Soft Tissue Sarcoma

Note: For Medicare members/enrollees, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Please refer to the CMS website at http://www.cms.gov for additional information.

Note: For Medicaid members/enrollees, circumstances when state Medicaid coverage provisions conflict with the coverage provisions within this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

DISCUSSION

Soft tissue sarcoma (STS) develops from the soft tissue, starts in the body's connective tissue, and can be found in any location in the body. There are 50 types of soft tissue sarcomas. Sixty percent of STS diagnoses begin in the arm or leg, thirty percent in the torso or abdomen, and ten percent in the head or neck.[1]

Even though there were an estimated 13,190 new cases in 2022, soft tissue cancer is rare, accounting for 0.7% of all adult cancers. The relative survival rate for patients following diagnosis within five years is 65.4%. In 2019, an estimated 160,079 people were living with soft tissue sarcoma. Approximately 5,130 deaths will occur in 2022 related to STS.[2]

Patients can be treated with external beam radiation therapy or brachytherapy. Brachytherapy may be used alone or combined with external beam radiation therapy (EBRT). There are two types of BT: low dose rate brachytherapy (LDR) and high dose rate (HDR) brachytherapy.[3]

Radiation therapy may be used as a primary treatment or in combination with other treatments. Clinicians must choose treatment options based on the individual patient, the type of sarcoma, including stage, size, and grade.

Benefits of giving neoadjuvant radiation include lower radiation dose, shorter course of treatment, and the treatment field is smaller. Results of a randomized study showed a non-significant trend toward reduced late toxicities (fibrosis, edema, and joint stiffness) with neoadjuvant compared to adjuvant radiation and a significant association between these toxicities and increasing treatment field size. Based on the pros and cons of neoadjuvant versus adjuvant radiation, the panel has expressed a general preference for neoadjuvant RT, because adjuvant radiation fields are typically larger than neoadjuvant radiation fields.[4]

Soft Tissue Sarcomas[1]	
Sarcoma Name	**Related Normal Tissue Type**
Angiosarcoma (AS)	Blood or lymph vessel
Desmoid tumor	Fibroblast (most common type of cell in connective tissue)
Ewing family of tumor (EFST)	No obvious related normal tissue: maybe tumor of stem cell
Fibrosarcoma	Fibroblast (most common type of cell in connective tissue)
Gastrointestinal stromal tumor (GIST)	Specialized neuromuscular cells of the digestive tract
Kaposi sarcoma	Blood vessels
Leiomyosarcoma (LMS)*	Smooth muscle
Liposarcoma (LPS)*	Fat tissue
Myxofibrosarcoma (MYFS)	Connective tissue
Malignant peripheral nerve sheath tumor (MPNST)	Lining of nerves
Rhabdomyosarcoma	Skeletal muscle

Soft Tissue Sarcomas[1]	
Sarcoma Name	**Related Normal Tissue Type**
Synovial sarcoma (SYS)	No obvious related normal tissue: maybe tumor of stem cell
Undifferentiated pleomorphic sarcoma (UPS),* previously called malignant fibrous histiocytoma (MFH)	No obvious related normal tissue: maybe tumor of stem cell or a distance relative of rhabdomyosarcoma

**Most common type sarcoma in adults.*

DEFINITIONS

- **Adjuvant radiation therapy -** Additional radiation therapy given after the primary treatment to lower the risk of cancer recurrence.
- **Brachytherapy (BT) -** Brachytherapy is a procedure that involves placing radioactive material inside your body. Brachytherapy is sometimes called internal radiation.
- **Definitive radiation therapy -** Radiation therapy used with curative intent.
- **External beam radiation therapy (EBRT) -** External radiation (or external beam radiation) is the most common type of radiation therapy used for cancer treatment. A machine is used to aim high-energy rays (or beams) from outside the body into the tumor.
- **Fractions -** A way of dividing a total dose of radiation into separate doses to be administered over a period of time.
- **Gray (Gy) -** One of the two units used to measure the amount of radiation absorbed by an object or person, known as the absorbed dose. One gray (Gy) is the international system of units (SI) equivalent of 100 rads, which is equal to an absorbed dose of 1 Joule/kilogram.
- **Image-guided radiation therapy (IGRT) -** Image-guided radiation therapy (IGRT) is the use of imaging during radiation therapy to improve the precision and accuracy of treatment delivery. Radiation therapy machines are equipped with imaging technology to allow your doctor to image the tumor before and during treatment. By comparing these images to the reference images taken during simulation, the patient's position and/or the radiation beams may be adjusted to more precisely target the radiation dose to the tumor. To help align and target the radiation equipment, some IGRT procedures may use fiducial markers, ultrasound, MRI, X-ray images of bone structure, CT scan, 3D body surface mapping, electromagnetic transponders, or colored ink tattoos on the skin.
- **Intensity-modulated radiotherapy (IMRT) -** Intensity-modulated radiation therapy (IMRT) is an advanced mode of high-precision radiotherapy that uses computer-controlled linear accelerators to deliver precise radiation doses to a malignant tumor or specific areas within the tumor. IMRT allows the radiation dose to conform more precisely to the three-dimensional shape of the tumor by controlling the intensity of the radiation beam in multiple small volumes. IMRT also allows higher radiation doses to be focused to regions within the tumor while minimizing the dose to surrounding normal critical structures.
- **National Comprehensive Cancer Network® (NCCN) -** An alliance of 32 leading cancer centers devoted to patient care, research, and education. The NCCN guidelines are utilized for Radiation Therapy and Medical Oncology standards. NCCN consensus clinical standards are periodically updated and NantHealth, Inc. reviews these and updates its policies within a timely manner.
- **Neoadjuvant radiation therapy -** Treatment given as a first step to shrink a tumor before the main treatment, which is usually surgery.
- **Palliative radiation therapy -** Treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease. Palliative therapy may be given with other treatments from the time of diagnosis until the end of life.
- **Stereotactic body radiation therapy (SBRT) -** Treatment outside the brain is called stereotactic body radiation therapy (SBRT). SBRT may be used for certain lung, spine, and liver tumors.

