# **MEDICAL POLICY**



MEDICAL POLICY DETAILS	
Medical Policy Title	Stereotactic Radiosurgery and Stereotactic Body Radiation Therapy
Policy Number	6.01.12
Category	Technology Assessment
<b>Original Effective Date</b>	01/20/00
<b>Committee Approval</b>	09/19/01, 07/18/02, 07/17/03, 08/19/04, 09/15/05, 08/17/06, 09/20/07, 10/23/08, 07/16/09,
Date	08/19/10, 11/17/11, 09/20/12, 05/23/13, 02/20/14, 08/21/14, 11/19/15, 10/20/16, 02/15/18,
<b>Current Effective Date</b>	06/20/19, 6/18/20, 06/17/21, 07/21/22 07/21/22
Archived Date	N/A
<b>Archive Review Date</b>	N/A
Product Disclaimer	<ul> <li>If a product excludes coverage for a service, it is not covered, and medical policy criteria do not apply.</li> <li>If a commercial product (including an Essential Plan or Child Health Plus product),</li> </ul>
	medical policy criteria apply to the benefit.
	If a Medicaid product covers a specific service, and there are no New York State     Medicaid guidelines (eMedNY) criteria, medical policy criteria apply to the benefit.
	• If a Medicare product (including Medicare HMO-Dual Special Needs Program (DSNP) product) covers a specific service, and there is no national or local Medicare coverage decision for the service, medical policy criteria apply to the benefit.
	If a Medicare HMO-Dual Special Needs Program (DSNP) product DOES NOT cover a specific service please refer to the Medicaid Product coverage line.

# **POLICY STATEMENT**

Based upon our criteria and assessment of the peer-reviewed literature:

- I. Stereotactic radiosurgery (SRS) has been medically proven to be effective and, therefore, is considered **medically appropriate** for the following indications:
  - A. Benign conditions:
    - 1. Arteriovenous malformations;
    - 2. Acoustic neuromas;
    - 3. Pituitary adenomas;
    - 4. Nonresectable, residual, or recurrent meningiomas;
    - 5. Craniopharyngiomas;
    - 6. Glomus tumors;
    - 7. Hemangioblastoma;
    - 8. Pineocytoma;
    - 9. Schwannoma;
    - 10. Cavernous malformations.
  - B. Primary tumors of the brain and spinal cord that have been previously irradiated.
  - C. Primary spinal tumor with compression or intractable pain.
  - D. Reirradiation of recurrent inoperable malignant gliomas in individuals with an Eastern Cooperative Oncology Group (ECOG) performance status of 0-2.

Policy Number: 6.01.12

Page: 2 of 12

- E. Brain metastases under the following conditions:
  - 1. Initial treatment:
    - a. Any number of lesions to be treated with no lesion greater than five cm;
    - b. All lesions can be encompassed in a single treatment plan; and
    - c. The patient has a Karnofsky performance status of 70 or greater and
    - d. Systemic disease is limited and under control or good options for systemic treatment are available; and
    - e. There is no leptomeningeal disease; or
    - f. The primary histology is not germ cell, small cell, or lymphoma; and
    - g. The total volume of treated lesions should be considered safe to deliver SRS.
  - 2. Previous whole brain irradiation (WBRT):
    - a. The patient has a Karnofsky performance status greater than or equal to 70; and
    - b. Systemic disease is under control; and
    - c. The patient's life expectancy is greater than three months.
  - 3. Previous treatement with SRS:
    - a. The patient has a Karnofsky performance status greater than or equal to 70; and
    - b. The patient's systemic disease is under control; and
    - c. Life expectancy is greater than six months; and
    - d. New lesions are present (no lesion is greater than five cm); and
    - e. The patient has not been treated with more than two episodes of radiosurgery in the past nine months.
  - 4. No previous WBRT:
    - a. Recurrence involves one to five lesions; and
    - b. More than six months have elapsed since RT; and
    - c. The patient has a Karnofsky performance status greater than or equal to 70; and
    - d. Systemic disease is under control.
  - 5. Post-operative SRS:
    - a. The patient has a combination of up to four resected and unresected lesions, each of which, individually, is less than four cm in size.
- G. For indications that are refractory to medical management and/or invasive neurosurgical treatment:
  - 1. Trigeminal neuralgia;
  - 2. Movement disorders (e.g., epilepsy, Parkinson's disease, essential tremor, or familial tremor classifications with major systemic disease).
- II. Stereotactic body radiation therapy (SBRT) has been medically proven to be effective and, therefore, is considered **medically appropriate** for the following indications:
  - A. Recurrent or residual nasopharyngeal carcinoma at primary site when radiation therapy treatments such as three-dimensional conformal or Intensity-modulated radiation therapy (IMRT) cannot be utilized;
  - B. Spinal or vertebral body tumors (metastatic or primary) in patients who have received prior radiation therapy;
  - C. Inoperable stage I or stage II non-small cell lung cancer (NSCLC);
  - D. Pancreatic cancer:
    - 1. Preoperative (neoadjuvant resectable or borderline resectable), following a minimum of two cycles of chemotherapy, and restaging in which there is no evidence of tumor progression; or
    - 2. As definitive treatment for medically or surgically inoperable or locally advanced, following a minimum of two cycles of chemotherapy and restaging when there is no evidence of tumor progression, and the disease volume can be entirely encompassed in the radiation treatment volume.
      - Note, SBRT is considered **not medically necessary** in palliative situations.
  - E. Primary liver cancer (Hepatocellular Carcinoma [HCC]) in the definitive setting to concurrently treat one or more tumors, when there is evidence of the ability to protect an adequate volume of uninvolved liver.

