Eviti Imaging: Bone Sarcoma

Version: 1.0

Effective Date: 1/1/2026

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Please note the following:

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.

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.

Bone Sarcoma Imaging

Discussion

This imaging guideline provides a standardized framework for the use of diagnostic and surveillance imaging in the management of common adult malignancies, specifically bone sarcoma. The goal is to ensure timely, evidence-based imaging that supports accurate staging, treatment planning, response assessment, and post-treatment surveillance.

Guiding Principles

- Follow evidence-based practices from major guidelines (e.g., NCCN, ESMO, ACR Appropriateness Criteria)
- Ensure imaging aligns with the clinical context and stage of disease
- Minimization of unnecessary radiation exposure
- Promote timely and cost-effective imaging utilization
- Incorporate multidisciplinary collaboration in imaging decisions

Imaging Guidelines

This guideline applies to the following patients:

1. At least 18 years of age with confirmed or suspected diagnoses of bone sarcoma; AND
2. All phases of oncologic care, including one of the following:
   a) Initial staging
   b) Treatment response evaluation
   c) Post-treatment surveillance
   d) Detection of recurrence or progression; AND
3. All imaging modalities used in oncology care, including but not limited to the following:
   a) Computed tomography (CT) (neck, chest, abdomen, pelvis, neck, or site-specific)
   b) Magnetic resonance imaging (MRI) (including site-specific protocols such as pelvis MRI, brain MRI, liver MRI)
   c) Fluorodeoxyglucose positron emission tomography/CT (FDG-PET/CT)
   d) PET/MRI
   e) Somatostatin receptor PET/CT (SSTR-PET/CT)
   f) Nuclear medicine (e.g., bone scan, PSMA PET)
   g) Single photon emission computed tomography/CT (SPECT/CT) (e.g., octreotide SPECT/CT for neuroendocrine tumors)

Notes:

1. The concurrent utilization of multiple advanced imaging modalities—such as PET/CT and MRI—is not routinely warranted and should be considered only when each modality is expected to provide distinct and clinically relevant information that will directly impact patient management. The selection of the most appropriate imaging study should be individualized, taking into account tumor type, clinical presentation, prior imaging, and other patient-specific factors. Imaging requests will be evaluated on a case-by-case basis to ensure clinical necessity, appropriateness, and the potential to influence therapeutic decision-making.

2. When PET imaging is clinically indicated, the appropriate radiotracer should be selected based on tumor type and clinical scenario.

Bone Sarcoma Imaging

Imaging in bone sarcoma plays a central role in diagnosis, staging, treatment planning, and post-therapy surveillance. Because these malignancies often present with nonspecific symptoms such as pain or swelling, initial imaging defines lesion morphology and helps distinguish benign from malignant processes.

MRI is the preferred modality for local staging due to its superior soft tissue and marrow resolution, allowing accurate assessment of intraosseous tumor extent, skip lesions, and neurovascular involvement. CT imaging of the chest is essential at diagnosis and follow-up to evaluate for pulmonary metastases, the most common site of distant spread. Whole-body bone scan or FDG-PET/CT provides systemic staging, detecting multifocal or metastatic disease.

Post-treatment imaging serves to assess therapeutic response, guide surgical or radiation planning, and monitor for local recurrence or metastatic progression. The frequency and modality of surveillance imaging should be tailored to the tumor's histologic grade, anatomic site, and clinical risk factors.

These recommendations are not intended for all bone tumors. Other sub-types (e.g., low-grade chondrosarcoma, giant cell tumor of bone, some benign/aggressive lesions) often do not require extensive systemic staging or surveillance; their imaging work-up may be more localized and should follow tumor-specific guidance where available.

Bone Sarcoma Recommendations			
Clinical Scenario	**Recommended Modality**	**Frequency/Timing**	**Purpose/Notes**
Chondrosarcoma Atypical Cartilaginous Tumors			
Surveillance	CT or MRI imaging of primary site	Every 6–12 months for 2 years, then yearly, as clinically indicated	No routine imaging for initial diagnosis/staging. Monitor with x-rays of primary site and/or cross-sectional imaging after primary treatment.
Suspected Recurrence	CT or MRI imaging/bone scan	As clinically indicated	To evaluate for local recurrence

