

Clinical Appropriateness Guidelines: Advanced Imaging

Appropriate Use Criteria: Imaging of Bone Marrow Blood Supply

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Proprietary

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Description and Application of the Guidelines



AIM's Clinical Appropriateness Guidelines (hereinafter "AIM's Clinical Appropriateness Guidelines" or the "Guidelines") are designed to assist providers in making the most appropriate treatment decision for a specific clinical condition for an individual. As used by AIM, the Guidelines establish objective and evidence-based, where possible, criteria for medical necessity determinations. In the process, multiple functions are accomplished:

- To establish criteria for when services are medically necessary
- To assist the practitioner as an educational tool
- To encourage standardization of medical practice patterns
- To curtail the performance of inappropriate and/or duplicate services
- To advocate for patient safety concerns
- To enhance the quality of healthcare
- To promote the most efficient and cost-effective use of services

AIM's guideline development process complies with applicable accreditation standards, including the requirement that the Guidelines be developed with involvement from appropriate providers with current clinical expertise relevant to the Guidelines under review and be based on the most up to date clinical principles and best practices. Relevant citations are included in the "References" section attached to each Guideline. AIM reviews all of its Guidelines at least annually.

AIM makes its Guidelines publicly available on its website twenty-four hours a day, seven days a week. Copies of AIM's Clinical Appropriateness Guidelines are also available upon oral or written request. Although the Guidelines are publicly-available, AIM considers the Guidelines to be important, proprietary information of AIM, which cannot be sold, assigned, leased, licensed, reproduced or distributed without the written consent of AIM.

AIM applies objective and evidence-based criteria and takes individual circumstances and the local delivery system into account when determining the medical appropriateness of health care services. The AIM Guidelines are just guidelines for the provision of specialty health services. These criteria are designed to guide both providers and reviewers to the most appropriate services based on a patient's unique circumstances. In all cases, clinical judgment consistent with the standards of good medical practice should be used when applying the Guidelines. Guideline determinations are made based on the information provided at the time of the request. It is expected that medical necessity decisions may change as new information is provided or based on unique aspects of the patient's condition. The treating clinician has final authority and responsibility for treatment decisions regarding the care of the patient and for justifying and demonstrating the existence of medical necessity for the requested service. The Guidelines are not a substitute for the experience and judgment of a physician or other health care professionals. Any clinician seeking to apply or consult the Guidelines is expected to use independent medical judgment in the context of individual clinical circumstances to determine any patient's care or treatment.

The Guidelines do not address coverage, benefit or other plan specific issues. If requested by a health plan, AIM will review requests based on health plan medical policy/guidelines in lieu of AIM's Guidelines.

The Guidelines may also be used by the health plan or by AIM for purposes of provider education, or to review the medical necessity of services by any provider who has been notified of the need for medical necessity review, due to billing practices or claims that are not consistent with other providers in terms of frequency or some other manner.

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Administrative Guideline: Ordering of Multiple Studies



Requests for multiple imaging studies to evaluate a suspected or identified condition and requests for repeated imaging of the same anatomic area are subject to additional review to avoid unnecessary or inappropriate imaging.

Simultaneous Ordering of Multiple Studies

In many situations, ordering multiple imaging studies at the same time is not clinically appropriate because:

- Current literature and/or standards of medical practice support that one of the requested imaging studies is more appropriate in the clinical situation presented; or
- One of the imaging studies requested is more likely to improve patient outcomes based on current literature and/or standards of medical practice; or
- Appropriateness of additional imaging is dependent on the results of the lead study.

When multiple imaging studies are ordered, the request will often require a peer-to-peer conversation to understand the individual circumstances that support the medical necessity of performing all imaging studies simultaneously.

