

# Clinical Policy: Stereotactic Body Radiation Therapy

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## Description

Stereotactic body radiation therapy (SBRT) and stereotactic radiosurgery (SRS) are radiation therapies delivered via stereotactic guidance to a small, precise target. Both largely spare the surrounding tissue by converging multiple non-parallel radiation beams into one sharply defined target, thereby greatly reducing the amount of radiation to which the surrounding tissue is exposed. SBRT is used to treat extra-cranial sites and can be performed in one to five sessions (fractions). SRS is used to treat intra-cranial and spinal targets. SRS is typically performed in a single session but can be performed in a limited number of sessions, up to a maximum of five. Gamma-ray photons, X-ray photons, protons, helium ions, and neutrons have all been used for SBRT and SRS.

## Policy/Criteria

- I. It is the policy of Pennsylvania Health and Wellness<sup>®</sup> (PHW) that up to five sessions of stereotactic body radiation therapy (SBRT) are **medically necessary** for any of the following indications:
  - A. Early stage non-small cell lung cancer (i.e., stage I through II, T1 through T3,N0,M0) as an alternative to surgery;
  - B. Acoustic neuroma;
  - C. Localized malignant conditions in the body where highly precise application of high-dose radiotherapy is required, including tumors of any type arising in or near previously irradiated regions;
  - D. Recurrences of metastatic spine cancer after previous radiation;
  - E. Hepatocellular carcinoma, as an alternative to ablation/embolization techniques or when these therapies have failed or are contraindicated;
  - F. Recurrent malignant disease requiring palliation and/or as palliative treatment for liver-related symptoms;
  - G. Low to intermediate risk localized prostate cancer;
  - H. High risk prostate cancer when combined with androgen deprivation therapy, when delivering longer courses of external beam radiation therapy would present a documented hardship;
  - I. Inoperable spinal tumors causing compression or intractable pain;
  - J. Pancreatic adenocarcinoma:
    1. Locally advanced disease, without distant metastases;
    2. Combination therapy not feasible;
    3. Isolated local recurrence, respecting normal organ tolerance.
  - K. Extracranial oligometastatic disease, all of the following:
    1. One to three metastatic lesions involving the lungs, liver or bone;
    2. Primary tumor is breast, colorectal, melanoma, non-small cell lung, prostate, renal cell, or sarcoma;
    3. Primary tumor is controlled;
    4. No prior history of metastatic disease.

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- II.** It is the policy of PHW that up to five sessions of stereotactic radiosurgery (SRS) are **medically necessary** for any one of the following indications:
- A. Cranial indications when unresectable due to deep intracranial location or member/enrollee is unable to tolerate conventional operative intervention, one of the following:
    - 1. Inoperable, small ( $\leq 3$  cm) arteriovenous (AV) malformations,
    - 2. Benign tumors including meningiomas, pituitary adenomas, craniopharyngiomas, hemangiomas, and neoplasms of the pineal gland;
  - B. Small acoustic neuromas ( $\leq 3$  cm) or enlarging neuromas in patients who are not candidates for surgery;
  - C. Brain malignancies, primary and/or metastatic lesions if other positive clinical indications exist, such as stable systemic disease, Karnofsky Performance Status 40 or greater (and expected to return to 70 or greater with treatment), and reasonable survival expectations, or Eastern Cooperative Oncology Group (ECOG) Performance Status of 3 or less (and expected to return to 2 or less with treatment);
  - D. Intracranial lesions where the patient refuses surgery;
  - E. Severe, sustained trigeminal neuralgia not responsive to other treatments,
  - F. Booster treatment for larger cranial or spinal lesions that have been treated initially with external beam radiation therapy or surgery. Avoid when in close proximity to cranial nerves II and VIII if the maximal dose delivered exceeds 10 Gy;
  - G. Relapse in previously irradiated cranial or spinal field where additional stereotactic precision is required to avoid unacceptable vital tissue radiation;
  - H. Inoperable spinal tumors causing compression or intractable pain;
  - I. Refractory epileptic seizures in children when the lesion is located where a conventional surgical approach is technically difficult or excessively risky.
  - J. Other cranial non-neoplastic conditions, such as trigeminal neuralgia and select cases of medically refractory epilepsy, movement disorders such as Parkinson's disease and essential tremor, and hypothalamic hamartomas.
- III.** It is the policy of PHW that there is insufficient evidence to support more than five sessions of SBRT or SRS for indications other than those listed above.

