Secondary malignant neoplasm of breast
C7A.022-C7A.029	Malignant carcinoid tumor of the colon
C96.4	Soft tissue sarcoma of dendritic cells (accessory cells)
Z85.118	Personal history of other malignant neoplasm of bronchus and lung
Z85.3	Personal history of malignant neoplasm of breast
Z85.528	Personal history of other malignant neoplasm of kidney
Z85.820	Personal history of malignant melanoma of skin

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Other Tumor Types: Sarcoma, Thymoma and Thymic Carcinoma, Pediatric Tumors, and Other Malignancies

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D or 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)
- Stereotactic Radiosurgery (SRS)

Proton Beam Therapy: see separate Carelon Guidelines for Proton Beam Therapy

Radiation Oncology Considerations

Sarcomas

Soft tissue sarcomas are rare malignancies arising in connective tissue. Multimodality treatment with surgery, radiation and chemotherapy is common, especially in high-grade sarcomas. Multiple studies have shown that radiation improves local control. Soft tissue sarcomas are often treated with preoperative therapy to a dose of 50 Gy. Placement of clips at the time of surgery aids with boost planning if needed. Alternatively, postoperative radiation therapy can be given. External beam treatment typically consists of 50 Gy to a larger field encompassing the preoperative tumor volume plus a margin followed by a smaller boost field. Boost doses of 10-26 Gy are used, depending on the final surgical margins. Brachytherapy may also be used postoperatively, particularly in the setting of microscopic or gross residual disease after resection. Alternatively, intra- operative radiation may be considered as boost treatment at the time of surgery.

In terms of radiation planning, the use of MRI imaging and CT based planning are recommended. IMRT is sometimes utilized but is particularly helpful in the setting of pelvic or retroperitoneal sarcoma, to minimize toxicity in this high-risk anatomic region. IMRT for sarcomas in other regions remains an area of active investigation. A recent RTOG study of image guidance suggested that toxicity is lower when field size is reduced in conjunction with daily IGRT. Many of these patients were treated with IMRT. Other retrospective comparisons of conventional radiation and IMRT have been published. A study by Folkert reported recurrence rates for 319 consecutive patients, about half of whom were treated with IMRT. There was an association between IMRT and improved local control. The authors note, however, that other confounding factors such as the use of MRI in treatment planning may explain the difference. The use of IMRT for soft tissue sarcomas is appropriate for pelvic, retroperitoneal and extremity soft tissue sarcoma.

Thymoma and Thymic Carcinoma

Thymomas are rare tumors arising in epithelial cells within the thymus. They can be benign or malignant. For lesions which are resectable, complete thymectomy and excision of tumor is recommended. Radiotherapy is added for stage III disease or in cases where the tumor is unresectable or incompletely resected. Doses of 45-50 Gy are used after resection with clear or close margins. A dose of 54 Gy is used for microscopically positive margins and doses of 60-70 Gy are given for gross disease. Chemotherapy is used in advanced or metastatic disease. CT-based treatment planning is recommended, as is respiratory motion management if available. Much like mediastinal Hodgkin lymphoma, IMRT is appropriate in order to spare heart and lung tissue.

Pediatric Tumor Types

IMRT is a method to spare normal tissue from radiation damage, and reduce the risk of toxicity, complications, and secondary malignancy in normal tissues that are still developing. IMRT has demonstrated excellent potential in sparing the organs at risk while achieving good local control. Therefore, IMRT is helpful in treating pediatric tumors that are sensitive to radiation therapy. Please see separate Carelon Guidelines for Proton Beam Therapy for further details regarding use of protons in pediatric tumors.

Other Tumor Types

Intensity modulated radiation therapy (IMRT) and stereotactic radiation techniques are used in the setting of overlapping with a previously irradiated field, due to the risk of toxicity or complications.

For review of metastatic sites, please refer to specific guideline section for the appropriate location (e.g., CNS Cancers for brain metastases and Lung Cancer for lung metastases).

Clinical Indications

2D or 3D conformal is appropriate when ANY of the following conditions are met:

- Primary malignancy diagnoses
- Metastatic lesions

Sarcoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for sarcoma when **ANY** of the following conditions are met:

- For initial treatment of a primary pelvic soft tissue sarcoma
- For initial treatment of a primary retroperitoneal sarcoma
- For treatment of an extremity sarcoma
- To treat a previously irradiated field

Stereotactic Radiosurgery (SRS) is appropriate for sarcoma when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy (LDR or HDR) is appropriate for sarcoma when **EITHER** of the following conditions is met:

- When margins are involved
- When margins are closer than 5 mm

Thymoma and thymic carcinoma

Intensity Modulated Radiation Therapy (IMRT) is appropriate for treatment of thymoma and thymic carcinoma when **EITHER** of the following conditions is met:

- For treatment of a mediastinal thymoma or thymic carcinoma
- To treat a previously irradiated field

Stereotactic Radiosurgery (SRS) is appropriate for thymoma and thymic carcinoma when the following condition is met:

- Only to treat a previously irradiated field

Pediatric individuals (age 20 years or younger)

Intensity Modulated Radiation Therapy (IMRT) is appropriate for pediatric patients when the following condition is met:

- To treat pediatric individuals (age 20 years or younger) with a radiosensitive tumor

Stereotactic Radiosurgery (SRS) or Stereotactic Body Radiation Therapy (SBRT) is appropriate for pediatric patients when **EITHER** of the following conditions is met:

- To treat an intracranial malignancy (see CNS guidelines)
- To treat a previously irradiated field

Note: For proton beam indications, see separate Carelon Guidelines for Proton Beam Therapy.

Other malignancies

Intensity Modulated Radiation Therapy (IMRT) is appropriate for other malignancies when **EITHER** of the following conditions is met:

- Where risk of critical structure (heart, lung) exposure would be excessive with 3D conformal treatment (**BOTH must be met**):
    - 3D planning has been done with appropriate techniques to limit toxicity, but organ at risk limits have been exceeded (based on QUANTEC limits in Table 1)
    - IMRT demonstrates improvement to tissue exposure to within safe ranges
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for other malignancies when the following condition is met:

- Only to treat a previously irradiated field

Table 1. QUANTEC limits

Lung	V20 ≤ 30%
Heart	V25 ≤ 10%
Pericardium	Mean dose ≤ 26 Gy OR V30 < 46%
Spinal Cord	Mean dose ≤ 45 Gy OR Maximum dose 50 Gy
Esophagus	Mean dose < 34 Gy
Small bowel	Dmax < 54 Gy
Liver	Mean dose < 30 Gy
Kidney	Mean dose < 18 Gy. If one kidney, < 15% to receive 18 Gy

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

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3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms

ICD-10 Diagnoses

Not specified

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77386	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking, when performed; complex
G6015	Intensity modulated treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

C37	Malignant neoplasm of thymus
C48	Malignant neoplasm of retroperitoneum
C49.10 – C49.12	Malignant neoplasm of connective and soft tissue of the upper limb
C49.20 – C49.22	Malignant neoplasm of connective and soft tissue of the lower limb
C49.4, C49.5	Malignant neoplasm of connective and other soft tissue of abdomen, pelvis
D15.0	Benign neoplasm of thymus

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses

Z92.3	Personal history of irradiation

Stereotactic Radiosurgery

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (when specified as treatment planning for SRS or SBRT)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan (when specified as devices for SRS or SBRT)
77370	Special medical radiation physics consultation
77371	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; multi-source Cobalt 60 based
77372	Radiation treatment delivery, stereotactic radiosurgery (SRS) complete course of treatment of cranial lesion(s) consisting of 1 session; linear accelerator based
77432	Stereotactic radiation treatment management of cranial lesion(s) (complete course of treatment consisting of 1 session)
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses

Z92.3	Personal history of irradiation

Brachytherapy

CPT/HCPCS

20555	Placement of needles or catheters into muscle and/or soft tissue for subsequent interstitial radioelement application (at the time of or subsequent to the procedure)
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77761	Intracavitary radiation source application; simple
77762	Intracavitary radiation source application; intermediate
77763	Intracavitary radiation source application; complex
77770	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 1 channel
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 2-12 channels
77772	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; over 12 channels
77778	Interstitial radiation source application, complex, includes supervision, handling, loading of radiation source, when performed

ICD-10 Diagnoses

C49.0 – C49.9	Malignant neoplasm of connective and other soft tissue

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Prostate Cancer

General Information

Commonly Used Modalities

Internal Radiation Therapy (Brachytherapy)

External Beam Radiation Therapy

- 2D and 3D conformal
- Intensity Modulated Radiation Therapy (IMRT)
- Stereotactic Body Radiation Therapy (SBRT)

Radiation Oncology Considerations

Prostate cancer is the most common cancer seen in men. Early detection has resulted in a decrease in prostate cancer mortality over the past two decades.

Active surveillance options should be discussed with individuals with low-risk prostate cancers. Furthermore, individuals with low- or intermediate-risk prostate cancer and an anticipated survival of less than 10 years based on comorbidity are recommended to be followed with observation, as the risk of over-treatment may outweigh the clinical benefit.

External beam radiotherapy and surgery are the primary treatment modalities in patients who do not opt for surveillance. Improvement in radiation therapy delivery, including 3D-conformal radiation and IMRT, have allowed for the safe dose escalation which has improved cure rates in patients with localized disease. Pelvic nodal irradiation should be limited to individuals with intermediate-risk or high-risk disease.

