



Cohere Medicare Advantage Policy – Magnetic Resonance Imaging (MRI), Spine (Cervical, Thoracic, and Lumbar)

Clinical Guidelines for Medical Necessity Review

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Important Notices

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Medical Necessity Criteria

Service: Magnetic Resonance Imaging (MRI), Spine (Cervical, Thoracic, and Lumbar)

Benefit Category

Diagnostic Services in Outpatient Hospital
Diagnostic Tests (other)

Please Note: This may not be an exhaustive list of all applicable Medicare benefit categories for this item or service.^{1-4,23-25}

Related CMS Documents

Please refer to [CMS Medicare Coverage Database](#) for the most current applicable CMS National Coverage.^{1-4,23-25}

- [National Coverage Determination \(NCD\) Magnetic Resonance Imaging \(MRI\) \(220.2\)](#)
- [Local Coverage Determination \(LCD\) Lumbar MRI \(L34220\)](#)
- [Billing and Coding: Lumbar MRI \(A57206\)](#)
- [Local Coverage Determination \(LCD\) Lumbar MRI \(L37281\)](#)
- [Billing and Coding: Lumbar MRI \(A57207\)](#)
- [Local Coverage Determination \(LCD\) Multiple Imaging in Oncology \(L35391\)](#)
- [Billing and Coding: Multiple Imaging in Oncology \(A56848\)](#)

Recommended Clinical Approach

Magnetic resonance imaging (MRI) is a versatile imaging technique that operates on the interaction between radiofrequency electromagnetic fields and specific atomic nuclei in the body, typically hydrogen nuclei, following exposure to a powerful magnetic field. This method allows for the discrimination between normal and abnormal tissues, offering a highly sensitive diagnostic tool for detecting diseases. The effectiveness of MRI stems from the notable contrast inherent in various tissues, both healthy and diseased, owing to differences in their magnetic relaxation properties. MRI of

the spine is the preferred imaging modality for pain, radiculopathy, or neurological symptoms. This includes clinical suspicion of cancer, infection, autoimmune disease, persistent symptoms following six weeks of conservative management, or new or worsening symptoms with a history of spine surgery.⁵

Contrast should be used at the discretion of the ordering clinician, with guidance from the radiologist as needed. Common indications for administering contrast for an MRI of the spine include infection, prior spine surgery, demyelinating diseases, or tumor. A detailed patient history and indication will ensure the appropriate region is covered when ordering an MRI of the spine. For many patients with neck or back pain, symptoms resolve after a trial of conservative treatment without performing imaging, especially patients with low back pain.⁶

Evaluation of Clinical Harms and Benefits

Cohere Health uses the criteria below to ensure consistency in reviewing the conditions to be met for coverage of magnetic resonance imaging (MRI) of the spine (cervical, thoracic, and lumbar). This process helps to prevent both incorrect denials and inappropriate approvals of medically necessary services. Specifically, limiting incorrect approvals reduces the risks associated with unnecessary procedures, such as complications from surgery, infections, and prolonged recovery times.

The potential clinical harms of using these criteria may include:

- The use of contrast agents (e.g., gadolinium-based contrast agents) cause side effects in a few patients. These may include nausea, headache, and pain at the site of injection. Rarely, patients experience hives, itchy eyes, or other allergic reactions to the contrast material.⁷
- Dynamic magnetic fields during MRI scanning create loud knocking noises which may harm hearing if adequate ear protection is not used. They may also cause peripheral muscle or nerve stimulation that may feel like a twitching sensation.⁷
- MRI scanning could lead to heating of the body, particularly during long MRA scans, due to radiofrequency energy used in the procedure.⁷
- Increased healthcare costs and complications from the inappropriate use of emergency services and additional treatments.