### Background

Stereotactic body radiation therapy or stereotactic ablative therapy (SBRT) and stereotactic radiosurgery (SRS) both pair a high degree of anatomic targeting accuracy and reproducibility with very high doses of extremely precise, externally generated, ionizing radiation to inactivate or eradicate a defined target(s). The target is defined by high resolution stereotactic imaging. The procedure involves a multidisciplinary team often consisting of a surgeon, radiation oncologist, radiologist, medical radiation physicist, dosimetrist, radiation therapist, radiation therapy nurse and a specialist of the disease site such as a neurologist.<sup>2</sup>

Stereotactic describes a procedure during which a target lesion is localized relative to a fixed 3-D reference system, such as a rigid head frame affixed to a patient, fixed bony landmarks, a system of implanted fiducial markers, or other similar system. This localization procedure allows physicians to perform image-guided procedures with a high degree of accuracy and precision.<sup>2</sup>

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The risk of developing permanent damage following SRS varies by the location of the lesion in the brain. Lesions located deep in the gray matter (thalamus, basal ganglia) or brainstem (pons, midbrain) carry the maximum risk of neurologic complications. Complications are less likely with lesions in the frontal and temporal lobes. Fractionated radiation therapy is often preferred to SRS for the treatment of lesions in the deep gray matter or the brainstem.

Technologies that are used to perform SBRT and SRS include Gamma Knife<sup>®</sup>, LINAC (linear accelerator), CyberKnife<sup>®</sup> and proton beam or heavy-charged-particle radiosurgery. In order to enhance precision, various devices may incorporate robotics and real time imaging.<sup>3</sup>

#### *Gamma Knife*

Standard gamma knife uses 192 or 201 beams of highly focused gamma rays all aiming at the target region. The Gamma Knife is ideal for treating small to medium size lesions.<sup>15</sup>

#### *Linear accelerator- (LINAC)*

LINAC machines deliver high-energy x-rays, also known as photons. It can provide treatment on larger tumors in a single session or during multiple sessions (fractionated SRT). The principles of LINAC are identical to GammaKnife.<sup>3,10,15</sup>

#### *CyberKnife*

This device combines a mobile LINAC machine with an image guided robotic system that delivers either a single large dose or fractionated radiation therapy. The overall length of time of treatment on a CyberKnife is typically longer than with other radiation therapy modalities.<sup>3,9</sup>

#### *Proton Beam*

There is limited use of proton beam in North America; however, the number of centers has dramatically increased in the last several years.<sup>15</sup> Protons are atoms that carry a positive charge. Compared to the use of photons (x-rays), the energy from protons conforms to the tumor better and causes less damage to the surrounding tissue. This allows a greater dose of radiation to be used due to minimizing the effects to normal tissue.<sup>29</sup>

The National Comprehensive Cancer Network (NCCN) states that SBRT/extremely hypofractionated image-guided intensity-modulated radiation therapy (IMRT) regimens (6.5 Gy per fraction or greater) can be considered as an alternative to conventionally fractionated regimens in the treatment of prostate cancer at clinics with appropriate technology, physics, and clinical expertise. Longer follow-up and prospective multi-institutional data are required to evaluate longer-term results, especially because late toxicity theoretically could be worse in hypofractionated regimens compared to conventional fractionation (1.8 Gy to 2.0 Gy).<sup>11</sup> Results from a study comparing the efficacy of SBRT plus androgen deprivation therapy (ADT) to fractionated radiotherapy plus ADT in higher risk prostate cancer support recent NCCN guideline updates, which include SBRT as a non-preferred option for higher risk biological males. Findings demonstrated no difference in survival between SBRT + ADT and standard of care external beam radiation therapy + ADT for high-risk prostate cancer.<sup>39</sup>

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The World Health Organization notes the following information regarding Grade I meningiomas: stereotactic or image guided therapy is recommended when using tight margins or when close to critical structures.<sup>20</sup>