There is a trend toward hypofractionation (fewer treatments to deliver the same biologic dose) which allows patients to be treated with less disruption in their daily lives. There have been several randomized clinical trials comparing conventionally fractionated external radiotherapy with hypofractionated regimens. RTOG 0415 was designed to evaluate the non-inferiority of hypofractionated treatment (70.8 Gy in 28 fractions) compared to conventional fractionation (73.8 Gy in 42 fractions). There were 1092 participants. At a median follow-up of 5.9 years, the estimated 5-year disease-free survival rate was 85.3% in the conventional radiotherapy arm and 86.3% in the hypofractionated radiotherapy arm. The hypofractionated arm was associated with a significant increase in late grade 2 and 3 gastrointestinal and genitourinary adverse events. Based on the DFS rates, hypofractionated radiotherapy was found to be non-inferior. In the HYPRO trial, patients with intermediate to high-risk prostate cancer were randomized to receive 78 Gy in 38 fractions or 64.6 Gy in 19 fractions. At 5 years, the relapse-free survival rates for conventional fractionation vs hypofractionation were 77.1% and 80.5%, respectively. Since the goal of the trial was to prove superiority of hypofractionation, the authors concluded that hypofractionation had not been proven superior to standard fractionation. Hypofractionation does appear non-inferior in this study. In the PROFIT trial, investigators randomly assigned patients with intermediate-risk prostate cancer to receive 78 Gy in 39 fractions or 60 Gy in 20 fractions. With 6 years of follow-up, biochemical disease-free survival was the same in both groups. There were no differences in ≥ grade 3 late GI or GU toxicities reported. Five-year results of the CHHip trial were recently published. This was an open-label, randomized study looking at both effectiveness and toxicities. A total of 3216 men were included. They compared 74 Gy in 37 fractions over a period of 7.4 weeks with hypofractionated radiotherapy at 60 Gy in 20 fractions over a period of 4 weeks or 57 Gy in 19 fractions over a period of 3.8 weeks. At the 5-year follow-up, biochemical or clinical failure-free rates were 88.3% in the conventional 74-Gy group, 90.6% in the hypofractionated 60-Gy group, and 85.9% in the hypofractionated 57-Gy group. While bladder and bowel symptoms peaked sooner in the hypofractionated groups (4-5 vs 7-8 weeks), at 18 weeks, rates were similar for all groups. Long-term adverse effects were similar among the treatment groups. The authors concluded that the hypofractionated approach using 60 Gy in 20 fractions was non-inferior to standard fractionation using 74 Gy in 37 fractions.

In 2018, ASTRO, ASCO, and AUA published an evidence-based guideline on hypofractionated radiation therapy for localized prostate cancer. They defined moderate hypofractionation as daily fractions ranging from 240 cGy to 340 cGy and ultrahypofractionation as daily fractions > 500 cGy. The latter is given in up to 5 fractions of SBRT. In comparing moderately fractionated IMRT with conventionally fractionated treatment, the panel has recommended that hypofractionated therapy should be offered to men with low- or intermediate-risk prostate cancer who opt for active treatment. These recommendations were both considered strong, were based on high-quality evidence, and had 100% consensus. Moderate hypofractionation should also be offered for high-risk prostate cancer where pelvic nodes will not be treated based on 94% consensus. They recommended that men be counselled of a small increased risk of temporary GI toxicity with hypofractionated regimens but noted that late GI and GU toxicities were similar in hypofractionated and conventional treatments. General and prostate specific quality of life (QOL) and patient reported outcome studies have shown good tolerance of the hypofractionated regimens. The suggested fractionation patterns are either 6,000 cGy in 20 fractions or 7,000 cGy in 28 fractions.

Postoperative radiotherapy (EBRT/IMRT) can be delivered in either the adjuvant or salvage setting. Indications for adjuvant prostate bed radiotherapy include T3 primary, extracapsular disease, seminal vesicle involvement, Gleason 8 or 9 disease and positive margins. Salvage radiotherapy is indicated in patients at risk for local failure who have a rising prostate specific antigen (PSA) level. When adjuvant radiation therapy is indicated, it should be given within 1 year of radical prostatectomy, but after any post-operative issues have stabilized. ASTRO and AUA published an updated clinical practice guideline on the use of adjuvant and salvage radiotherapy after prostatectomy in 2019 to reflect new level 1 evidence demonstrating the addition of hormonal ablation to salvage treatment.