Policy Number: 6.01.12

Page: 3 of 12

- F. *Intrahepatic* bile duct cancer (cholangiocarcinoma) when unresectable, and localized in the definitive treatment setting.
- G. Any of the following neoplasms presenting with one to three metastases in the synchronous setting when local control is expected and treatment of the metastases may result in an increased disease-free interval and possible survival:
  - a. For an individual with non-small cell lung cancer who has had or will undergo curative treatment of the primary tumor (based on T and N stage)
  - 2. For an individual with colorectal cancer who:
    - a. has had or will undergo curative treatment of the primary tumor; and
    - b. whose metastases are in the lung or liver; and
    - c. for whom surgical resection is not possible.
- H. Any of the following neoplasms where the primary tumor was previously controlled and metachronous metastases have presented, under the following circumstances:
  - 1. Clinical presentation of one to three metastases to the adrenal gland, lung, liver, or bone when the following criteria are met:
    - a. the histology is non-small cell lung, colon, breast, sarcoma, renal cell or melanoma; and
    - b. disease free interval of one year or greater from the initial diagnosis; and
    - c. the primary tumor received curative therapy and is controlled; and
    - d. there is no prior evidence of metastatic disease (cranial or extracranial)

Note, all metastatic lesions present on imaging will be treated concurrently in a single episode.

- 2. SBRT to three or more sites other than those indications listed above is considered **experimental/investigational**.
- 3. Based upon our criteria and assessment of the peer-reviewed literature, SBRT has not been medically proven to be effective and, therefore, is considered **investigational** to induce the abscopal effect.
- 4. Based upon our criteria and assessment of the peer-reviewed literature, SBRT does not improve patient outcomes for individuals with oligoprogression (progression of a limited number of metastatic sites while other metastatic disease sites remain controlled), and, therefore, is considered **not medically necessary**.
- I. Prostate cancer when the disease is clinically localized and when used as definitive treatment when not treating pelvic lymph nodes.
  - a. Based upon our criteria and assessment of the peer-reviewed literature, biodegradable perirectal spacer (e.g., SpaceOar system) use in the setting of localized prostate cancer is medically appropriate.
- J. Recurrent soft tissue sarcoma that is within a previously irradiated area.
- K. Head and neck cancer, as retreatment of inpatients who have no evidence of metastatic disease.
- L. Cervical cancer, when there is a history of previous radiation to the same or abutting region and inability an to deliver therapeutic doses of radiation with other techniques.
- M. Curative treatment of recurrent, inoperable malignant gliomas in individuals who maintain an ECOG performance status of 0-2.
- N. Stage I or node-negative stage IIA limited small cell lung cancer.
- III. Based upon our criteria and assessment of the peer-reviewed literature, stereotactic body radiation therapy as an alternative to brachytherapy has not been medically proven to be effective and, therefore, is considered **investigational** for the definitive treatment of cervical cancer.
- IV. Based upon our criteria and assessment of the peer-reviewed literature, stereotactic body radiation therapy has not been medically proven to be effective and, therefore, is considered **not medically necessary** for *extrahepatic* bile duct cancer (cholangiocarcinoma), or gall bladder cancer.

Policy Number: 6.01.12

Page: 4 of 12

V. Based upon our criteria and assessment of the peer-reviewed literature, stereotactic radiosurgery does not improve patient outcomes and, therefore, is considered **not medically necessary** for the treatment of chronic pain.

- VI. Based upon our criteria and assessment of the peer-reviewed literature, stereotactic body radiation therapy has not been medically proven to be effective and, therefore, is considered **investigational** as a boost for prostate cancer.
- VII. Based upon our criteria and assessment of the peer-reviewed literature, stereotactic body radiation has not been medically proven to be effective and, therefore is considered not medically necessary in the adjuvant (post-operative) curative treatment of primary adrenocortical carcinoma.

Refer to Corporate Medical Policy #6.01.11 Proton Beam Radiation.