Chondrosarcoma Low-Grade Extra Compartmental Appendicular Tumors/ Grade I Axial Tumors/High-Grade (Grade II, Grade III)/Clear Cell/Extracompartmental:			
Surveillance	X-rays of primary site and/or cross-sectional imaging as clinically indicated: CT or MRI	Chest imaging every 3–6 months (may include CT at least every 6 months for 5 years), then yearly for a minimum of 10 years, as clinically indicated	No routine imaging for initial diagnosis/staging. Monitor with X-rays of primary site and/or cross-sectional imaging after primary treatment.
Chordoma			
Initial Staging	Cross-sectional imaging of primary site (e.g., MRI, CT) MRI of spinal axis (screening) CT chest/abdomen/pelvis FDG-PET/CT (when clinically indicated due to inconclusive or inadequate findings or conventional imaging) Bone scan	Once at diagnosis Once at diagnosis Once at diagnosis As clinically indicated As clinically indicated	
Surveillance	Imaging of primary site (e.g., x-ray, MRI ± CT)	Up to 10 years: chest imaging every 6 months may include CT annually for 5 years, then	Timing and modality, as clinically indicated

		annually thereafter, as clinically indicated	
Ewing Sarcoma			
Initial Staging	Contrast-enhanced MRI ± CT of primary site Chest CT chest FDG-PET/CT	Once at diagnosis	Preferred PET/CT and/or bone scan
Treatment Monitoring	CT chest Contrast-enhanced MRI ± CT of primary site X-rays of primary site FDG-PET/CT (when clinically indicated due to inconclusive or inadequate findings or conventional imaging) Bone scan	Every 3 months as clinical indicated	
Surveillance	Contrast-enhanced MRI ± CT of primary site Chest imaging (x-ray or CT chest) X-rays of primary site	Every 3 months; after 24 months increase intervals followed by annually after 5 years as clinical indicated	Indefinite monitoring
Giant Cell			
Initial Staging	Imaging of primary site (x-ray and MRI ± CT) Chest imaging (CT chest or x-ray) Bone scan	As clinically indicated Once at diagnosis As clinically indicated	Bone scan is optional
Treatment Monitoring	Contrast-enhanced CT ± MRI X-rays	As clinically indicated	

Surveillance	Imaging of surgical site (x-ray, contrast-enhanced CT and/or MRI) Chest imaging (CT chest or x-ray)	As clinically indicated Every 6–12 months x 4 years then annually, thereafter, as clinically indicated	
Osteosarcoma			
Initial Staging	Contrast-enhanced MRI ± CT of primary site CT Chest FDG-PET/CT and/or bone scan MRI or CT of skeletal metastatic sites	Once at diagnosis	Detailed imaging (CT/MRI) of primary imaging abnormalities is required
Treatment Monitoring	X-rays of primary site Contrast-enhanced CT ± MRI of local sites Chest CT	As clinically indicated	
Surveillance	MRI ± CT of primary site CT Chest	Every 3 months x 2 years, then every 4 months x 1 year, then every 6 months x 2 years, followed by yearly thereafter	

Notes:

1. MRI of the entire involved bone, plus adjacent joint, is the primary local staging modality for bone sarcoma. Hardware and prostheses may limit MRI; in such cases, CT + targeted ultrasound can be adjuncts, but MRI remains preferred where feasible.
2. CT chest with contrast is mandatory in baseline staging and follow-up of high-grade bone sarcoma given the high risk of lung metastases.
3. Surveillance intensity is highest in the first 2–3 years, when risk of relapse is greatest, and then can be tapered.

4. Osteosarcoma and Ewing sarcoma require comprehensive systemic staging with MRI, CT chest, and PET/CT or bone scan.
5. Chondrosarcoma and chordoma typically require anatomic (MRI/CT) rather than metabolic (PET/CT) follow-up, emphasizing local recurrence detection.
6. Imaging frequency should be individualized based on tumor grade, site, histologic subtype, and treatment intent.
7. Symptomatic bone lesion: bone scan or FDG-PET/CT and/or skeletal survey, plain film, or CT (if multiple myeloma suspected), chest x-ray
8. If NCCN does not define surveillance imaging for residual bone sarcoma, repeating the initial diagnostic imaging modality is reasonable provided results are expected to inform management.[1]

Revision and Review History

No.	Description	Date
1	Original Effective Date:	1/1/2026
2	Policy Annual Review Dates:	
3	Department Owner:	Medical Affairs
4	NH Advisory Committee Approval Dates:	
5	Revision Changes:	

References

[1] National Comprehensive Cancer Network Guidelines: Bone Sarcoma. https://www.nccn.org/professionals/physician_gls/pdf/bone.pdf. Accessed January 5, 2026.