A revision to the metastatic spine guideline notes that in selected cases or recurrences after previous radiation, SBRT is appropriate.<sup>20</sup>

Definitive radiation therapy, particularly SBRT, is recommended for individuals with early-stage non-small cell lung cancer (i.e., stage I through II, NO) who are medically inoperable or those who refuse surgery.<sup>21</sup>

SBRT for the treatment of pancreatic adenocarcinoma should be delivered at an experienced high-volume center with technology that allows for image-guided radiation therapy or in a clinical trial.<sup>22</sup> Most recent guidelines from NCCN on the principles of radiation therapy note that data are limited to support radiation therapy recommendations for locally advanced disease. The guidelines include SBRT as an “option” in select patients with pancreatic adenocarcinoma with good performance status and locally advanced disease without systemic metastasis. Chemo radiation or SBRT may also be an option in select patients who are not candidates for combination therapy, an option in disease progression when SBRT had not been previously given, and as an option for isolated local recurrence. SBRT should be avoided if direct invasion of the bowel or stomach is observed on imaging and/or endoscopy.<sup>22</sup>

SBRT can be considered in patients with hepatocellular carcinoma, as an alternative to ablation/embolization techniques or when these therapies have failed or are contraindicated. SBRT (one to five fractions) is often used for patients with one to three tumors. SBRT could be considered for larger lesions or more extensive disease, if there is sufficient uninvolved liver and liver radiation tolerance can be respected. There should be no extrahepatic disease, or it should be minimal and addressed in a comprehensive management plan (Category 2B recommendation).<sup>23</sup>

There is currently insufficient evidence to recommend SBRT for treatment of head and neck cancers, however, it might be beneficial for palliation or for older adults. When using SBRT techniques in reirradiation, selection of patients who do not have circumferential carotid involvement is advised. The best outcomes are seen in patients with smaller tumors and no skin involvement.<sup>31</sup>

A systematic review and meta-analysis of 32 retrospective studies published between 1999 and 2019 demonstrated that the effectiveness and safety of stereotactic radiosurgery (SRS) for brainstem metastases (BSM) was comparable to SRS for nonbrainstem brain metastases. Death related to BSM progression following treatment with SRS was rare and patients often experienced symptomatic improvement. Based upon the apparent effectiveness and safety of SRS for BSM in the context of acute morbidity or death from BSM growth, consideration of SRS on emerging trials of targeted therapy for nonbrainstem brain metastases should be considered.<sup>37</sup>

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The American Academy of Neurology states there is insufficient evidence to make recommendations regarding the use of gamma knife thalamotomy in the treatment of essential tremor.<sup>24</sup> Per UpToDate, “Gamma knife thalamotomy has not generally been adopted for essential tremor due to concerns about delayed radiation side effects, including risk of radiation necrosis and a theoretical risk of secondary tumor formation.”<sup>28</sup>

Gamma knife stereotactic radiosurgery can offer a less invasive approach for resection of medial temporal structures in mesial temporal sclerosis (MTS) by allowing increased preservation of tissue. SRS may be an excellent option for patients unwilling to undergo invasive open surgical treatment of MTS. Further randomized trials are ongoing to assess the continued efficacy and outcomes of SRS as a treatment option in patients with MTS.<sup>38</sup> Per UpToDate on seizures and epilepsy in children, “Stereotactic radiosurgery may be helpful for selected cases when the lesion is located where a conventional surgical approach is technically difficult or excessively risky. More information is needed on long-term outcome before wider application of this procedure.”<sup>34</sup>

*American Society for Radiation Oncology (ASTRO), the American Society of Clinical Oncology (ASCO), and the American Urological Association (AUA)*

Per a recent new guideline on hypofractionated radiation therapy for localized prostate cancer from ASTRO, ASCO, and the AUA, “Based on high-quality evidence, strong consensus was reached for offering moderate hypofractionation across risk groups to patients choosing external beam radiation therapy. The task force reached a weaker consensus for ultrahypofractionated radiation therapy. Extremely hypofractionated radiation therapy, also known as ultrahypofractionation, SBRT or stereotactic ablative radiation therapy (SABR) may be offered for low and intermediate risk prostate cancer, but strongly encourages treatment of intermediate-risk patients on a clinical trial or multi-institutional registry. For high-risk disease, the panel does not suggest offering ultrahypofractionation outside of a trial or registry.”<sup>30</sup> Recommendations for ultrahypofractionation were graded by the panel as conditional, reflecting the limited base of current evidence on this approach. The guideline recommends large-scale randomized clinical trials and stresses the importance of shared decision making between clinicians and patients.<sup>30</sup>