Refer to Corporate Medical Policy #6.01.24 Intensity Modulated Radiation Therapy (IMRT).

Refer to Corporate Medical Policy #7.01.23 Deep Brain Stimulation.

Refer to Corporate Medical Policy #11.01.03 Experimental or Investigational Services.

# **POLICY GUIDELINE**

SBRT, as a complete course of therapy, must be completed in five fractions or less within a single episode of care.

# **DESCRIPTION**

<u>Stereotactic radiosurgery</u> (SRS). SRS or fractionated radiosurgery, is a method of delivering high doses of ionizing radiation to small intracranial targets. This technique differs from conventional radiotherapy, which involves exposing large areas of tissue to relatively broad fields of radiation over a number of sessions. SRS entails delivering highly focused convergent beams in a single session so that only the desired target is radiated, sparing adjacent structures.

Stereotactic body radiation therapy (SBRT). As stated in the guideline developed by the American College of Radiology (ACR) and the American Society for Radiation Oncology (ASTRO) (2019), stereotactic body radiation therapy (SBRT) is an external beam radiation therapy method used to deliver, very precisely, a high dose of radiation to an extracranial target within the body, in five fractions or less. Specialized treatment planning results in high target dose and steep dose gradients beyond the target. The ability to deliver a single or a few fractions of high-dose ionizing radiation with high targeting accuracy and rapid dose falloff gradients encompassing tumors within a patient provides the basis for the development of SBRT. SBRT can be applied using noninvasive or minimally invasive stereotactic localization and radiation delivery techniques. It requires significantly improved delivery precision over that required for conventional radiotherapy. Specialized imaging techniques may be required, either to limit or to compensate for target movement during treatment planning and delivery.

<u>Perirectal Hydropgel Spacer Use</u>. SpaceOAR (Spacing Organs At Risk (OAR)) (Augmenix, Inc, Waltham, MA), is one example of a polyethylene glycol-based hydrogel spacer. It received FDA approval in 2015. The spacer is injected into the perirectal space, temporarily positioning the rectum further away from the radiation field reducing the dose of radiation outside of the designated treatment area, and proposes to improve patient's quality of life by reducing potential toxicities. The hydrogel remains in place for three months after which, it is then absorbed, and excreted through the patient's urine.

#### **ECOG Performance Status**

<b>Performance Status</b>	Description
0	Fully active; no performance restrictions
1	Strenuous physical activity restricted; fully ambulatory and able to carry out light work
2	Capable of all self-care but unable to carry out any work activities Up and about > 50% of waking hours.

Policy Number: 6.01.12

Page: 5 of 12

3	Capable of only limited self-care; confined to bed or chair >50% of waking hours
4	Completely disabled; cannot carry out any self-care; totally confined to bed or chair

### **RATIONALE**

The addition of SRS as a treatment regimen for intracranial masses less than four cm in diameter (e.g., gliomas, brain metastases, and meningiomas) has improved health outcomes by providing local tumor control and increasing survival rates. Radiosurgery in patients with lesions over 4 cm is associated with increased complications (e.g., radionecrosis, CNS toxicity) and lowers probability of reaching effective radiation doses.

SRS performed on inoperable arteriovenous malformations (AVM's) with diameters less than 4 cm have been found to have obliteration rates up to 94%.

SRS for trigeminal neuralgia refractory to medical management has similar outcomes compared to alternative treatments (e.g., microvascular decompression), is the least invasive non-pharmacologic treatment, and is associated with less complications (facial paresis, pain recurrence) than alternative treatments. Outcomes of gamma radiosurgery for acoustic neuroma include local tumor control, preservation of hearing and facial nerve function.

While there is minimal data investigating whether the cumulative higher radiation provides improved patient outcomes such as medium survival or quality of life for patients with malignancies, SRS may provide a palliative benefit and can offer a chance of prolonged survival. Its use for the treatment of acoustic neuroma increases the preservation of facial nerve function and decreases hearing loss associated with alternative treatments. A single-institution study reported outcomes of single fractions versus fractionated LINAC-based SRS in 129 patients with acoustic neuromas. With an average follow-up of 33 months, there was no difference in outcome in terms of local tumor control, facial nerve preservation, and hearing preservation.

Gamma knife radiosurgery is a form of SRS. Small case series examined the role of gamma knife radiosurgery in the treatment of refractory movement disorders, although radiofrequency ablation or deep brain stimulation would be considered the gold standard therapies for this indication. The ordering provider must certify that the usual and customary treatments outlined above would not be successful in managing the member's condition.

Several small prospective studies of SRS of spinal cord lesions, metastatic and primary, conclude that radiation-induced toxicity is minimal with axial and radicular pain improvement as high as 96%. Major benefits are relatively short treatment time in an outpatient setting combined with potentially better local control of the tumor with minimal risk of side effects. Stereotactic technique also allows for the treatment of lesions previously irradiated with conventional external beam irradiation.