Examples of multiple imaging studies that may require a peer-to-peer conversation include:

- CT brain and CT sinus for headache
- MRI brain and MRA brain for headache
- MRI cervical spine and MRI shoulder for pain indications
- MRI lumbar spine and MRI hip for pain indications
- MRI or CT of multiple spine levels for pain or radicular indications
- MRI foot and MRI ankle for pain indications
- Bilateral exams, particularly comparison studies

There are certain clinical scenarios where simultaneous ordering of multiple imaging studies is consistent with current literature and/or standards of medical practice. These include:

- Oncologic imaging – Considerations include the type of malignancy and the point along the care continuum at which imaging is requested
- Conditions which span multiple anatomic regions – Examples include certain gastrointestinal indications or congenital spinal anomalies

Repeated Imaging

In general, repeated imaging of the same anatomic area should be limited to evaluation following an intervention, or when there is a change in clinical status such that imaging is required to determine next steps in management. At times, repeated imaging done with different techniques or contrast regimens may be necessary to clarify a finding seen on the original study.

Repeated imaging of the same anatomic area (with same or similar technology) may be subject to additional review in the following scenarios:

- Repeated imaging at the same facility due to motion artifact or other technical issues
- Repeated imaging requested at a different facility due to provider preference or quality concerns
- Repeated imaging of the same anatomic area (MRI or CT) based on persistent symptoms with no clinical change, treatment, or intervention since the previous study
- Repeated imaging of the same anatomical area by different providers for the same member over a short period of time

Administrative Guideline: Pre-Test Requirements



Critical to any finding of clinical appropriateness under the guidelines for specific imaging exams is a determination that the following are true with respect to the imaging request:

- A clinical evaluation has been performed prior to the imaging request (which should include a complete history and physical exam and review of results from relevant laboratory studies, prior imaging and supplementary testing) to identify suspected or established diseases or conditions.
- **For suspected diseases or conditions:**
 - Based on the clinical evaluation, there is a reasonable likelihood of disease prior to imaging; and
 - Current literature and standards of medical practice support that the requested imaging study is the most appropriate method of narrowing the differential diagnosis generated through the clinical evaluation and can be reasonably expected to lead to a change in management of the patient; and
 - The imaging requested is reasonably expected to improve patient outcomes based on current literature and standards of medical practice.
- **For established diseases or conditions:**
 - Advanced imaging is needed to determine whether the extent or nature of the disease or condition has changed; and
 - Current literature and standards of medical practice support that the requested imaging study is the most appropriate method of determining this and can be reasonably expected to lead to a change in management of the patient; and
 - The imaging requested is reasonably expected to improve patient outcomes based on current literature and standards of medical practice.
- If these elements are not established with respect to a given request, the determination of appropriateness will most likely require a peer-to-peer conversation to understand the individual and unique facts that would supersede the pre-test requirements set forth above. During the peer-to-peer conversation, factors such as patient acuity and setting of service may also be taken into account.

Magnetic Resonance Imaging (MRI) Bone Marrow Blood Supply



CPT Codes

77084..... MRI of bone marrow blood supply

Standard Anatomic Coverage

- MRI of the bone marrow blood supply is used to image multiple anatomic areas in the axial and appendicular skeleton

Imaging Considerations¹

- In addition to MRI, several other imaging procedures are available to assess the bone marrow, including skeletal radiographic survey and nuclear scintigraphy.
- To undertake extensive coverage of the skeleton with MRI of the bone marrow blood supply, phased array MR coils are often used.
- Performed most often to study a specific lesion(s), based on the results of other imaging or laboratory studies, or to evaluate focal pain or neurologic symptoms.
- On some occasions used to survey the whole body for marrow replacement or infiltration by neoplastic cells [5–12]. In these instances, the entire body is imaged from the vertex to the heels, usually in a single plane (coronal or sagittal) acquired with overlapping stations.