SBRT for prostate cancer is an emerging modality. This technology delivers a high biologic dose of radiation over a short period of time. The hypofraction associated with SBRT shortens the treatment time to five visits, compared to the 7 to 9 weeks typically required for IMRT. This shortened treatment time is (one week vs 8 to 9 weeks) appreciated by individuals. The key outcomes include both tumor control and toxicity, primarily focusing on acute and chronic rectal and genitourinary complications. While there have been no controlled studies directly comparing SBRT and alternative techniques of conformal therapy (for example, IMRT) many prospective case series and retrospective cohort studies of subjects with localized low-risk and intermediate-risk prostate cancer and prolonged life expectancies have consistently reported that SBRT is associated with an acceptable toxicity profile and tumor control that is comparable to other radiation techniques. As with other treatments for prostate cancer, it is unlikely that randomized comparisons will be performed. Published studies to date include single institution reports, multi-institutional phase I/II studies looking at dose and systematic reviews. Hannan has recently published 5-year results of a prospective phase I/II trial of SBRT in 91 low-risk to intermediate-risk patients. About two-thirds of the patients had intermediate-risk disease. Doses of 45-50 Gy in five fractions were given. The 5-year freedom from biochemical failure was 98.6%. Grade 3 or greater late urinary and gastrointestinal toxicities were 5.5% and 7%, respectively. The highest rates of toxicity were seen in the 50 Gy cohort and the authors recommend against this dose. At the lower doses, toxicities are similar to that seen in dose-escalated IMRT. The most recent systematic review of SBRT for prostate cancer looked at 1,472 patients in 14 studies. The most common fractionation ranged from 35-36.25 Gy in five fractions. Most of these reports were for patients treated with Cyberknife. Biochemical progression-free survival ranged from 81%-100%. Acute and late grade 3 urinary and gastrointestinal toxicities ranged from 0-0.5% (acute) to 0.5%-1.3% (late). In May 2013, ASTRO updated its Model Policy for SBRT and states “It is ASTRO’s opinion that data supporting the use of SBRT for prostate cancer have matured to a point where SBRT could be considered an appropriate alternative for select patients with low to intermediate risk disease.”

The 2018 ASTRO, ASCO, and AUA guideline on ultrahypofractionated radiotherapy for prostate cancer recommends offering SBRT to men with low-risk disease, considers SBRT an option in intermediate-risk disease, and does not recommend SBRT for high-risk disease outside of a clinical trial or registry.

Brachytherapy or prostate implant is another option to deliver highly conformal doses to the prostate. For a low dose rate (LDR) implant, permanent radioactive seeds are implanted evenly throughout the gland under ultrasound guidance. For a high dose rate (HDR) implant, catheters are placed into the gland which is later irradiated as the high activity seed stops in fixed dwell positions throughout the volume. Recently, the ASCO/Ontario Guideline on brachytherapy for prostate cancer was updated. For low-risk patients, LDR brachytherapy is a proven option to surgery or external beam radiotherapy. For intermediate and high-risk patients, either LDR or HDR brachytherapy should be considered as boost options in appropriate patients. Studies have shown improved survival when brachytherapy is used in this setting compared to external treatment

alone. Both I-125 and palladium-103 are reasonable isotopes for LDR brachytherapy. No recommendation could be made for or against the use of Cs-131.

Several recent publications have reported results of HDR brachytherapy in the treatment of low risk and low-intermediate risk prostate cancer. These studies have shown equivalent results to those seen with IMRT, SBRT, and LDR brachytherapy. Additionally, the Groupe Europėen de Curiethėrapie (GEC) and the European Society for Radiotherapy and Oncology (ESTRO) have published a joint prostate brachytherapy guideline. They note that they no longer consider the recommendations for LDR and HDR brachytherapy separately and therefore HDR monotherapy is now considered a standard treatment for low- and intermediate-risk disease.

For a discussion of implanted hydrogel spacer, please refer to the separate Carelon Guidelines for Perirectal Hydrogel Spacer for Prostate Radiotherapy.

For a discussion of proton therapy, please refer to the separate Carelon Guidelines for Proton Beam Therapy.

Disease Definitions

Low risk of recurrence (ALL must be present to qualify as low risk)

- Stage T1-T2a
- Gleason score of 6
- Prostate-specific antigen (PSA) below 10 ng/mL

Intermediate risk of recurrence (ANY one characteristic)

- Stage T2b to T2c
- Gleason score of 7
- PSA 10-20 ng/mL

High risk of recurrence (ANY one characteristic)

- Stage T3a
- Gleason score 8-10
- PSA greater than 20 ng/mL

Localized disease (BOTH must apply)

- T stage of T1-3a (tumor has spread through the capsule on one or both sides but has not invaded the seminal vesicles or other structures)
- N0 (no lymph node involvement)

Locally advanced disease (EITHER must apply)

- Any T status with N1 disease (either no spread to lymph nodes or there has been spread to the regional lymph nodes)
- T3b and above, no distant metastatic disease beyond local lymph nodes

Distant metastatic disease

- Beyond the local lymph nodes

Clinical Indications

2D or 3D conformal is appropriate for prostate cancer when ANY of the following conditions are met:

- Primary treatment of prostate cancer

- Palliative treatment of advanced disease

Low risk of recurrence

Intensity Modulated Radiation Therapy (IMRT) is appropriate for prostate cancer when **EITHER** of the following conditions is met:

- As primary treatment
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for prostate cancer when **EITHER** of the following conditions is met:

- As primary treatment
- To treat a previously irradiated field

Brachytherapy is appropriate as monotherapy for low-risk prostate cancer. **EITHER** of the following is appropriate:

- Low dose rate (LDR) brachytherapy
- High dose rate (HDR) brachytherapy

Note: Active surveillance is a reasonable alternative to radiation treatment in individuals with low-risk prostate cancer.