### Coding Implications

This clinical policy references Current Procedural Terminology (CPT®). CPT® is a registered trademark of the American Medical Association. All CPT codes and descriptions are copyrighted 2023, American Medical Association. All rights reserved. CPT codes and CPT descriptions are from the current manuals and those included herein are not intended to be all-inclusive and are included for informational purposes only. Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

CPT® Codes	Description
61796	Stereotactic radiosurgery (particle beam, gamma ray, or linear accelerator); 1 simple cranial lesion

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<b>CPT® Codes</b>	<b>Description</b>
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); 1 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)
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); 1 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 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
77373	Stereotactic body radiation therapy, treatment delivery, per fraction to 1 or more lesions, including image guidance, entire course not to exceed 5 fractions
77432	Stereotactic radiation treatment management of cranial lesion(s) (complete course of treatment consisting of 1 session)
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

<b>HCPS</b>	<b>Description</b>
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

<b>Reviews, Revisions, and Approvals</b>	<b>Revision Date</b>	<b>Approval Date</b>
Added hepatocellular cancer as an indication for SBRT per NCCN; added information to background section from NCCN that SBRT in the treatment of pancreatic adenocarcinoma be used preferably in the context of a clinical trial; added to background section, that while AAN, that there is insufficient evidence to make recommendations regarding the use of gamma knife thalamotomy in the treatment of essential tremor; codes reviewed and updated.	03/18	
Added low to intermediate risk localized prostate cancer to section I.as medically necessary. Updated background. Revised coding	2/19	03/19

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Reviews, Revisions, and Approvals	Revision Date	Approval Date
section, combining ICD 10 codes into applicable categories. References reviewed and updated.		
Revised wording in I.A from “in patients who are not surgical candidates” to “as an alternative to surgery”; Added to section I. Indications for SBRT: Pancreatic cancer and high risk prostate cancer, when specific criteria are met; Added to section II- indication for SRS: Refractory epileptic seizures in children, when criterion is met. Updated background information regarding NCCN recommendations on pancreatic cancer. Added note that ICD 10 code list may not be all inclusive. Added the following ICD-10 code/code ranges: C25.0- C25.9, C78.89, G40.011- G40.019, G40.111-G40.119, G40.211-G40.219, G40.311- G40.319, G40.A11-G40.A19, G40.B11-G40.B19, G40.411- G40.419, G40.803-G40.804, G40.813-G40.814, G40.823- G40.824, and G40.911-G40.919. Internal and external specialist review.	10/2020	7/2020
Annual review of policy. References reviewed and updated. Added CPT- 61800. Replaced “member” with” member/enrollee” in all instances.	7/2021	
Annual Review. In II.A., clarified that “one of the following” must be met. Removed “SBRT” from the note about proximity to cranial nerves in II.F. “Experimental/investigational” verbiage replaced in criteria III. with descriptive language. Changed "Last Review Date" in the header to "Date of Last Revision" and "Date" in revision log to "Revision Date". Reviewed by specialist.	8/30/2022	
Annual review completed. Added I.F. “Recurrent malignant disease requiring palliation and/or as palliative treatment for liver-related symptoms”. “Inoperable spinal tumors” added as criteria I.I. Added I.K. “Extracranial oligometastatic disease: 1. One to three metastatic lesions involving the lungs, liver or bone; 2. Primary tumor is breast, colorectal, melanoma, non-small cell lung, prostate, renal cell, or sarcoma; 3. Primary tumor is controlled; 4. No prior history of metastatic disease”. Background updated and minor rewording with no clinical significance. ICD-10 Code table removed. References reviewed and updated. Reviewed by external specialist.	09/2023	
Annual review. Updated cancer staging in Criteria I.A. to align with National Comprehensive Cancer Network (NCCN) guidelines. Criteria II.C. updated to include details regarding positive clinical indications regarding stable systemic disease, Karnofsky Performance Score, survival expectations, and Eastern Cooperative Oncology Group (ECOG) Performance Status to align with ASTRO 2022 Model Policy for SRS. Criteria II.J. added to include trigeminal neuralgia and select cases of medically	01/24	03/20/2024

