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Single Photon Emission Computed Tomography (SPECT/CT) Imaging for the Evaluation of the Spine Corporate Medical Policy

File Name: Single Photon Emission Computed Tomography (SPECT) Imaging for the Evaluation of Back Pain
File Code: 6.01.VT204
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Description/Summary

Single photon emission tomography with concurrent CT imaging (SPECT/CT) is a nuclear medicine modality consisting of SPECT acquisition combined with CT using an integrated CT scanner. Such multimodality imaging offers the opportunity to correlate scintigraphic findings with anatomical images and introduces novel algorithms to further enhance SPECT image quality based on the CT data. The indications for SPECT-CT imaging, including for the evaluation of back pain, are broad.

Policy

Coding Information

Click the links below for attachments, coding tables & instructions.
Attachment I – CPT® Coding Table

When a service may be considered medically necessary

SPECT Imaging for evaluation of the Spine may be considered **medically necessary** for **any** of the following indications:

- Diagnosis of infection, to distinguish bone from soft tissue infection, including osteomyelitis, epidural abscess, spondylodiscitis and discitis; **OR**
- Diagnosis of avascular necrosis **when both**:
  - prior plain film x-ray imaging or CT of the suspicious area is nondiagnostic; **AND**
  - MRI cannot be performed or is nondiagnostic
- Evaluation of bony lesion, indeterminant on prior imaging; **OR**
- Evaluation of pain and/or associated symptoms of the spine, or clinical or radiographic signs in patients with primary bone tumor or tumors known to metastasize frequently to bone; **OR**
- Evaluation of osseous tumor; **OR**
- Evaluation of osteoid osteoma; **OR**

- Diagnosis of suspected stress or occult fracture, not visible or indeterminant on prior imaging; **OR**
- Evaluation of surgical bed in patients with residual pain and/or associated symptoms with prior surgical procedure/fixation/fusion, where there is clinically suspected periprosthetic infection, aseptic loosening or delayed hardware failure; **OR**
- Assessment of the spine and sacroiliac joints for rheumatologic disorders, including spondyloarthropathy, when MRI cannot be performed or is nondiagnostic; **OR**
- Further evaluation of spondylolysis/spondylolisthesis when prior imaging provides insufficient information to direct management

When a service is considered not medically necessary

- Simultaneous ordering of SPECT imaging with other advanced imaging, such as MRI, may be considered **not medically necessary** unless there is clear, documented rationale to support the medical necessity of all imaging being performed at that the same time. Request must show that simultaneous imaging is medically necessary and is more likely to change patient management and/or outcome over single imaging modality or staged imaging approach.
- For all other indications that are not listed as medically necessary

When a service is considered Investigational:

- The use of SPECT/CT imaging to guide surgical planning in individuals with axial neck and/or back pain from disc degeneration (spondylosis,) not otherwise meeting medical necessity criteria above.

Policy Guidelines

(Physician documentation information, Instructions for PA submissions, clinical requirements, etc.

The medical records submitted for review should document that medical necessity criteria above are met. Clinical documentation to include history and physical exam information to support that the member has symptoms and/or findings of a condition above. Documentation to include what condition is being evaluated or ruled out.

Rationale/Scientific Background

Bone scintigraphy is a highly sensitive diagnostic nuclear medicine imaging technique that uses a radiotracer to evaluate the distribution of active bone formation in the skeleton related to malignant and benign diseases, as well as physiological processes. Diagnostic sensitivity and specificity of bone scanning can be significantly increased by using SPECT or, if available, SPECT/CT. Tomographic images may thus be acquired to assist in localizing anomalies seen on the whole-body images and to improve lesion contrast. [2]

Concomitant use of single-photon emission computed tomography, able to confine the uptake area to the sacroiliac joint, can significantly improve the diagnostic performance of bone scintigraphy for sacroiliitis. In counterpoint, the use of radionuclide tools for the diagnosis of sacroiliitis with its radiation exposure for the diagnosis in young patients may be unjustified

or even unethical, when MRI, a modality with no radiation exposure and higher sensitivity and specificity is available, and thus its use is not advisable in daily clinical practice. In general, it seems that patients with suspected acute, particularly infectious sacroiliitis can benefit most from the diagnostic abilities of bone scintigraphy for disease localization, while patients with a more indolent course should probably be referred to alternative means of imaging. [6]

MRI has become commonly used to characterize sacroiliac joint disease severity and activity.

Bone scintigraphy may not be the preferred investigation for symptomatic degenerative joint disease well-characterized on radiographical imaging, properly diagnosed based on the pain syndrome and a well-performed clinical exam. [2]

Brusko, Brusko and colleagues (2019) carried out a retrospective medical and imaging record review of the role of pre-operative hybrid SPECT with CT imaging for surgical planning. The authors concluded that this was the largest series to date describing patients with axial neck and back pain who underwent preoperative SPECT imaging and subsequent surgical intervention on the affected spinal levels. The results demonstrated that SPECT imaging may be a useful adjunct to guide surgical planning, resulting in substantial clinical improvement following surgery. The authors showed started there are several important limitations to this study. First, this series was small, with just 23 patients included. However, traditional management of axial neck or back pain is nonsurgical and thus, this series was the largest one to date examining surgical outcomes. Second, a subset of patients had involvement of multiple spinal levels. Therefore, the inability to treat all degenerated levels and the progressive nature of the osteoarthritic disease may be responsible for a lack of clinical improvement in these select patients over time. Third, biases related to retrospective reviews must be taken into account, and the results of this single-surgeon, single-institution series may not be generalizable to other patient populations. [18]