Intermediate risk of recurrence

Intensity Modulated Radiation Therapy (IMRT) is appropriate for prostate cancer when **EITHER** of the following conditions is met:

- As primary treatment or in combination with brachytherapy
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for prostate cancer when **EITHER** of the following conditions is met:

- As primary treatment
- To treat a previously irradiated field

Brachytherapy is appropriate as either monotherapy or as a boost in combination with external beam radiotherapy. **EITHER** of the following is appropriate:

- Low dose rate (LDR) brachytherapy
- High dose rate (HDR) brachytherapy

High risk of recurrence

Intensity Modulated Radiation Therapy (IMRT) is appropriate for prostate cancer **when EITHER of the following conditions is met:**

- As primary treatment or in combination with brachytherapy
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for prostate cancer when the following condition is met:

- Only to treat a previously irradiated field

Brachytherapy is appropriate for prostate cancer when used in combination with external beam radiotherapy. **EITHER** of the following is appropriate:

- Low dose rate (LDR) brachytherapy
- High dose rate (HDR) brachytherapy

Post-prostatectomy

Intensity Modulated Radiation Therapy (IMRT) is appropriate for prostate cancer when **ANY** of the following conditions are met:

- Adjuvant therapy, with no evidence of metastatic disease (**when EITHER is present**)
    - Detectable PSA
    - Any adverse pathologic feature
        - pT3 disease
        - Pathology demonstrates positive margin(s)
        - GIeason score 8-10
        - Seminal vesicle involvement or invasion
        - Extracapsular extension
- Salvage therapy
    - Undetectable PSA becomes detectable and increases on 2 or more lab measurements
- To treat a previously irradiated field

Stereotactic Body Radiation Therapy (SBRT) is appropriate for prostate cancer when the following condition is met:

- Only to treat a previously irradiated field

Local recurrence after radiotherapy

Intensity Modulated Radiation Therapy (IMRT) is appropriate for prostate cancer when the following condition is met:

- To treat locally recurrent disease with no evidence of distant metastasis

Stereotactic Body Radiation Therapy (SBRT) is appropriate for prostate cancer when the following condition is met:

- To treat locally recurrent disease with no evidence of distant metastasis

Brachytherapy is appropriate for prostate cancer when the following condition is met:

- Low dose rate (LDR) or High dose rate (HDR) brachytherapy
    - To treat locally recurrent disease with no evidence of distant metastasis

Fractionation

When the above criteria are met, the following fractionation applies:

The recommended EBRT/IMRT fractionation to treat localized prostate cancer when the pelvic lymph nodes will not be treated is either 60 Gy in 20 fractions or 70 Gy in 28 fractions. In men with significant baseline obstructive urinary symptoms, conventional fractionation of up to 45 fractions is considered medically necessary.

Up to 45 fractions of EBRT/IMRT are considered medically necessary for localized or locally recurrent prostate cancer when the pelvic lymph nodes will be treated.

Up to 40 fractions of EBRT/IMRT are considered medically necessary as adjuvant treatment to the prostate bed after prostatectomy.

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms

ICD-10 Diagnoses

C61	Malignant neoplasm Prostate

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiotherapy plan, including dose-volume histograms for target and critical structure partial tolerance specifications (IMRT treatment plan)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77385	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking when performed; Simple (includes breast cancer, prostate cancer and compensator-based IMRT)
G6015	Intensity modulated treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

ICD-10 Diagnoses

C61	Malignant neoplasm Prostate

Stereotactic Body Radiation Therapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (IMRT treatment plan)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77370	Special medical radiation physics consultation
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77435	Stereotactic body radiation therapy, treatment management, per treatment course, to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions

77470	Special treatment procedure
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment
G0340	Image guided robotic linear accelerator-based stereotactic radiosurgery, delivery including collimator changes and custom plugging, fractionated treatment, all lesions, per session, second through fifth sessions, maximum 5 sessions per course of treatment

ICD-10 Diagnoses

C61	Malignant neoplasm Prostate
Z92.3	Personal history of irradiation

Brachytherapy

CPT/HCPCS

55875	Transperineal placement of needles or catheters into prostate for interstitial radioelement application, with or without cystoscopy
77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 2-12 channels
77772	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; over 12 channels
77778	Interstitial radiation source application, complex, includes supervision, handling, loading of radiation source, when performed