Common Diagnostic Indications

Myeloma^{2,3}

- Diagnosis when all of the following are met:
 - No lytic bone lesions seen on whole body radiography
 - Note: for further characterization of an equivocal bone lesion seen on whole body radiography. A dedicated MRI of the region (i.e. cervical, thoracic, lumbar spine, pelvis or extremity) should be obtained
 - To establish the diagnosis of myeloma at least one of the following is required:
 - Biopsy proven plasmacytoma
 - Clonal bone marrow plasma cells greater than 10%
 - M-protein greater than or equal to 3 g/dL and/or 10 to 60 percent bone marrow plasma cells

Note: *The evidence for use of MRI in myeloma is insufficient for the evaluation of the following: Response to therapy, prognosis, and monoclonal gammopathy of uncertain significance (MGUS). For myeloma with back pain, see tumor evaluation (cervical, thoracic, lumbar spine).*

References

1. Siegel MJ. MRI of Bone Marrow. In: Kransdorf MJ, Reinhold C, Ho VB, eds. *Syllabus of the American Roentgen Ray Society (ARRS) 2006 Cateogrical Course. Body MRI*. ARRS; 2006:243-254.
2. Dimopoulos MA, Hillengass J, Usmani S, et al. Role of Magnetic Resonance Imaging in the Management of Patients With Multiple Myeloma: A Consensus Statement. *J Clin Oncol*. 2015 Jan 20.
3. Rajkumar SV, Dimopoulos MA, Palumbo A, et al. International Myeloma Working Group updated criteria for the diagnosis of multiple myeloma. *Lancet Oncol*. 2014 Nov;15(12):e538-48.

MRI Bone Marrow Blood Supply Bibliography

1. Angtuaco EJ, Fassas AB, Walker R, et al. Multiple myeloma: clinical review and diagnostic imaging. *Radiology*. 2004; 231(1):11-13.
2. Centers for Medicare & Medicaid Services. *National Coverage Determination (NCD) for Magnetic Resonance Imaging (220.2)*. Available at <http://www.cms.gov/medicare-coverage-database/>. Accessibility verified September 2, 2016.
3. Kumar J, Seith A, Kumar A, Sharma R, Bakhshi S, Kumar R, Agarwala S. Whole-body MR imaging with the use of parallel imaging for detection of skeletal metastases in pediatric patients with small-cell neoplasms: comparison with skeletal scintigraphy and FDG PET/CT. *Pediatr Radiol*. 2008;38(9):953-962.
4. Lecouvet FE, Vande Berg BC, Michaux L, et al. Stage III multiple myeloma: clinical and prognostic value of spinal bone marrow MR imaging. *Radiology*. 1998; 209(3):653-660.
5. Rahmouni A, Montazel JL, Divine M, et al. Bone marrow with diffuse tumor infiltration in patients with lymphoproliferative diseases: dynamic gadolinium-enhanced MR imaging. *Radiology*. 2003; 229(3):710-717.
6. Schmidt GP, Reiser MF, Baur-Melnyk A. Whole-body imaging of the musculoskeletal system: the value of MR imaging. *Skeletal Radiol*. 2007;36(12):1109-1119.
7. Van de Berg BC, Lecouvet FE, Michaux L, et al. Stage I multiple myeloma: value of MR imaging of the bone marrow in the determination of prognosis. *Radiology*. 1996;201:243-246.
8. Siegel MJ. MRI of Bone Marrow. In: Kransdorf MJ, Reinhold C, Ho VB, eds. *Syllabus of the American Roentgen Ray Society (ARRS) 2006 Cateogrical Course. Body MRI*. ARRS; 2006:243-254.
9. Dimopoulos MA, Hillengass J, Usmani S, et al. Role of Magnetic Resonance Imaging in the Management of Patients With Multiple Myeloma: A Consensus Statement. *J Clin Oncol*. 2015 Jan 20
10. Rajkumar SV, Dimopoulos MA, Palumbo A, et al. International Myeloma Working Group updated criteria for the diagnosis of multiple myeloma. *Lancet Oncol*. 2014 Nov;15(12):e538-48.