Reviews, Revisions, and Approvals	Revision Date	Approval Date
refractory epilepsy, movement disorders such as Parkinson’s disease and essential tremor, and hypothalamic hamartomas to align with 2022 ASTRO Model Policy for SRS. Background updated with no impact on criteria. References reviewed and updated. Reviewed by external specialist.		

**References**

- American College of Radiology. ACR-ARS Practice Parameter for the Performance of Brain Stereotactic Radiosurgery. <https://www.acr.org/-/media/ACR/Files/Practice-Parameters/stereobrain.pdf>. Published 1997 (revised 2021). Accessed December 06, 2023.
- American Society for Radiation Oncology (ASTRO). Model Policy: Stereotactic body radiation therapy (SBRT). [https://www.astro.org/ASTRO/media/ASTRO/Daily%20Practice/PDFs/ASTROSBR\\_TModelPolicy.pdf](https://www.astro.org/ASTRO/media/ASTRO/Daily%20Practice/PDFs/ASTROSBR_TModelPolicy.pdf). Updated June 2020. Accessed November 08, 2023.
- Chen CC, Chapman PH. Stereotactic cranial radiosurgery. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated April 05, 2022. Accessed December 05, 2023.
- Koyfman SA. General principles of radiation therapy for head and neck cancer. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated October 30, 2023. Accessed December 06, 2023.
- Health Technology Assessment. Stereotactic radiosurgery for movement disorders. Hayes. [www.hayesinc.com](http://www.hayesinc.com). Published September 13, 2019 (annual review October 07, 2022). Accessed December 05, 2023.
- Heinzerling JH, Timmerman RD. Stereotactic body radiation therapy for lung tumors. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated August 26, 2022. Accessed December 06, 2023.
- Tuleasca C, Régis J, Sahgal A, et al. Stereotactic radiosurgery for trigeminal neuralgia: a systematic review. *J Neurosurg*. 2018;130(3):733 to 757. doi:10.3171/2017.9.JNS17545
- Karajannis MA, Marcus KJ. Focal brainstem glioma. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated March 20, 2023. Accessed December 06, 2023.
- Shih HA. Radiation therapy of pituitary adenomas. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated April 20, 2021. Accessed December 04, 2023.
- Mitin T. Radiation therapy techniques in cancer treatment. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated March 16, 2023. Accessed December 05, 2023.
- National Comprehensive Cancer Network®. NCCN Clinical Practice Guidelines in Oncology Version 4.2023 Prostate Cancer. [https://www.nccn.org/professionals/physician\\_gls/pdf/prostate.pdf](https://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf). Published September 07, 2023. Accessed December 06, 2023.
- Local Coverage Determination (LCD): Stereotactic radiation therapy: stereotactic radiosurgery (SRS) and stereotactic body radiation therapy (SBRT) (L35076). Centers for Medicare and Medicaid Services website. <https://www.cms.gov/medicare-coverage-database/new-search/search.aspx>. Published October 01, 2015 (revised April 1, 2020). Accessed December 06, 2023.
- Park JK, Vernick DM, Ramakrishna N. Vestibular schwannoma (acoustic neuroma). UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated September 28, 2022. Accessed December 06, 2023.
- Pollock BE, Lunsford LD. A call to define stereotactic radiosurgery. *Neurosurgery*. 2004;55(6):1371 to 1373. doi:10.1227/01.neu.0000143613.13759.d4