ICD-10 Diagnoses

C61	Malignant neoplasm Prostate
Z92.3	Personal history of irradiation

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Skin Cancer

General Information

Radiation Oncology Considerations

Skin cancer is the most common malignancy in the United States with more than 5 million cases diagnosed annually. Ninety-five percent of skin cancers are either basal cell carcinoma (the most common) or cutaneous squamous cell carcinoma. Basal cell carcinomas are less likely to spread to regional lymphatics than squamous cell carcinomas. Cutaneous melanomas are much more likely to have lymph node involvement than non-melanoma skin cancers and have a significant risk of distant metastasis unless detected early.

The main risk factor for all skin cancers is UV exposure from the sun or other sources. Immunosuppressed patients, like those who have had an organ transplant, are much more commonly affected by skin cancer.

The primary treatment options are surgical excision or definitive radiation therapy. A detailed review of surgical options is beyond the scope of this guideline. Radiation options include superficial and orthovoltage x-rays, electrons, or high energy photons delivered with either 3D conformal or intensity modulated radiation therapy (IMRT). The vast majority of non-melanoma skin cancer lesions which are not approached surgically are treated with low energy x-rays or electrons where the cure rate approaches 95%. Melanomas or other skin cancers with risk of lymphatic involvement are best treated with 3D conformal and occasionally IMRT techniques.

In 2019, ASTRO published a Clinical Practice Guideline for definitive and postoperative treatment of basal and squamous cell cancers of the skin. They reviewed the commonly used radiation modalities used to treat skin cancer including electrons, low energy x-rays, megavoltage x-rays and brachytherapy. Regarding brachytherapy, they note that this technique may be preferentially used for specific anatomic locations with complicated topology. Due to limited follow up information, they stress caution against extrapolating local control and toxicity data for electronic brachytherapy as compared to other radiation modalities.

NCCN has published guidelines for the treatment of basal cell, squamous cell and melanoma skin cancers. For all three guidelines, they note that there are “insufficient long-term efficacy and safety data to support the routine use of electronic surface brachytherapy.” The American Brachytherapy Society concludes that “it is not recommended that electronic brachytherapy be utilized for accelerated partial breast irradiation, non-melanomatous skin cancers, or vaginal cuff brachytherapy outside prospective clinical trials at this time.”

Clinical Indications

Superficial, Orthovoltage, and 2D or 3D Conformal Radiotherapy are appropriate for skin cancer when ANY of the following conditions are met:

- As an alternative to surgery
- As postoperative treatment after surgery when there are positive margins or other high-risk features

Intensity Modulated Radiation Therapy (IMRT) is appropriate for skin cancer when ANY of the following conditions are met:

- To treat a skin cancer of the head and neck region when the regional lymphatics will be treated
- To treat cutaneous melanoma
- To treat a previously irradiated field

Brachytherapy is appropriate for skin cancer when ANY of the following conditions are met:

- To treat a skin cancer which is not amenable to surgery or external beam radiation
- To treat a previously irradiation field

Note: Electronic brachytherapy is considered not medically necessary.

Exclusions

Indications other than those addressed in this guideline are considered **not medically necessary** including, but not limited to:

- Electronic brachytherapy
- IGRT when used in combination with superficial x-rays or electron therapy (see IGRT section)

Codes

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes.

Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

3D Conformal

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms (3D Conformal treatment plan)
77401	Radiation treatment delivery, superficial and/or orthovoltage, per day
77402	Radiation treatment delivery, >1 MeV; simple
77407	Radiation treatment delivery, > 1 MeV; intermediate
77412	Radiation treatment delivery, > 1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV

G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

Brachytherapy

CPT/HCPCS

77295	3-dimensional radiotherapy plan, including dose-volume histograms
77316	Brachytherapy isodose plan; simple (1-4 sources or 1 channel), includes basic dosimetry calculations (Do not bill 77300)
77317	Brachytherapy isodose plan; intermediate (5-10 sources or 2-12 channels), includes basic dosimetry calculation (Do not bill 77300)
77318	Brachytherapy isodose plan; complex (over 10 sources or over 12 channels), includes basic dosimetry calculations (Do not bill 77300)
77370	Special medical radiation physics consultation
77470	Special treatment procedure
77771	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; 2-12 channels
77772	Remote afterloading high dose rate radionuclide interstitial or intracavitary brachytherapy, includes basic dosimetry, when performed; over 12 channels
0394T	HDR electronic brachytherapy, skin surface application, per fraction
0395T	HDR electronic brachytherapy, interstitial or intracavitary treatment, per fraction

