Cohere Medicare Advantage Policy - Magnetic Resonance Angiography (MRA), Upper Extremity

Clinical Guidelines for Medical Necessity Review

Version: 1.1
Revision Date: May 1, 2025

Important Notices

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Other Notices:

Guideline Information:

Specialty Area: Diagnostic Imaging
Guideline Name: Magnetic Resonance Angiography (MRA), Upper Extremity

Date of last literature review: 9/16/2024
Document last updated: 04/29/2025
Type: [**X**] Adult (18+ yo) | [**X**] Pediatric (0-17 yo)

Table of Contents

Medical Necessity Criteria

Service: Magnetic Resonance Angiography (MRA), Upper Extremity

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.[1-7, 19-20]

Related CMS Documents

Please refer to the CMS Medicare Coverage Database for the most current applicable CMS National Coverage.

- National Coverage Determination (NCD). Magnetic resonance imaging (MRI) (220.2)
- Local Coverage Determination (LCD). Magnetic resonance angiography (MRA) (L33633)
- Billing and Coding: Magnetic resonance angiography (MRA) (A56747)
- Local Coverage Determination (LCD). Magnetic resonance angiography (MRA) (L34865)
- Billing and Coding: Magnetic resonance angiography (MRA) (A56805)
- Local Coverage Determination (LCD). Magnetic resonance angiography (MRA) (L34372)
- Billing and Coding: Magnetic resonance angiography (MRA) (A57779)
- Local Coverage Determination (LCD). Magnetic resonance angiography (MRA) (L34424)
- Billing and Coding: Magnetic resonance angiography (MRA) (A56775)

Recommended Clinical Approach

Magnetic resonance angiography (MRA) of the upper extremity is typically performed without and with gadolinium contrast. Although contrast-enhanced MRA (CE-MRA) is generally preferred, non-contrast-enhanced techniques are increasingly available. These may be a good option for patients with impaired renal function or who cannot tolerate gadolinium-

based contrast agents. A broad spectrum of upper extremity vascular disorders can be assessed accurately using MRA of the upper extremity.[8]

Evaluation of Clinical Benefits and Potential Harms

Cohere Health uses the criteria below to ensure consistency in reviewing the conditions to be met for coverage of magnetic resonance angiography (MRA), upper extremity. 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:

- There is a risk of malfunction of implanted medical devices (e.g., implanted pacemakers, cochlear implants).
- A potential exists for allergic reactions to contrast material, if used in the study. The MRI department staff will monitor the patient for an allergic reaction and treat as recommended by a physician.[8-9]
- Use of gadolinium-based contrast is not recommended during pregnancy or in patients with acute or chronic kidney injury or disease.[8-9]
- If sedation is used for the study (for anxiety or claustrophobia), there is a risk of over-sedation. The patient will be monitored during the procedure to reduce this risk.
- There is uncertain risk for MR imaging in pregnant patients. The decision to image in a pregnant patient should be made on an individual basis in consultation with the patient's obstetric provider.
- There is a risk of increased healthcare costs and complications from the inappropriate use of emergency services and additional treatments.[18]

The clinical benefits of using these criteria include:

- Improved patient outcomes through timely and appropriate access to the procedure. Ghouri et al (2019) describe the procedural benefits of MRA of the upper extremity, including increasing use for semi-urgent

conditions where computed tomography was previously preferred. MRA is stated to allow better soft tissue characterization without ionizing radiation exposure, as well as high accuracy and reproducibility, and simultaneous assessment of central vessels and soft tissues.[10]

- Reduction in complications and adverse effects from unnecessary procedures. According to the 2020 ACR-NASCI-SPR practice parameter for the performance of body magnetic resonance angiography (MRA), the procedure is stated to be much less invasive than standard catheter-based invasive angiography, reducing the risk of vascular injury. For patients who are unable to receive gadolinium-based contrast agents, non-contrast study techniques are available. There is no associated ionizing radiation exposure as with computed tomography studies. MRA is stated to be useful in diagnosis of vascular disease in pediatric patients, although sedation or general anesthesia may be required.[8]
- Enhanced diagnostic accuracy for complex medical conditions. Bode et al. (2012) evaluated MRA use in upper extremity vascular access planning. They stated that MRA allows examination of the entire upper extremity vascular tree compared to discrete locations from duplex ultrasound testing.[11]
- 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 angiography (MRA), upper extremity** is considered appropriate if **ALL** of the following are **TRUE**[8]:

- MRA-preferred indications including **ANY** of the following:
    - Arterial entrapment syndrome, when ultrasound is indeterminate or for pre-treatment planning; **OR**
    - Adventitial cystic disease; **OR**
    - Intimal hyperplasia evaluation within vascular devices such as stents; **AND**
- Ultrasound and CT/CTA are contraindicated or inconclusive (e.g., body habitus for ultrasound, anaphylactic reaction due to IV contrast reaction, pregnancy, pediatric) with **ANY** of the following:
    - Clinical suspicion of acute or chronic limb ischemia, when ultrasound is inconclusive or nondiagnostic, with **ANY** of the following:
        - Acute absence of radial or ulnar pulses; **OR**
        - Acute changes in motor or sensory function; **OR**
        - Symptoms with exercise attributable to vascular; **OR** etiologies such as muscle pain that resolves with rest, coolness, pallor, or fatigue; **OR**
    - Neoplastic conditions (including masses or mass-like conditions) when the arterial blood supply needs to be evaluated (e.g., for treatment planning, treatment response, or prognostication); **OR**
    - Neoplastic invasion of arteries or veins; **OR**
    - Trauma-related conditions as indicated by **ANY** of the following[12]:
        - Expanding hematoma; **OR**
        - Major blunt trauma and the patient is hemodynamically stable[13]; **OR**
        - Neurologic deficit of upper extremity in association with trauma[14]; **OR**
        - Vascular trauma to an upper extremity[15]; **OR**
    - Vascular conditions, known or suspected, including **ANY** of the following:
        - Aneurysm, seen on ultrasound or when ultrasound is nondiagnostic; **OR**
        - Intramural hematoma; **OR**
        - Dissection; **OR**
        - Non-healing upper extremity ulcers with abnormal or inconclusive ultrasound results (e.g. arterial Doppler); **OR**

    - Determination of hemorrhage source (including non-surgical, spontaneous); **OR**
    - Localization and characterization of vascular malformation (e.g., assessing treatment response, treatment planning) with **ANY** of the following:
        - Duplex ultrasound indeterminate or nondiagnostic; **OR**
        - High flow lesion suspected clinically or by imaging; **OR**
        - Preoperative planning; **OR**
    - Vasculitis, initial evaluation, when **ANY** of the following is **TRUE**[15]:
        - Biopsy proven; **OR**
        - Rheumatologic panel work-up including but not limited to erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) is suggestive of vasculitis; **OR**
        - The requesting clinician specializes in rheumatology and the outcome of the imaging is expected to change management and/or treatment plan; **OR**
    - Non-inflammatory vasculopathies that are symptomatic such as Raynaud's, Buerger's disease, fibromuscular dysplasia, or scleroderma; **OR**
    - Vascular steal syndrome of the upper extremity, is suspected, and initial imaging is needed to guide therapy[10]; **OR**
- Pre- and post-intervention evaluation when **ANY** of the following is **TRUE**:
    - Postoperative evaluation of the effectiveness of arterial or venous reconstruction or bypass; **OR**
    - Characterization of normal and variant vascular anatomy; **OR**
    - Determination of the patency, location, or integrity of grafts and other vascular devices (e.g., stents); **OR**
    - Planning autografts for musculoskeletal reconstruction; **OR**

- Hemodialysis access evaluation, when duplex ultrasound is inconclusive and fistulogram cannot be performed, for **ANY** of the following conditions:
    - Arteriovenous fistula (AVF) stenosis; **OR**
    - Occlusion; **OR**
    - Pseudoaneurysm; **OR**
    - Steal syndrome (cool and painful extremity)

➔ **Magnetic resonance venography (MRV), upper extremity** is considered appropriate if **ALL** of the following are **TRUE**[1]:

- MRA-preferred indications including venous entrapment syndrome, when ultrasound is indeterminate or for pre-treatment planning; **AND**
- Ultrasound and CT/CTV are contraindicated or inconclusive (e.g., body habitus for ultrasound, anaphylactic reaction due to IV contrast reaction, pregnancy, pediatric) with **ANY** of the following:
    - Neoplastic conditions (including masses or mass-like conditions) when the arterial blood supply needs to be evaluated (e.g., for treatment planning, treatment-response, or prognostication); **OR**
    - Neoplastic invasion of arteries or veins; **OR**
    - Initial evaluation for known venous upper extremity ulcer, when ultrasound is indeterminate or non-diagnostic; **OR**
    - Known or suspected acute or chronic deep venous thrombosis, when results would change, or management and ultrasound have been completed[16];**OR**
    - Known severe post-thrombotic changes incompletely evaluated by ultrasound; **OR**
    - Subclavian or central venous obstruction such as subclavian vein thrombosis, Paget-Schroetter syndrome, thoracic outlet syndrome, either known or suspected clinically (e.g., edema aggravated by exercise/arm position); **OR**
    - Pre and post-intervention evaluation when **ANY** of the following is **TRUE**:

- Postoperative evaluation of the effectiveness of arterial or venous reconstruction or bypass; **OR**
- Characterization of normal and variant vascular anatomy; **OR**
- Determination of the patency, location, or integrity of grafts and other vascular devices (e.g., stents); **OR**
- Planning autografts for musculoskeletal reconstruction; **OR**
- Treatment of venous entrapment syndrome

➔ **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 angiography (MRA), upper extremity** 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.

*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
73225	Magnetic resonance angiography (MRA), upper extremity, with or without contrast material(s)
C8934	Magnetic resonance angiography (MRA), with contrast, upper extremity
C8935	Magnetic resonance angiography (MRA), without contrast, upper extremity
C8936	Magnetic resonance angiography (MRA), without contrast followed by with contrast, upper extremity

Disclaimer: S Codes are non-covered per CMS guidelines due to their experimental or investigational nature.

Medical Evidence

Nassar et al. (2022) reviewed imaging modalities for preoperative planning. CTA and MRA can generate detailed 3D images of vascular structures and surrounding anatomy, with applications in preoperative planning for breast, head, neck, and extremity reconstructions. While MRA eliminates the need for radiation exposure, it is less precise than CTA in detecting perforators smaller than 1 mm. For assessing venous anatomy, the most effective modalities include duplex ultrasound, MRV, and the outflow phase of conventional angiography. While MR scanners and software continue to advance, the general preference is for 1.5-T scanners in reconstructive applications. Lower-strength scanners allow enhanced fat suppression, contributing to clearer imaging of vascular structures.[17]

Ghouri et al. (2019) review the successes and failures of CTA and MRA of the upper extremities. These modalities are preferred over Doppler or digital subtraction angiography (DSA), especially in patients without contraindications to MRI. Soft tissue characterization is improved with MRA and does not expose the patient to radiation. Venous and neurological compression is also successfully evaluated with MRA. As imaging modalities, particularly CTA and MRA, continue to advance, the authors stress the importance of identifying the strengths and weaknesses of different techniques to obtain the most effective imaging test.[10]

The American College of Radiology, the North American Society for Cardiovascular Imaging (NASCI), and the Society for Pediatric Radiology (SPR) developed a 2020 updated practice parameter for the performance of body magnetic resonance angiography (MRA). They state that contrast-enhanced MRA is as effective as standard angiography in the evaluation of diseases related to the vascular system as well as the planning of treatment. MRA is less invasive than catheter-based angiography, reducing the risk of injury to the vascular system being examined. Noncontrast MRA is available to patients in whom contrast media is contraindicated. Specific extremity MRA evaluations include arterial occlusions, congenital anomalies, and aneurysms, as well as venous malformations, causes of peripheral edema, and varicose veins. MRA is effective in planning for dialysis access placement.[8]

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Clinical Guideline Revision History/Information

Original Date: 09/19/2024		
Review History		
Version 1.1	05/01/2025	• Revised per CMS update for 03/27/2025 • Updated Revision Date • Updated Links and References for L34424, A56775