The clinical benefits of using these criteria include:

- MRI of the spinal canal allows for the non-invasive visualization of the spinal cord.²
- Compared to computed tomography (CT) and radiography, MRI provides for the best evaluation of soft tissue pathology. MRI of the soft tissues in the cervical spine is typically indicated when there is neurologic deficit or clinical suspicion of a vascular abnormality following trauma. Pulse sequence, a short-tau inversion-recovery sequence in MRI, can highlight undetected fractures, bone bruising, and tumors using fat suppression.⁸
- MRI without and with contrast of the affected spine segment is the initial diagnostic test of choice when spinal infection is clinically suspected. The sensitivity, specificity, and accuracy of MRI in spine infection are 96%, 94%, and 92%, respectively.⁹
- MRI allows timely diagnosis and treatment for spine emergencies. Traumatic spine injury classification systems provide an algorithm for clinical decision-making. Diagnostic considerations for atraumatic spine emergencies are broad, and MRI is the first line imaging modality for detecting compressive pathology.¹⁰
- Enhanced overall patient satisfaction and healthcare experience.

This policy includes provisions for expedited reviews and flexibility in urgent cases to mitigate risks of delayed access. Evidence-based criteria are employed to prevent inappropriate denials, ensuring that patients receive medically necessary care. The criteria aim to balance the need for effective treatment with the minimization of potential harms, providing numerous clinical benefits in helping avoid unnecessary complications from inappropriate care.

In addition, the use of these criteria is likely to decrease inappropriate denials by creating a consistent set of review criteria, thereby supporting optimal patient outcomes and efficient healthcare utilization.

Medical Necessity Criteria

Indications

→ **Magnetic resonance imaging (MRI), spine (cervical/thoracic/lumbar)** is considered appropriate if **ANY** of the following is **TRUE**:

- ◆ Neoplastic conditions (including masses or mass-like conditions) including **ANY** of the following^{5, 11, 12}:
 - Bone tumors; **OR**
 - Intradural-extramedullary masses, including leptomeningeal disease; **OR**
 - Intramedullary masses; **OR**
 - Other extradural soft-tissue neoplasms of **ANY** of the following:
 - Connective tissues; **OR**
 - Muscles; **OR**
 - Regional nerves; **OR**
 - Initial diagnosis of suspected tumor or malignancy as indicated by **ANY** of the following:
 - Abnormal laboratory values; **OR**
 - Inconclusive or abnormal prior imaging; **OR**
 - Primary or metastatic lesion to the spinal cord (including the spinal canal or vertebral bodies) for **ANY** of the following scenarios:
 - Known tumor or malignancy with worsening symptoms or pain; **OR**
 - To monitor response to treatment; **OR**
 - Neoplastic conditions for **ANY** of the following:
 - Initial staging; **OR**
 - Treatment planning; **OR**
 - Response assessment; **OR**
 - Surveillance, and **ANY** of the following is **TRUE**^{4,13-15,25}:
 - ◆ The patient is assumed to have either no known disease or disease that is stable or clinically insignificant (every 6-12 months for an overall duration [e.g., 5 years]); **OR**
 - ◆ Suspected recurrence/progression; **OR**
 - ◆ Evaluation of response to treatment when a change in therapy is contemplated (no more often than after 2 cycles of chemotherapy and/or 6-8 weeks since the prior imaging evaluation); **OR**
- ◆ Concern for infection or an infectious disorder in the spine, with **ANY** of the following^{11,12,16,17}:

- **ANY** of the following⁵:
 - Discitis; **OR**
 - Epidural abscess; **OR**
 - Postoperative infections; **OR**
 - Surrounding soft-tissue infection; **OR**
 - Vertebral osteomyelitis; **OR**
- Spinal cord infection and inflammation, including abscess⁵; **OR**
- Pain (including back and neck) with elevated laboratory markers suspicious of infection; **OR**
- Follow-up to abnormal initial imaging with suspected infection; **OR**
- Trauma-related conditions, and **ANY** of the following^{5,10,12,17}:
 - Follow-up to initial imaging (e.g., radiograph, CT) with positive findings; **OR**
 - High suspicion for **ANY** of the following injury types:
 - ◆ Fracture; **OR**
 - ◆ Ligamentous; **OR**
 - ◆ Nerve; **OR**
 - ◆ Spine; **OR**
 - Neurological deficit (myelopathy) or radiculopathy, following traumatic event including accident, surgery, or intervention or with **ANY** of the following^{12,18}:
 - Bladder dysfunction; **OR**
 - Bowel dysfunction; **OR**
 - Fecal incontinence; **OR**
 - Loss of anal sphincter tone; **OR**
 - Physical exam finding of major muscle weakness; **OR**
 - Saddle anesthesia; **OR**
 - Severe sciatic/dermatomal sensory loss; **OR**
 - Urinary retention or overflow incontinence; **OR**
 - Weakness (bilateral or progressive) in the lower extremities; **OR**
- Persistent or worsening pain without acute findings on initial imaging (including patients who are elderly, osteoporotic, or have chronic steroid use); **OR**

- ◆ Vascular conditions, known or suspected, including **ANY** of the following⁵:
 - Extraspinal vascular malformations; **OR**
 - Spinal cord infarction; **OR**
 - Spinal vascular malformations and/or the cause of occult subarachnoid hemorrhage; **OR**
- ◆ Autoimmune, collagen vascular diseases, or inflammatory conditions including **ANY** of the following⁵:
 - Connective tissue disorders (systemic lupus erythematosus); **OR**
 - Muscular dystrophies and myopathies; **OR**
 - **ANY** of the following demyelinating diseases:
 - Acute disseminated encephalomyelitis; **OR**
 - Acute inflammatory demyelinating polyradiculopathy (Guillain-Barre syndrome); **OR**
 - Chronic inflammatory demyelinating polyradiculopathy (including relapsing polyneuropathy); **OR**
 - Multiple sclerosis (MS) and its variants (cervical or thoracic); **OR**
 - Myelin oligodendrocyte glycoprotein antibody-associated disease; **OR**
 - Neuromyelitis optica spectrum disorder; **OR**
- ◆ For evaluation of **ANY** of the following uncategorized/ miscellaneous symptoms when applicable:
 - Pain or radiculopathy without trauma or known malignancy with **ANY** of the following^{5,12}:
 - Discordant pain or radiculopathy to radiograph findings; **OR**
 - Neurological deficit (myelopathy) or severe radiculopathy not previously imaged with **ANY** of the following:
 - ◆ Abnormal electromyography (EMG); **OR**
 - ◆ New or worsening symptoms; **OR**
 - ◆ Not previously imaged; **OR**
 - Degenerative conditions including **ANY** of the following⁵:

- Degenerative disc disease and its sequelae in the lumbar, thoracic, and cervical spine (including myelopathy); **OR**
 - Symptomatic radiculopathy; **OR**
- Compression (suspected) in **ANY** of the following¹⁸:
 - Spinal cord; **OR**
 - Cauda equina; **OR**
 - Myelopathy (acute or progressive); **OR**
 - Nerve root; **OR**
- **ANY** of the following⁵:
 - Amyloid deposition in the spine; **OR**
 - Cerebrospinal fluid (CSF) leak (may include spontaneous intracranial hypotension); **OR**
 - Gout; **OR**
 - Spinal cord herniation¹⁹; **OR**
- ◆ Preoperative, postoperative, or pre-treatment evaluation for **ANY** of the following:
 - Planning for treatment fields for radiation therapy; **OR**
 - Postradiation changes (e.g., myelopathy); **OR**
 - Epidural and subdural fluid collection⁵; **OR**
 - Follow-up of incidental or concerning findings seen on other imaging examinations⁵; **OR**
 - Pre-procedure assessment for vertebroplasty and kyphoplasty²⁰; **OR**
 - Postoperative fluid collections and soft-tissue changes (extradural and intradural)¹; **OR**
 - Postoperative with new or worsening neurological symptoms^{11,12}; **OR**
- ◆ **ANY** of the following congenital conditions^{5,21}:
 - Chiari malformation; **OR**
 - Scoliosis with **ANY** of the following²²:
 - Neurological symptoms; **OR**
 - Requiring preoperative assessment; **OR**
 - Worsening pain not previously imaged; **OR**
 - Syringohydromyelia (syrinx); **OR**
 - Congenital spinal dysraphism (failure of fusion of parts along the dorsal midline of the spinal cord)²; **OR**
- ◆ Repeat imaging (defined as repeat request following recent

imaging of the same anatomic region with the same modality), in the absence of established guidelines, will be considered reasonable and necessary if **ANY** of the following is **TRUE**:

- New or worsening symptoms, such that repeat imaging would influence treatment; **OR**
- One-time clarifying follow-up of a prior indeterminate finding; **OR**
- In the absence of change in symptoms, there is an established need for monitoring which would influence management.

Non-Indications

→ **Magnetic resonance imaging (MRI), spine (cervical/thoracic/lumbar)** is not considered appropriate if **ANY** of the following is **TRUE**:

- ◆ 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; **OR**
- ◆ Cortical bone and calcification is being imaged²; **OR**
- ◆ Spatial resolution of bone or calcification is required for a procedure.²

*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

Inpatient or Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
72141	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents, cervical; without contrast material

72142	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents; with contrast material(s)
72146	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents, thoracic; without contrast material
72147	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents, thoracic; with contrast material(s)
72148	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents, lumbar; without contrast material
72149	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents, lumbar; with contrast material(s)
72156	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents, without contrast material, followed by contrast material(s) and further sequences; cervical
72157	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents, without contrast material, followed by contrast material(s) and further sequences; thoracic
72158	Magnetic resonance imaging (MRI) (e.g., proton), spinal canal and contents, without contrast material, followed by contrast material(s) and further sequences; lumbar

Disclaimer: G, S, I, and N Codes are non-covered per CMS guidelines due to their experimental or investigational nature.

Medical Evidence

Mathieu and Talbotts (2022) review using magnetic resonance imaging (MRI) to assess spinal emergencies. As an adjunct to CT, MRI proves to be most valuable in situations where additional imaging is necessary to assess spinal stability or compromise of neural elements. Vessel wall imaging techniques and MRA may also be utilized in cases of blunt traumatic cerebrovascular injury, mainly when findings from CTA are inconclusive. The American College of Radiology (ACR) has established guidelines outlining the appropriateness of MRI usage in various clinical scenarios related to spinal injuries and emergencies. MRI is considered 'usually appropriate' for patients with confirmed or suspected spinal cord or nerve root injuries.¹⁰

Suri et al. (2021) report on a randomized control trial (RCT) that investigated the impact of inserting epidemiological benchmarks into lumbar spine imaging reports as part of the Lumbar Imaging with Reporting of Epidemiology (LIRE) trial. The trial analyzed secondary outcomes, focusing on subsequent nonsurgical and surgical procedures involving the thoracolumbosacral spine and sacroiliac joints. The study included 238,886 adult patients from primary care clinics across four integrated healthcare systems in the United States. All participants underwent lumbar diagnostic imaging between 2013 and 2016. Results indicate that including epidemiological benchmarks (the 'LIRE intervention') did not significantly affect the utilization of non-surgical procedures (e.g., lumbosacral epidural steroid injections, facet joint injections, or facet joint radiofrequency ablation). In addition, the intervention did not impact surgical procedures such as decompression surgery, spinal fusion, or other spine surgeries involving the lumbar, sacral, or thoracic spine. The intervention also did not significantly affect any specific spine procedure.²⁰

Ghaffari-Rafi et al. (2021) performed a systematic review and meta-analysis on the role of MRI in clinical decision-making in acute spinal cord injury. Obtaining MRI scans significantly influences the clinical management of patients experiencing acute spinal cord injury (SCI) across all presentations. Guidelines support MRI scans in adult patients with acute SCI before surgical intervention, when feasible, to enhance clinical decision-making. Additional research is needed to establish the utility and efficacy of MRI in various types of SCI further.¹⁹

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