- **Three dimensional conformal radiation therapy (3D-CRT) -** A procedure that uses a computer to create a three dimensional picture of the tumor. This allows doctors to give the highest possible dose of radiation to the tumor, while sparing the normal tissue as much as possible.

POLICY

The following table outlines the criteria that must be met for the number of fractions and dosing relative to soft tissue sarcoma cancer radiation treatments. This dosing table represents evidence-based doses and fractions for the designated type of cancer treatment. Variations outside of the ranges may indicate a deviation from standard treatment.

Soft Tissue Sarcoma			
	Number of Fractions	**Total Dose**	**Technique**
Neoadjuvant Radiation	25-30	50 Gy	IMRT, 3D, IGRT
Adjuvant Radiation	25-35	50-70 Gy	IMRT, 3D, IGRT
Definitive Radiation	25-35	50-70 Gy	IMRT, 3D, IGRT
Palliative Radiation	1-15	8-37.5 Gy	IMRT, 3D, IGRT

REFERENCES

1. Sarcomas, soft tissue: introduction. Cancer.Net. https://www.cancer.net/cancer-types/sarcomas-soft-tissue/introduction. Accessed May 12, 2022.
2. Cancer stat facts: soft tissue including heart cancer. National Cancer Institute. https://seer.cancer.gov/statfacts/html/soft.html. Accessed May 12, 2022.
3. Pellizzon A. Review paper Evidence and clinical outcomes of adult soft tissue sarcomas of the extremities treated with adjuvant high-dose-rate brachytherapy – a literature review. *Journal of Contemporary Brachytherapy.* 2014;6(3).
4. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Soft Tissue Sarcoma (Version 1.2022). Available at https://www.nccn.org/professionals/physician_gls/pdf/sarcoma.pdf. ©National Comprehensive Cancer Network, 2022.
5. Dictionary of Cancer Terms. National Cancer Institute. https://www.cancer.gov/publications/dictionaries/cancer-terms/def/neoadjuvant-therapy. Accessed May 12, 2022.

Please see all related radiation therapy treatment policies for additional information on the treatment modalities. (3D-CRT, EBRT, IGRT, IMRT, PBT and SBRT)

CODING [ICD-10, HCPCS]*

*Procedure codes appearing in medical policy documents are only included as a general reference. This list may not be all-inclusive and is subject to updates. In addition, codes listed are not a guarantee of payment. CPT codes are available through the AMA.

Code	**Description**
C49.0 - C49.9	Malignant neoplasm of connective and other soft tissue
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
G0339	Image-guided robotic linear accelerator-based stereotactic radiosurgery, complete course of therapy in one session or first session of fractionated treatment

Code	Description
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
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 three or more high-resolution (milled or cast) compensator, convergent beam modulated fields, per treatment session
Z92.3	Personal history of irradiation

REVISION AND REVIEW HISTORY

No.	Description	Metadata
1	Original Effective Date:	5/2022
2	Policy Review Dates:	5/9/2022, 5/13/2022, 5/16/2022, 7/20/2022
3	Policy Revision Dates:	5/9/2022, 5/13/2022, 5/16/2022, 7/20/2022
4	Department Owner:	Medical Affairs
5	NH Advisory Committee Approval Dates:	5/14/2022, 5/16/2022
6	Revision Changes:	