Literature has increased regarding stereotactic radiosurgery/radiotherapy of other extracranial sites. Numerous studies address SRS/SBRT of the lung and liver (for both primary and metastatic lesions), renal cell carcinoma (for both primary and metastatic lesions), pancreas, and adrenal glands. These studies are generally of small sample size but show that the control rate is similar to the control rate for brain metastases (over 90%).

Oligometastatic disease has differing definitions in the literature. Lievens, et al. (2020) summarized the ESTRO-ASTRO consensus document to define oligometastatic disease from a radiation oncology perspective. Based on available data, the ESTRO-ASTRO established definition should be "1-5 metastatic lesions, a controlled primary tumor being optional, but where all metastatic sites must be safely treatable." The consensus is that most evidence derives from retrospective, single-center case series, with significant heterogeneity in both patient inclusion criteria and the definition of oligometastatic disease (number of lesions, size of lesions), further studies that are randomized and allow for cross-trial comparisons are needed. Oligoprogression is a conceptual state of oligometastatic disease and is the progression of a limited number of metastatic sites while other metastatic disease sites remain controlled. Studies regarding oligoprogression have been small in sample size, making it difficult to draw conclusions about appropriate treatment goals and patient types, and therefore, the routine use of SBRT in this setting is not supported.

Policy Number: 6.01.12

Page: 6 of 12

Abscopal effects are reported to be rare immune-response phenomenon in which treatment of one tumor with radiation therapy typically combined with immunotherapy, may cause the regression of other, untreated tumors. Abscopal responses have been documented in case series of patients with melanoma, breast, lung, and liver cancers however, the mechanism of which to induce this reported effect is not clearly understood, nor is the type of patient who is more likely to respond. The evidence is not sufficient to determine that utilizing SBRT to induce an abscopal effect, results in a meaningful improvement in the net health outcome.

Literature is active with respect to the use of SBRT for treatment of-prostate cancer and the National Comprehensive Cancer Network (NCCN) guidelines consider it an acceptable regimen, even for high-risk disease, when patients have received prior radiotherapy. Studies are small but improvements in quality of life and mild (grade I-II) toxicities have been reported. SBRT using a hypofractionation regimen for treatment of prostate cancer has been suggested as a more cost-effective alternative to IMRT because the treatment time is shorter, it utilizes resources more effectively, and the regimen is more convenient to the patient with less time away from work, and savings in transportation and housing if the treatment center is located away from the patient's home.

Hypofractionation, however, has been shown to increase the risk of acute moderate gastrointestinal (GI) toxicity when compared to conventional fractionation. ASTRO (2019) states that the radiation oncologist, in collaboration with the qualified medical physicist, will determine the need to utilize devices to stabilize or pull away organs at risk from inadvertently moving in to the field of treatment, and includes spacers as an example.

For individuals who have prostate cancer and are undergoing radiation therapy who receive a hydrogel spacer, the evidence includes a pivotal RCT with a 3-year follow up, observational studies, and systematic reviews. Mariados and colleagues (2015) carried out a manufacturer sponsored, prospective, multi-center, single-blind study, evaluating the percent of the rectal volume receiving 70 Gy in dose planning studies of 222 men randomized 2:1 to either a spacer or control group. All men received IMRT (79.2 Gy in 1.8-Gy fractions) to the prostate. Those with spacer use experienced a lower percentage of rectal volume receiving 70 Gy (3.3% vs. 11.7%). They evaluated the effectiveness of the SpaceOAR system in reducing adverse gastrointestinal events with IMRT. and demonstrated a significant reduction in mean rectal V70 with the device in place. There were no reports of device-related adverse events, rectal perforations, serious bleeding, or infections, and acute rectal adverse events were similar between the two groups, however there was significantly less pain experience reported by the treatment group. A reduction in late rectal toxicity (three to 15 months after RT) has been observed, and no patients treated with the spacer experienced greater than grade 1 toxicity. The 3-year follow up study (Hamstra et al. 2017) involved 63% of the original participants (94 SpaceOAR subjects and 46 control group) and demonstrated a reduction of Grade ≥ 1 adverse events in the treatment group (2% vs. 9%, p<.03).

NCCN guidelines (v4.2022) for principles of radiation therapy for prostate cancer state that biocompatible and biodegradable perirectal spacer materials may be implanted between the prostate and rectum in patients undergoing external radiotherapy with organ-confined prostate cancer in order to displace the rectum from high radiation dose regions. A randomized phase III trial demonstrated reduced rectal bleeding in patients undergoing the procedure, compared to controls. The guidelines state, "Overall, the panel believes that biocompatible and biodegradable perirectal spacer materials may be implanted between the prostate and rectum in patients undergoing external radiotherapy with organ-confined prostate cancer in order to displace the rectum from high radiation dose regions." Patients with obvious rectal invasion or visible T3 or posterior extension should not undergo perirectal spacer implantation.

