



# **Cohere Medical Policy – Magnetic Resonance Imaging (MRI), Bone Marrow**

*Clinical Guidelines for Medical Necessity Review*

**Version:** 2  
**Effective Date:** August 15, 2024

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## Guideline Information:

**Specialty Area:** Diagnostic Imaging

**Guideline Name:** Cohere Medical Policy - Magnetic Resonance Imaging (MRI), Bone Marrow

**Date of last literature review:** 8/14/2024

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**Type:**  Adult (18+ yo) |  Pediatric (0-17 yo)

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# Medical Necessity Criteria

**Service: Magnetic Resonance Imaging (MRI), Bone Marrow**

## Recommended Clinical Approach

Magnetic resonance imaging (MRI) of the bone marrow is recommended in patients with known or suspected malignancies (routinely in multiple myeloma or those with cancer predisposition syndromes) after PET/CT, bone scan or CT failed to provide adequate clinical information.

## Medical Necessity Criteria

### Indications

- **Magnetic resonance imaging (MRI), bone marrow** is considered appropriate if **ALL** of the following are **TRUE**:
- ◆ PET/CT, bone scan, or CT fails to provide adequate clinical information; **AND**
  - ◆ **ANY** of the following is **TRUE**:
    - Multiple myeloma, including **ANY** of the following<sup>6-7</sup>:
      - Monoclonal gammopathy of uncertain significance (MGUS) (low dose CT, whole body is preferred); **OR**
      - Solitary bone plasmacytoma<sup>8</sup>; **OR**
      - Systemic multiple myeloma, suspected or confirmed<sup>9</sup>; **OR**
      - Smoldering multiple myeloma, suspected or confirmed<sup>9</sup>; **OR**
    - For the diagnosis, staging, and follow-up of patients with multiple myeloma (MM), leukemia, and other related hematological malignancies; **OR**
    - Diagnosis and assessment of treatment response in diffuse or multifocal marrow disorders when the diagnosis is in doubt, including **ANY** of the following:
      - Chronic recurrent multifocal osteomyelitis; **OR**
      - Marrow involvement in storage diseases (e.g., Gaucher's or hematologic malignancies); **OR**
      - Waldenström macroglobulinemia; **OR**
    - Repeat imaging of a specific area or structure using the

same imaging modality is considered appropriate when **ALL** of the following are **TRUE**:

- There is documented clinical necessity; **AND**
- No existing follow-up guideline for that indication; **AND**
- Prior imaging results of the specific area or structure, obtained using the same imaging modality, must be documented and available for comparison; **AND**
- **ANY** of the following is **TRUE**:
  - ◆ A change in clinical status, such as worsening symptoms or the emergence of new symptoms, that may influence the treatment approach; **OR**
  - ◆ The requirement for interval reassessment, which may alter the treatment plan; **OR**
  - ◆ One-time follow-up of a prior indeterminate finding to assess for interval change; **OR**
  - ◆ The need for re-imaging either before or after performing an invasive procedure.

### Non-Indications

→ **Magnetic resonance imaging (MRI), bone marrow** may not be considered appropriate if **ANY** of the following is **TRUE**:

- ◆ The patient has undergone advanced imaging of the same body part and for the same indication within 3 months, without being on treatment; **OR**
- ◆ If contrast is used, history of anaphylactic allergic reaction to gadolinium contrast media with detailed guidelines for use in patients with renal insufficiency; **OR**
- ◆ The patient has metallic clips on vascular aneurysms; **OR**
- ◆ Incompatible implantable devices (e.g., pacemakers, defibrillators, cardiac valves); **OR**
- ◆ Metallic foreign body in orbits/other critical area(s) or within the field of view and obscuring area of concern.

\*NOTE: MRI in patients with claustrophobia should be requested at the discretion of the ordering provider.

\*\*NOTE: MRI in pregnant patients should be requested at the discretion of the ordering provider and obstetric care provider.

**Level of Care Criteria**

Outpatient

**Procedure Codes (CPT/HCPCS)**

<b>CPT/HCPCS Code</b>	<b>Code Description</b>
77084	Magnetic resonance imaging (MRI) (e.g., proton); bone marrow blood supply

# Medical Evidence

Lowrance et al. (2023) review guidelines published by the American Urological Association (AUA) and the Society of Urologic Oncology (SUO) on advanced prostate cancer. For patients experiencing prostate-specific antigen (PSA) recurrence following unsuccessful local therapy, particularly those with elevated risk factors such as a PSA doubling time (PSADT) of less than 12 months, regular staging assessments should be conducted. Computed tomography (CT) and magnetic resonance imaging (MRI) are preferred imaging modalities, along with technetium bone scans or prostate-specific membrane antigen (PSMA) positron emission tomography (PET) scans.<sup>11</sup>

Karampinos et al. (2018) reviewed quantitative MRI and spectroscopy of bone marrow. Due to the exceptional soft-tissue contrast capability, MRI is the preferred imaging method for tracking bone marrow alterations in healthy and diseased conditions. Innovative quantitative MRI techniques and magnetic resonance spectroscopy (MRS) can accurately measure changes in bone marrow composition, including water-fat distribution, cellularity, and perfusion across various pathologies. Advancements can help clinicians understand the role of bone marrow in the pathogenesis of systemic diseases like osteoporosis.<sup>12</sup>

Shah et al. (2014) conducted a retrospective cohort study on the evaluation of incidental abnormal bone marrow signals on MRI. Among 49,678 MRI scans conducted, 110 patients over 18 met the inclusion criteria. Of note, 22% underwent additional evaluation, primarily consisting of complete blood counts, serum protein electrophoresis, or bone scans. Over a median follow-up period of 41 months, 6% of patients received diagnoses of malignancies, including multiple myeloma, non-Hodgkin's lymphoma, metastatic non-small cell lung cancer, and metastatic adenocarcinoma. Furthermore, one patient who had not undergone evaluation was diagnosed with breast cancer 24 months post-MRI. In conclusion, observing abnormal or heterogeneous bone marrow signals on MRI should not be dismissed, as it often warrants further investigation.<sup>13</sup>

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# Clinical Guideline Revision History/Information

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