Traditionally, facet joint injections have been used to aid in the diagnosis of axial pain generators. SPECT imaging has been shown to decrease the required number of facet injections for axial back pain. [19] However, a large discrepancy has been reported between hypermetabolic findings on SPECT/CT and facet joints treated with injections based on clinical symptoms; 53% of injected facets did not demonstrate any increased radiotracer uptake on SPECT imaging. [20] The clinical impact of facet joint bone scan activity is not fully understood. Further prospective double-blinded investigations of the clinical significance of facet joint activity by use of technetium Tc99m methylene diphosphonate SPECT/CT and comparative medial branch blocks are needed. Per Cohen and colleagues, there is moderate evidence supporting the use of SPECT for identifying painful lumbar facet joints prior to medial branch blocks (grade C recommendation, moderate level of certainty that the net benefit is small). Weak evidence exists supporting the use of SPECT for identifying painful lumbar facet joints prior to IA facet joint injections (grade D recommendation, low level of certainty). Regarding the cost-effectiveness of SPECT, further study is required. [21]

Reference Resources

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Document Precedence

Blue Cross and Blue Shield of Vermont (BCBSVT) Medical Policies are developed to provide clinical guidance and are based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. The applicable group/individual contract and member certificate language, or employer's benefit plan if an ASO group, determines benefits that are in effect at the time of service. Since medical practices and knowledge are constantly evolving, BCBSVT reserves the right to review and revise its medical policies periodically. To the extent that there may be any conflict between medical policy and contract/employer benefit plan language, the member's contract/employer benefit plan language takes precedence.

Audit Information

BCBSVT reserves the right to conduct audits on any provider and/or facility to ensure compliance with the guidelines stated in the medical policy. If an audit identifies instances of non-compliance with this medical policy, BCBSVT reserves the right to recoup all non-compliant payments.

Administrative and Contractual Guidance

Benefit Determination Guidance

Prior approval is required and benefits are subject to all terms, limitations and conditions of the subscriber contract.

Incomplete authorization requests may result in a delay of decision pending submission of missing information. To be considered compete, see policy guidelines above.

NEHP/ABNE members may have different benefits for services listed in this policy. To confirm benefits, please contact the customer service department at the member's health plan.

Federal Employee Program (FEP): Members may have different benefits that apply. For further information please contact FEP customer service or refer to the FEP Service Benefit Plan Brochure. It is important to verify the member's benefits prior to providing the service to determine if benefits are available or if there is a specific exclusion in the member's benefit.

Coverage varies according to the member's group or individual contract. Not all groups are required to follow the Vermont legislative mandates. Member Contract language takes precedence over medical policy when there is a conflict.

If the member receives benefits through an Administrative Services Only (ASO) group, benefits may vary or not apply. To verify benefit information, please refer to the member's employer benefit plan documents or contact the customer service department. Language in the employer benefit plan documents takes precedence over medical policy when there is a conflict.

Policy Implementation/Update information

02/2021	New Policy. Codes 78803, 78830, 78831, 78832 removed from corporate investigational medical policy and will require prior approval.
04/2022	Policy reviewed. References updated. No changes to Policy Statement.
05/2023	Policy reviewed. References updated. No changes to Policy Statement.

Eligible providers

Qualified healthcare professionals practicing within the scope of their license(s).

Approved by BCBSVT Medical Directors Date Approved

Tom Weigel, MD, MBA
Vice President and Chief Medical Officer

Attachment I
CPT® Coding Table

Code Type	Number	Description	Policy Instructions
The following codes will be considered as medically necessary when applicable criteria have been met.			
CPT®	78803	Radiopharmaceutical localization of tumor, inflammatory process or distribution of radiopharmaceutical agent(s) (includes vascular flow and blood pool imaging, when performed); tomographic (SPECT), single area (eg, head, neck, chest, pelvis), single day imaging	Prior Approval Required
CPT®	78830	Radiopharmaceutical localization of tumor, inflammatory process or distribution of radiopharmaceutical agent(s) (includes vascular flow and blood pool imaging, when performed); tomographic (SPECT) with concurrently acquired computed tomography (CT) transmission scan for anatomical review, localization and determination/detection of pathology, single area (eg, head, neck, chest, pelvis), single day imaging	Prior Approval Required
CPT®	78831	Radiopharmaceutical localization of tumor, inflammatory process or distribution of radiopharmaceutical agent(s) (includes vascular flow and blood pool imaging, when performed); tomographic (SPECT), minimum 2 areas (eg, pelvis and knees, abdomen and pelvis), single day imaging, or single area imaging over 2 or more days	Prior Approval Required
CPT®	78832	Radiopharmaceutical localization of tumor, inflammatory process or distribution of radiopharmaceutical agent(s) (includes vascular flow and blood pool imaging, when performed); tomographic (SPECT) with concurrently acquired computed tomography (CT) transmission scan for anatomical review, localization and determination/detection of pathology, minimum 2 areas (eg, pelvis and knees, abdomen and pelvis), single day imaging, or single area imaging over 2 or more days	Prior Approval Required