Literature regarding SRS as first-line treatment of meningioma consists of prospective and retrospective case series, which conclude that SRS provides high rates of tumor growth control or regression in patients with benign meningiomas with low-risk, and in patients with cavernous sinus meningioma.

Due to a lack of clinical trials, there is insufficient evidence to permit conclusions about health outcomes for the treatment of chronic pain.

The NCCN SCLC Panel (2022) recommends SBRT followed by systemic therapy as an option for select patients with clinical stage I to IIA (T1-2 N0) small cell lung cancer who are medically inoperable or decline surgery (category 2A). This decision was based on a study published in 2018 (Shioyama, et al) that retrospectively analyzed 43 patients diagnosed with small-cell lung cancer, treated with SBRT at 11 Japanese institutions. The 2-year overall survival was 72.3%, progression-free survival was 44.6%, and distant metastasis free survival rates were 47.2%. Of the patients

Policy Number: 6.01.12

Page: 7 of 12

selected for inclusion, 80% were inoperable. The number of distant metastases was high at 47%, authors noting that only a small number of patients received chemotherapy using standard regimens but their progression free survival was higher than those treated with SBRT alone (70.0% vs. 44.6%). 2-year local control was 80.2% signaling effectiveness in the stage I population.

The role of radiotherapy in the adjuvant treatment of adrenocortical carcinoma has been controversial. The literature consists of small cohort studies and case series. The evidence is insufficient to determine that treatment with SBRT in this population results in meaningful improvement in the net health outcome. Furthermore, the NCCN guidelines for neuroendocrine and adrenal tumors (v1.2022) do not cite SBRT as a treatment recommendation for this indication.

# **CODES**

- Eligibility for reimbursement is based upon the benefits set forth in the member's subscriber contract.
- CODES MAY NOT BE COVERED UNDER ALL CIRCUMSTANCES. PLEASE READ THE POLICY AND GUIDELINES STATEMENTS CAREFULLY.
- Codes may not be all inclusive as the AMA and CMS code updates may occur more frequently than policy updates.

#### **CPT Codes**

Code	Description
31626	Bronchoscopy, rigid or flexible, including fluoroscopic guidance, when performed; with placement of fiducial markers, single or multiple
31627	Bronchoscopy, rigid or flexible, including fluoroscopic guidance, when performed; with computer-assisted, image-guided navigation (List separately in addition to code for primary procedure(s))
32553	Placement of interstitial device(s) for radiation therapy guidance (e.g., fiducial markers, dosimeter), percutaneous, intra-thoracic, single or multiple
49411	Placement of interstitial device(s) for radiation therapy guidance (eg, fiducial markers, dosimeter), percutaneous, intra-abdominal, intra-pelvic (except prostate), and/or retroperitoneum, single or multiple
49412	Placement of interstitial device(s) for radiation therapy guidance (eg, fiducial markers, dosimeter), open, intra-abdominal, intrapelvic, and/or retroperitoneum, including image guidance, if performed, single or multiple (List separately in addition to code for primary procedure)
55874	Transperineal placement of biodegradable material, peri-prostatic, single or multiple injection(s), including image guidance, when performed ( <i>effective 01/01/2018</i> )
61796	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); one simple cranial lesion
61797	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each additional cranial lesion, simple (List separately in addition to code for primary procedure)
61798	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); one complex cranial lesion
61799	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each additional cranial lesion, complex (List separately in addition to code for primary procedure)

Policy Number: 6.01.12

Page: 8 of 12

Code	Description
61800	Application of stereotactic headframe for stereotactic radiosurgery (List separately in addition to code for primary procedure)
63620	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); one spinal lesion
63621	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); each additional spinal lesion (List separately in addition to code for primary procedure)
77371	Radiation treatment delivery, stereotactic radiosurgery (SRS), complete course of treatment of cranial lesion(s), consisting of one 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
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to one or more lesions, including image guidance, entire course not to exceed five fractions
77432	Stereotactic radiation treatment management of cranial lesion(s) (complete course of treatment consisting of one session)
77435	Stereotactic body radiation therapy, treatment management, pretreatment course, to one or more lesions, including image guidance, entire course not to exceed five fractions

Copyright © 2022 American Medical Association, Chicago, IL

# **HCPCS Codes**

Code	Description
G0339	Image guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session, or first session of fractionated treatment. <b>Medically appropriate for the diagnosis codes listed below</b>
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. Medically appropriate for the diagnosis codes listed below