15. Stereotactic radiosurgery and stereotactic body radiotherapy (SBRT). Radiological Society of North America. <https://www.radiologyinfo.org/en/info.cfm?pg=stereotactic>. Published May 28, 2019 (Reviewed July 01, 2023). Accessed December 06, 2023.
16. Singer RJ, Ogilvy CS, Rordorf G. Brain arteriovenous malformations. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated June 23, 2023. Accessed December 06, 2023.
17. Synderman C. Chordoma and chondrosarcoma of the skull base. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated April 13, 2022. Accessed December 04, 2023.
18. Owen D, Iqbal F, Pollock BE, et al. Long-term follow-up of stereotactic radiosurgery for head and neck malignancies. *Head Neck*. 2015;37(11):1557 to 1562. doi:10.1002/hed.23798.
19. National Comprehensive Cancer Network®. NCCN Clinical Practice Guidelines in Oncology Version 5.2023. Non-Small Cell Lung Cancer. [https://www.nccn.org/professionals/physician\\_gls/pdf/nscl.pdf](https://www.nccn.org/professionals/physician_gls/pdf/nscl.pdf). Published November 08, 2023. Accessed December 06, 2023.
20. National Comprehensive Cancer Network®. NCCN Clinical Practice Guidelines in Oncology Version 1.2023. Central Nervous System Cancers. [https://www.nccn.org/professionals/physician\\_gls/pdf/cns.pdf](https://www.nccn.org/professionals/physician_gls/pdf/cns.pdf). Published March 24, 2023. Accessed December 06, 2023.
21. Videtic GMM, Donington J, Giuliani M, et al. Stereotactic body radiation therapy for early-stage non-small cell lung cancer: executive Summary of an ASTRO evidence-based guideline. *Pract Radiat Oncol*. 2017;7(5):295 to 301. doi:10.1016/j.prro.2017.04.014
22. National Comprehensive Cancer Network®. NCCN Clinical Practice Guidelines in Oncology Version 2.2023 Pancreatic Adenocarcinoma. [https://www.nccn.org/professionals/physician\\_gls/pdf/pancreatic.pdf](https://www.nccn.org/professionals/physician_gls/pdf/pancreatic.pdf) Published June 19, 2023. Accessed December 06, 2023.
23. National Comprehensive Cancer Network®. NCCN Clinical Practice Guidelines in Oncology Version 2.2023. Hepatocellular Carcinoma. [https://www.nccn.org/professionals/physician\\_gls/pdf/hcc.pdf](https://www.nccn.org/professionals/physician_gls/pdf/hcc.pdf). Published September 14, 2023. Accessed December 04, 2023.
24. Zesiewicz TA, Elble RJ, Louis ED, et al. Evidence-based guideline update: treatment of essential tremor: report of the Quality Standards subcommittee of the American Academy of Neurology. *Neurology*. 2011 (Reaffirmed July 2022);77(19):1752 to 1755. doi:10.1212/WNL.0b013e318236f0fd
25. Curley SA, Stuart KE, Schwartz JM, Carithers RL, Hunter KU. Localized hepatocellular carcinoma: Liver-directed therapies for nonsurgical candidates not eligible for local thermal ablation. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated December 06, 2022. Accessed December 06, 2023.
26. Caivano D, Valeriani M, Russo I, et al. Stereotactic body radiation therapy in primary and metastatic liver disease. *Anticancer Res*. 2017 Dec;37(12):7005 to 7010.
27. Su TS, Liang P, Liang J, et al. Long-term survival analysis of stereotactic ablative radiotherapy versus liver resection for small hepatocellular carcinoma. *Int J Radiat Oncol Biol Phys*. 2017 Jul 1;98(3):639 to 646.
28. Chou KL. Surgical treatment of essential tremor. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated August 15, 2023. Accessed December 06, 2023.
29. DiBiase SJ, Roach M. External beam radiation therapy for localized prostate cancer. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated October 05, 2023. Accessed December 05, 2023.