Intensity Modulated Radiation Therapy

CPT/HCPCS

77301	Intensity modulated radiation therapy plan, including dose volume histogram for target and critical structure partial tolerance specifications (IMRT treatment plan)
77338	Multi-leaf collimator (MLC) device(s) for intensity modulated radiation therapy (IMRT), design and construction per IMRT plan
77385	Intensity modulated radiation treatment delivery (IMRT), includes guidance and tracking when performed; Simple (includes breast cancer, prostate cancer and compensator-based IMRT)
G6015	Intensity modulated Treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session
G6016	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

All Modalities

ICD-10 Diagnoses

C43.0 - C43.9	Malignant melanoma
C44.0 – C44.99	Other and unspecified malignant neoplasm of skin
Z85.820	Personal history of malignant melanoma of skin

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These Guidelines are a work in progress that may be refined as often as new significant data becomes available.

The NCCN Guidelines® are a statement of consensus of its authors regarding their views of currently accepted approaches to treatment. Any clinician seeking to apply or consult any NCCN Guidelines® is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient's care or treatment. The National Comprehensive Cancer Network makes no warranties of any kind whatsoever regarding their content, use or application and disclaims any responsibility for their application or use in any way.

Appendix. Procedure Code Groupers

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

The following code list is not meant to be all-inclusive. Authorization requirements will vary by health plan. Please consult the applicable health plan for guidance on specific procedure codes. Specific CPT codes for services should be used when available. Nonspecific or not otherwise classified codes may be subject to additional documentation requirements and review.

Grouper Type	Grouper ID	Grouper Name	Grouper included on order when submitted Dx/Anatomy	Included Codes	Qty Sent
3D Conformal (EBRT)					
P	**77402**	Fraction	N/A	G6003, G6004, G6005, G6006, G6007, G6008, G6009, G6010, G6011, G6012, G6013, G6014, 77402, 77407, 77412	n
A/C	77295		N/A	77295	c
Brachytherapy					
P	**77761**	Delivery	N/A	76965, 77761, 77762, 77763, 77767, 77768, 77770, 77771, 77772, 77778	12
C	77790	Handling	N/A	77790	5
C	77316	Isodose Calc		77316, 77317, 77318	5
C	Q3001	Handling	N/A	Q3001	n
A	67218		Retina	67218	2
A	19296		Breast	19296, 19297, 19298	2
A	20555		Muscle and/or soft tissue	20555	2
A	41019		Head and/or neck region (percutaneous, transoral, or transnasal)	41019	2
A	55860		Prostate	55860, 55862, 55865, 55875, 76873, G0458	2
A	55920		Pelvic organs and/or genitalia (except prostate)	55920	3
A	31643		Bronchoscopy	31643	2
A	57155		Uterine tandems and/or vaginal ovoids, Heyman capsules, vaginal radiation afterloading apparatus	57155, 57156, 58346	5
Image Guided Radiation Therapy (IGRT)					
P	**77387**	IGRT	N/A	77387, G6001, G6002, G6017, 77014	c
Intensity Modulated Radiation Therapy (IMRT)					
P	**77385**	Delivery	N/A	77385, 77386, G6015, G6016	*n*
C	77301	Planning	N/A	77301	2
C	77338	MLC	N/A	77338	3
Intraoperative Radiation Therapy (IORT)					
P	**77424**		N/A	77424, 77425	1
C	77469		N/A	77469, 19294	2
Proton Beam Therapy (PBT)					
P	**77520**	Delivery	N/A	77520, 77522, 77523, 77525	*n*

Grouper Type	Grouper ID	Grouper Name	Grouper included on order when submitted Dx/Anatomy	Included Codes	Qty Sent
C	61796		N/A	61796, 61797, 61798, 61799	5
C	63620		N/A	63620, 63621	5
C	61800		N/A	61800	3
C	77432		N/A	77432	5
C	77435		N/A	77435	5
C	S8030		N/A	S8030	5
C	77301		N/A	77301	2
C	77338		N/A	77338	3
C	77295		N/A	77295	2
Stereotactic Body Radiation Therapy (SBRT)					
P	**77373**	Delivery	N/A	77373, G0339, G0340	*n*
C	63620		N/A	63620, 63621	5
C	77435		N/A	77435, 32701	5
C	77301		N/A	77301	2
C	77338		N/A	77338	3
C	77295		N/A	77295	2
Stereotactic Radiosurgery (SRS)					
P	**77371**	Delivery	N/A	77371, 77372, G0339, G0340	*n*
C	61796		N/A	61796, 61797, 61798, 61799	5
C	61800		N/A	61800	3
C	77432		N/A	77432, 77435	5
C	77301		N/A	77301	2
C	77338		N/A	77338	3
C	77295		N/A	77295	2
Special Physics Consult					
P	**77370**	Special radiation physics consult	N/A	77370	1
Special Treatment					
P	**77470**	Special radiation treatment	N/A	77470	1
SIRT					
P	**77778**	SIRT	N/A	77778, 77790	*n*
Hydrogel Spacer					
P	**55874**	Hydrogel spacer	N/A	55874	*n*
Electronic Brachytherapy - Skin					
P	**0394T**	Delivery	N/A	0394T, 0395T	*n*
Hyperthermia					
P	**77600**	Delivery	N/A	77600, 77605	*n*
C	77610		N/A	77610, 77615, 77620	*n*
Neutron					
P	**77423**	Delivery	N/A	77423	*n*