# **ICD10 Codes**

Code	Description
C22.0-C22.9	Malignant neoplasm of liver and intrahepatic bile ducts (code range)
C34.00-C34.92	Malignant neoplasm of bronchus and lung (code range)
C41.0	Malignant neoplasm of bones of skull and face
C41.2	Malignant neoplasm of vertebral column
C61	Malignant neoplasm of prostate
C64.1-C64.9	Malignant neoplasm of kidney, except renal pelvis (code range)
C65.1-C65.9	Malignant neoplasm of renal pelvis (code range)
C70.0-C70.9	Malignant neoplasm of meninges (code range)
C71.0-C71.9	Malignant neoplasm of brain (code range)

Policy Number: 6.01.12

Page: 9 of 12

Code	Description
C72.0-C72.1	Malignant neoplasm of spinal cord and cauda equina (code range)
C75.1-C75.3	Malignant neoplasm of other endocrine glands and related structures (code range)
C78.7	Secondary malignant neoplasm of liver and intrahepatic bile duct
C79.00-C79.02	Secondary malignant neoplasm of kidney and renal pelvis (code range)
C79.31	Secondary malignant neoplasm of brain
D01.5	Carcinoma in situ of liver, gallbladder and bile ducts
D18.02	Hemangioma of intracranial structures
D32.0-D32.9	Benign neoplasm of meninges (code range)
D33.0-D33.4	Benign neoplasm of brain and other parts of central nervous system (code range)
D35.0-D35.4	Benign neoplasm of other and unspecified endocrine glands (code range)
D37.6	Neoplasm of uncertain behavior of liver, gallbladder and bile ducts
D42.0-D42.9	Neoplasm of uncertain behavior of meninges (code range)
D43.0-D43.4	Neoplasm of uncertain behavior of brain and central nervous system (code range)
D44.3-D44.5	Neoplasm of uncertain behavior of pituitary gland and craniopharyngeal duct and pineal gland (code range)
G50.0	Trigeminal neuralgia
Q04.9	Congenital malformation of brain, unspecified
Q06.9	Congenital malformation of spinal cord, unspecified
Q07.9	Congenital malformation of nervous system, unspecified
Q27.9	Congenital malformation of peripheral vascular system, unspecified
Q28.2	Arteriovenous malformation of cerebral vessels
Q28.3	Other malformations of cerebral vessels

# **REFERENCES**

ACR–ASTRO Practice guideline for the performance of stereotactic body radiation therapy (2009). Revised 2019 [https://www.acr.org/-/media/ACR/Files/Practice-Parameters/SBRT-RO.pdf] accessed 5/24/22.

ASTRO guideline on radiation therapy for pancreatic cancer (2019) [ASTRO guideline - RT for Pancreatic Cancer - American Society for Radiation Oncology (ASTRO) - American Society for Radiation Oncology (ASTRO)] accessed 5/24/22.

\*Aluwini S, et al. CyberKnife stereotactic radiotherapy as monotherapy for low- to intermediate-stage prostate cancer: early experience, feasibility, and tolerance. <u>J Endourol</u> 2010 May;24(5):865-9.

Armstrong N, et al. SpaceOAR hydrogel spacer for reducing radiation toxicity during radiotherapy for prostate cancer. A systematic review. <u>Urology</u> 2021 May 23;156:e74-e85.

\*Buyyounouski MK, et al. Stereotactic body radiotherapy for primary management of early-stage, low-to intermediate risk prostate cancer: report of The American Society for Therapeutic Radiology and Oncology Emerging Technology Committee. Int J Radiation Oncol Biol Phys 2010;76(5):1297–304.

Policy Number: 6.01.12

Page: 10 of 12

\*Dhanachai M, et al. Fractionated stereotactic radiotherapy in residual or recurrent nasopharyngeal carcinoma. <u>Acta Oncol</u> 2007;46(6):828-33.

Farjam R, et al. Quantifying the impact of SpaceOAR hydrogel on interfractional rectal and bladder dose during 0.35 T MR-guided prostate adaptive radiotherapy. <u>J Applied Clin Med Physics</u> 2021 Jun 6;22(9):49-58.

\*Franzin A, et al. Neuroophthalmological evaluation after gamma knife surgery for cavernous sinus meningiomas. Neurosurg Focus 2007;23(6):E10.

\*Gerszten PC, et al. Radiosurgery for benign intradural spinal tumors. Neurosurg 2008 Apr;62(4):887-95.

\*Gerszten PC, et al. Radiosurgery for spinal metastases: clinical experience in 500 cases from a single institution. <u>Spine</u> 2007 Jan 15;32(2):193-9.

Gondi, V, et al. Radiation therapy for brain metastases: An ASTRO clinical practice guideline. <u>Practical Radiation Onc</u> 2022 (000):1-18.