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30. Morgan SC, Hoffman K, Loblaw DA, et al. Hypofractionated radiation therapy for localized prostate cancer: executive summary of an ASTRO, ASCO, and AUA evidence-based guideline. *Pract Radiat Oncol*. 2018;8(6):354 to 360. doi:10.1016/j.prro.2018.08.002
31. National Comprehensive Cancer Network<sup>®</sup>. NCCN Clinical Practice Guidelines in Oncology Version 1.2024. Head and Neck Cancers. [https://www.nccn.org/professionals/physician\\_gls/pdf/head-and-neck.pdf](https://www.nccn.org/professionals/physician_gls/pdf/head-and-neck.pdf). Published October 09, 2023. Accessed December 04, 2023.
32. Ryan DP, Mamon H. Initial chemotherapy and radiation for nonmetastatic, locally advanced, unresectable and borderline resectable, exocrine pancreatic cancer. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated July 06, 2023. Accessed December 04, 2023.
33. Zelefsky MJ, Kollmeier M, McBride S, et al. Five-year outcomes of a phase 1 dose-escalation study using stereotactic body radiosurgery for patients with low-risk and intermediate-risk prostate cancer. *Int J Radiat Oncol Biol Phys*. 2019;104(1):42 to 49. doi:10.1016/j.ijrobp.2018.12.045
34. Wilfong A. Seizures and epilepsy in children: refractory seizures. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated August 09, 2023. Accessed December 04, 2023.
35. Health Technology Assessment. Stereotactic Radiosurgery for Trigeminal Neuralgia. Hayes. [www.hayesinc.com](http://www.hayesinc.com). Published September 26, 2019 (annual review October 20, 2022). Accessed December 05, 2023.
36. Shih HA. Overview of the treatment of brain metastases. UpToDate. [www.uptodate.com](http://www.uptodate.com). Updated November 23, 2023. Accessed December 06, 2023.
37. Chen WC, Baal UH, Baal JD, et al. Efficacy and Safety of Stereotactic Radiosurgery for Brainstem Metastases: A Systematic Review and Meta-analysis. *JAMA Oncol*. 2021;7(7):1033 to 1040. doi:10.1001/jamaoncol.2021.1262
38. Chang EF, Englot DJ, Vadera S. Minimally invasive surgical approaches for temporal lobe epilepsy. *Epilepsy Behav*. 2015;47:24 to 33. doi:10.1016/j.yebeh.2015.04.033
39. Patel SA, Switchenko JM, Fischer-Valuck B, et al. Stereotactic body radiotherapy versus conventional/moderate fractionated radiation therapy with androgen deprivation therapy for unfavorable risk prostate cancer. *Radiat Oncol*. 2020;15(1):217. Published 2020 Sep 15. doi:10.1186/s13014-020-01658-5
40. Luo G, Cameron BD, Wang L, et al. Targeting for stereotactic radiosurgical thalamotomy based on tremor treatment response [published online ahead of print, 2021 Oct 29]. *J Neurosurg*. 2021;1 to 8. doi:10.3171/2021.7.JNS21160
41. Reshko LB, Baliga S, Crandley EF, et al. Stereotactic body radiation therapy (SBRT) in recurrent, persistent or oligometastatic gynecological cancers. *Gynecol Oncol*. 2020;159(3):611 to 617. doi:10.1016/j.ygyno.2020.10.001
42. Milano MT, Chowdhry AK, Salama JK, Chmura SJ. Signals from SABR-COMET time to move on to phase III studies. *Ann Transl Med*. 2019;7(Suppl 8):S316. doi:10.21037/atm.2019.09.152
43. American Society for Radiation Oncology (ASTRO). ASTRO Model policies. Stereotactic Radiosurgery (SRS). [https://www.astro.org/ASTRO/media/ASTRO/Daily%20Practice/PDFs/ASTRO-SRS\\_ModelPolicy.pdf](https://www.astro.org/ASTRO/media/ASTRO/Daily%20Practice/PDFs/ASTRO-SRS_ModelPolicy.pdf). Published June 2022. Accessed November 08, 2023.
44. Gondi V, Bauman G, Bradfield L, et al. Radiation Therapy for Brain Metastases: An ASTRO Clinical Practice Guideline. *Pract Radiat Oncol*. 2022;12(4):265 to 282. doi:10.1016/j.prro.2022.02.003

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45. National Institute for Health and Care Excellence. Stereotactic radiosurgery for trigeminal neuralgia Interventional procedures guidance [IPG715].  
<https://www.nice.org.uk/guidance/ipg715/chapter/2-The-condition-current-treatments-and-procedure>. Published February 02, 2022. Accessed December 12, 2023.