Grouper Types: P, Primary; C, Common; A, Associated

Notes: When criteria are met for the primary grouper (Grouper Type P), all of the included codes are passed on the extract with the associated quantity. Any of the included codes may be billed up to the specified total quantity limit. Codes listed in Grouper Type C are also included in the extract. Associated codes (Grouper Type A) are included only for specific anatomic sites as listed.

History

Status	Review Date	Effective Date	Action
Revised	05/09/2022	04/09/2023 Not for LA Medicaid	Independent Multispecialty Physician Panel (IMPP) review. IGRT: Added surface-based technique; IGRT not medically necessary to guide superficial radiotherapy for non-melanoma skin cancer. SRS/SBRT: Lowered threshold from 5 to 4 or fewer unresected brain metastases; added indication for postoperative treatment of 1 to 2 brain metastases. Added references. Removed CPT 77401.
Revised	05/09/2022	11/06/2022 for commercial, Medicare, and non-Anthem Medicaid; 04/09/2023 for Anthem Medicaid except LA Medicaid	IMPP review. IMRT: Removed plan comparison requirement for GI cancers. SBRT: Added indication for adrenal metastases (oligometastatic extracranial disease). Brachytherapy: added HDR monotherapy for low- and intermediate-risk prostate cancer. Added references.
Revised	05/26/2021	03/13/2022	IMPP review. New indication for SBRS/SBT to treat breast cancer in a previously irradiated field. Added clarifications for SBRS/SBT when treating brain metastases. For IMRT and SBRT, removed questions of anticipated survival for low risk and intermediate risk prostate cancer. Removed use of ECOG performance status throughout guidelines. Removed 3 codes from the Appendix: 43499, 47999, 55899.
Revised	05/26/2021	11/07/2021	IMPP review. Added indications for IMRT: to treat breast cancer and lung cancer when more than 10% of the LAD artery would receive more than 15 Gy with 3D conformal, to treat breast cancer patients treated with APBI. Moved hydrogel spacer content and CPT code 55874 from prostate cancer exclusions to a separate document with new criteria. Added references.
Revised	07/08/2020	03/14/2021	IMPP review. Added new criteria and discussion for skin cancer. Revised criteria for breast cancer and gynecologic cancer to address inclusion of electronic brachytherapy and hyperthermia. Added criteria for neutron therapy to treat primary salivary cancer. Added CPT codes 77401, 77600, 77605, 77610, 77615, 77620, 77423, 0394T, 0395T.
Revised	05/27/2020	03/14/2021	IMPP review. Revised criteria for special treatment procedure, CNS cancer, lung cancer, lymphoma, and prostate cancer. Revised fractionation for non-small cell lung cancer. Added discussion for IGRT, bone metastases, breast cancer, CNS cancers, gastrointestinal cancers, gynecologic cancers, lung cancer, oligometastatic extracranial disease, and prostate cancer. Removed all references to Karnofsky performance status.
Revised	06/10/2019	02/09/2020	IMPP review. Added new criteria and discussion for oligometastatic extracranial disease. Revised criteria for Special treatment procedure, bone metastases, head and neck cancer, and prostate cancer (added hydrogel spacer as not medically necessary). Revised fractionation for bone metastases and prostate cancer. Added discussion for CNS cancers and prostate cancer. Added Appendix with procedure code groupers.
Revised	07/11/2018	03/09/2019	IMPP review. Added the General Clinical Guideline.
Revised	05/01/2018	01/27/2019	IMPP review. Revised criteria for breast cancer, rectal cancer, pancreatic cancer, head and neck cancer, lung cancer, sarcoma. Added discussion for prostate cancer.
Revised	11/01/2016	02/20/2017	IMPP review. Added fractionation for lung cancer.
Revised	07/26/2016	10/31/2016	IMPP review. Revised criteria for IGRT, special treatment procedure and special physics consult, intracranial lesions, cholangiocarcinoma, gastric cancer, liver cancer, pancreatic cancer, bladder cancer, and prostate cancer. Added IORT codes for breast cancer.

Status	Review Date	Effective Date	Action
Revised	08/27/2015	01/01/2016	IMPP review. Revised criteria for breast cancer. Added new criteria for IGRT, special treatment procedure and special physics consult, and bone metastases.
Created	05/14/2014	11/03/2014	IMPP review. Original effective date.