\*Hodges JC, et al. Cost-effectiveness analysis of SBRT versus IMRT: an emerging initial treatment option for organconfined prostate cancer. Am J Manag Care 2012;18(5):e186-93.

\*Hof H, et al. Stereotactic single-dose radiotherapy (radiosurgery) of early stage non small-cell lung cancer (NSCLC). Cancer 2007 Jul 1;110(1):148-55.

\*Jabbari S, et al Stereotactic body radiotherapy as monotherapy or post-external beam radiotherapy boost for prostate cancer: technique, early toxicity, and PSA response. Int J Radiat Oncol Biol Phys 2012 Jan 1;82(1):228-34.

\*Jereczek-Fossa BA, et al. Robotic image-guided stereotactic radiotherapy, for isolate recurrent primary, lymph node or metastatic prostate cancer. Int J Radiat Oncol Biol Phys 2012 Feb 1;82(2):889-97.

\*Katz AJ, et al. Stereotactic body radiotherapy for localized prostate cancer: disease control and quality of life at 6 years. Radiat Oncol 2013 May 13;8(1):118.

\*Katz AW, et al. Hypofractionated stereotactic body radiation therapy (SBRT) for limited hepatic metastases. <u>Int J Radiat</u> Oncol Biol Phys 2007 Mar 1;67(3):793-8.

Kim L, et al. Application of stereotactic body radiotherapy in advanced pancreatic cancers in Australia. <u>J Med Rad Sci</u> 2019 Mar;66(2):54-61.

\*King CR, et al. Stereotactic body radiotherapy for localized prostate cancer: pooled analysis from a multi-institutional consortium of prospective phase II trials. <u>Radiother Oncol</u> 2013 Nov;109(2):217-21.

\*King CR, et al. Long-term outcomes from a prospective trial of stereotactic body radiotherapy for low-risk prostate cancer. In J Radiat Oncol Biol Phys 2012;82(2):877–82.

Lievens Y, et al. Defining oligometastatic disease from a radiation oncology perspective: an ESTRO-ASTRO consensus document. Radiotherapy and Oncology 2020;148:157-166.

\*Lagerwaard FJ, et al. Outcomes of risk-adapted fractionated Stereotactic radiotherapy for stage I non-small-cell lung cancer. Int J Radiat Oncol Biol Phys 2008 Mar 1;70(3):685-92.

Lutz S, et al. Palliative radiation therapy for bone metastases: update of an ASTRO Evidence-Based Guideline. <u>Pract</u> Radiat Oncol 2017 Jan-Feb;7(4):4-12.

<sup>\*</sup>Chang SD, et al. Stereotactic radiosurgery and hypofractionated stereotactic radiotherapy for residual or recurrent cranial base and cervical chordomas. Neurosurg Focus 2001 Mar 15;10(3):E5.

<sup>\*</sup>Davidson L, et al. Postoperative gamma knife surgery for benign meningiomas of the cranial base. <u>Neurosurg Focus</u> 2007;23(4):E6.

<sup>\*</sup>Dhakal S, et al. Stereotactic body radiotherapy for pulmonary metastases from soft-tissue sarcomas: excellent local lesion control and improved patient survival. <u>J Radiat Oncol Biol Phys</u> 2012 Feb 1;82(2):940-5..

Policy Number: 6.01.12

Page: 11 of 12

\*Milano MT, et al. Descriptive analysis of oligometastatic lesions treated with curative-intent stereotactic body radiotherapy. Int J Radiat Oncol Biol Phys 2008 Dec 1;72(5):1516-22.

Myrehaug S, et al. Reirradiation spine stereotactic body radiation therapy for spinal metastases: a systematic review. <u>J Neurosurg Spine</u> 2017 Oct; 27(4):428-435.

National Comprehensive Cancer Network (NCCN). Central Nervous System Cancers. Clinical practice guidelines in oncology. V.2.2021 [www.nccn.org/professionals/physician gls/pdf/cns/pdf] accessed 05/24/22.

National Comprehensive Cancer Network (NCCN). Neuroendocrine and Adrenal Tumors. Clinical practice guidelines in oncology. V.1.2022[https://www.nccn.org/professionals/physician\_gls/pdf/neuroendocrine.pdf] accessed 05/24/22.

National Comprehensive Cancer Network (NCCN). Hepatobiliary cancers. Clinical practice guidelines in oncology. V.1. 2022 [http://www.nccn.org/professionals/physician\_gls/pdf/hepatobiliary.pdf] accessed 05/24/22.

National Comprehensive Cancer Network. Practice guidelines in oncology: non-small cell lung cancer. V.3.2022. [http://www.nccn.org/professionals/physician\_gls/pdf/nscl.pdf] accessed 05/24/22.

National Comprehensive Cancer Network. Practice guidelines in oncology: prostate cancer. V.4.2022. [http://www.nccn.org/professionals/physician\_gls/pdf/prostate.pdf] accessed 06/28/22.

National Comprehensive Cancer Network. Practice guidelines in oncology: small cell lung cancer. V.2.2022. [http://www.nccn.org/professionals/physician\_gls/pdf/sclc.pdf]accessed 5/24/22.

\* Oken, M.M, et al. Toxicity and response criteria of the Eastern Cooporative Oncology Group. <u>Am J Clin Oncol</u>. 1982;5:649-655.

\*Okunieff P, et al. Stereotactic body radiation therapy (SBRT) for lung metastases. Acta Oncol 2006;45(7):808-17.

Palta M, et al. Radiation therapy for pancreatic cancer: executive summary of an ASTRO clinical practice guideline. <u>Pract Radiat Oncol</u> 2019 Sep-Oct;9(5):322-332.

\*Parthan A, et al. Comparative cost-effectiveness of stereotactic body radiation therapy versus intensity-modulated and proton radiation therapy for localized prostate cancer. <u>Frontiers Radiat Oncol</u> 2012 Aug;2(91):1-9.

Payne H. A, et al. SpaceOAR hydrogel spacer injection prior to stereotactic body radiation therapy for men with localized prostate cancer, a systematic review. Medicine 2021 Nov 16;100:49

Perri F, et al. Management of recurrent nasopharyngeal carcinoma: current perspectives. <u>Onco Targets Ther</u>. 2019; 12: 1583–1591.

\*Ricardi U, et al. Stereotactic body radiation therapy for lung metastases. Lung Cancer 2012 Jan;75(1):77-81.

Rodriguez-Ruiz, et al. Immunological mechanisms responsible for radiation-induced abscopal effect. <u>Trends Immunol</u> 2018 Aug;39(8):644-655

\*Ryu S, et al. Pain control image-guided radiosurgery for solitary spinal metastasis. <u>J Pain Symptom Manage</u> 2008 Mar;35(3):292-8.

\*Safavi-Abbasi S, et al. Nonvestibular schwannomas: an evaluation of functional outcome after radiosurgical and microsurgical management. <u>Acta Neurochir</u> 2010 Jan;152(1):35-46.

\*Sher DJ, et al. Cost effectiveness analysis of SBRT versus IMRT for low-risk prostate cancer. <u>Am J Clin Oncol</u> 2014 Jun;37(3):215-21.

<sup>\*</sup>Mariados, et al. Hydrogel spacer prospective multicenter randomized controlled pivotal trial: dosimetric and clinical effects of perirectal spacer application in men undergoing prostate image guided intensity modulated radiation therapy. <u>Int J Radiat Oncol Biol Phys.</u> 2015;92:971-977.

<sup>\*</sup>Morgan SC, et al. Hypofractionated radiation therapy for localized prostate cancer: an ASTRO, ASCO, and AUA evidence-based guideline. J Clin Oncol. 2018 Oct 11;36(34):3411-3430.

Policy Number: 6.01.12

Page: 12 of 12

Tchelebi LT, et al. Conventionally fractionated radiation therapy versus stereotactic body radiation therapy for locally advanced pancreastic cancer (CRiSP): and international systematic review and meta-analysis. <u>Cancer</u> 2020 May 15;126(10):2120-2131.

\*Timmerman RD, et al. The North American experience with stereotactic body radiation therapy in non-small cell lung cancer. <u>J Thorac Oncol</u> 2007;2(7 Suppl 3);S101-12.

Toesca DAS, et al. Management of borderline resectable pancreatic cancer. <u>Int J Radiat Oncol Biol Phys.</u> 2018 Apr 1;100(5):1155-1174.

- \*Wu SX, et al. Outcome of fractionated stereotactic radiotherapy for 90 patients with locally persistent and recurrent nasopharyngeal carcinoma. <u>Int J Radiat Oncol Biol Phys</u> 2007;69(3):761-9..
- \*Yen CP, et al. Gamma knife surgery for focal brainstem gliomas. J Neurosurg 2007 Jan;106(1):8-17.
- \*Zheng Y, et al. Surgical and nonresectional therapies for pulmonary metastases. Surg Clin N Am 2010;90:1041-51.
- \*Key Article

### **KEY WORDS**

CyberKnife, Fractionated stereotactic radiosurgery, Gamma knife, Linac, Linear accelerator, Stereotactic radiotherapy, Space Oar, Perirectal hydrogel spacer.

#### CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

There is currently a Local Coverage Determination (LCD) for Stereotactic Radiosurgery (SRS) and Stereotactic Body Radiation Therapy (SBRT). Please refer to the following LCD website for Medicare Members:

https://www.cms.gov/medicare-coverage-database/details/lcd-