



# **Cohere Medical Policy – Magnetic Resonance Angiography (MRA), Neck**

*Clinical Guidelines for Medical Necessity Review*

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## Guideline Information:

**Specialty Area:** Diagnostic Imaging

**Guideline Name:** Cohere Medical Policy - Magnetic Resonance Angiography (MRA), Neck

**Date of last literature review:** 8/9/2024

**Document last updated:** 10/30/2024

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

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# Medical Necessity Criteria

**Service: Magnetic Resonance Angiography (MRA), Neck**

## Recommended Clinical Approach

Magnetic resonance angiography (MRA) of the neck is advanced imaging that is best utilized per institutional neurological, neurosurgical, and radiologic protocols. Ordering providers may consult specialty guidelines before ordering.<sup>1</sup> Imaging analysis utilizing MRA of the head can be performed alone or in conjunction with MRA of the head or magnetic resonance imaging (MRI) of the head. Contrast and concurrent exams should be guided by clinical suspicion of disease presence or exclusion to direct value-based care. Staging, pre-surgical planning, and screening are also recommendations of a clinical approach. MRA plays a crucial role in the routine assessment of patients experiencing stroke syndrome, specifically for the evaluation of both cervical and intracranial vessels, enabling the identification and diagnosis of vascular anomalies. In conjunction with MRI, MRA enhances the examination by comprehensively analyzing the cerebral parenchyma. MRA is also a viable alternative to computed tomography angiography (CTA) when using iodinated contrast material is not feasible.

## Medical Necessity Criteria

### Indications

- **Magnetic resonance angiography (MRA), neck** is considered appropriate if **ALL** of the following are **TRUE**<sup>2-4</sup>:
- ◆ Ultrasound and CT/CTA are contraindicated or inconclusive (e.g., body habitus for ultrasound, anaphylactic reaction due to IV contrast reaction, pregnancy, pediatric); **AND**
  - ◆ **ANY** of the following is **TRUE**:
    - Detection, screening, surveillance, and follow-up of vascular neck mass (e.g., paraganglioma, pulsatile neck mass [not parotid region or thyroid])<sup>5</sup>; **OR**
    - Trauma-related conditions as indicated by **ANY** of the following:
      - Trauma of the head with a suspected intracranial arterial injury based on clinical findings or prior imaging<sup>6</sup>; **OR**

- Traumatic and non-traumatic orbital pathology with clinical or imaging findings that indicate vascular involvement<sup>7</sup>; **OR**
- Traumatic injury to cervicocerebral vessels, suspected<sup>8</sup>; **OR**
- Vascular conditions, known or suspected, including **ANY** of the following:
  - Aneurysm screening with **ANY** of the following<sup>9-11</sup>:
    - ◆ Loeyes–Dietz syndrome with repeat imaging at least every two years; **OR**
    - ◆ Fibromuscular dysplasia; **OR**
    - ◆ Spontaneous coronary artery dissection (SCAD); **OR**
  - Carotid artery stenosis screening (non-invasive); **OR**
  - Central nervous system vasculitis<sup>12</sup>; **OR**
  - Cerebrovascular disease<sup>13-14</sup>; **OR**
  - Dissection (carotid or vertebral), suspected<sup>15</sup>; **OR**
  - Extracranial vascular disease requiring additional evaluation; **OR**
  - Giant cell arteritis with suspected extracranial involvement<sup>16</sup>; **OR**
  - Pulsatile tinnitus for the evaluation of vascular etiology<sup>17</sup>; **OR**
  - Stroke and **ALL** of the following:
    - ◆ The patient is outside of the 6-hour revascularization window; **AND**
    - ◆ MRI head with or without contrast has been ordered; **AND**
    - ◆ MRA head has been ordered; **AND**
    - ◆ The patient has a subarachnoid hemorrhage (SAH) and needs evaluation for **ANY** of the following<sup>18-20</sup>:
      - Intracranial arteriovenous malformation (AVM); **OR**
      - Arteriovenous fistula (AVF); **OR**
      - Intracranial aneurysm<sup>21</sup>; **OR**
      - Arterial dissection; **OR**
  - Subclavian steal syndrome for treatment planning<sup>22</sup>; **OR**

- Takayasu arteritis based on observations of abnormalities in other blood vessels on prior imaging<sup>23</sup>; **OR**
- Transient ischemic attack (TIA)<sup>24-25</sup>; **OR**
- Vascular malformation and **ALL** of the following are **TRUE**<sup>14,26</sup>:
  - ◆ Performed in conjunction with MRI head and MRA head; **AND**
  - ◆ To assess the status of neck vasculature; **OR**
- For evaluation of **ANY** of the following uncategorized/miscellaneous symptoms when applicable:
  - Ataxia with suspected arterial pathologies<sup>27</sup>; **OR**
  - Horner's syndrome<sup>28</sup>; **OR**
  - **ANY** of the following<sup>29</sup>:
    - ◆ Episodic vertigo with or without associated hearing loss or aural fullness (peripheral vertigo); **OR**
    - ◆ Persistent vertigo with or without neurological symptoms (central vertigo); **OR**
- Preoperative, postoperative, or pre-treatment evaluation for **ANY** of the following:
  - Before surgical procedures that provide detailed vascular mapping of the neck; **OR**
  - Post-procedural evaluation to evaluate the patient's progress following a procedure; **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 angiography (MRA), neck** is not considered appropriate if **ANY** of the following is **TRUE**:
- ◆ The patient has undergone advanced imaging of the same body part within 3 months without undergoing treatment or developing new or worsening symptoms<sup>30</sup>; **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

Inpatient or Outpatient

## Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
70547	Magnetic resonance angiography (MRA), neck; without contrast material(s)
70548	Magnetic resonance angiography (MRA), neck; with contrast material(s)
70549	Magnetic resonance angiography (MRA), neck; without contrast material(s), followed by contrast material(s) and further sequences

# Medical Evidence

Amin et al. (2023) present a scientific statement from the American Heart Association regarding the diagnosis, workup, and risk reduction of transient ischemic attack in the emergency department. Computed tomography angiography (CTA) demonstrates superior sensitivity and positive predictive value compared to magnetic resonance angiography (MRA) in detecting intracranial stenosis and occlusion. As a result, CTA is the recommended imaging modality over time-of-flight (TOF) (without contrast) MRA. If there is a concern regarding administering iodinated contrast, expedited magnetic resonance imaging (MRI) with MRA is a viable alternative. TOF MRA may result in images of lower quality as there is a tendency to overestimate cervical carotid stenosis compared to gadolinium-enhanced MRA. However, this type of MRA may be suitable for screening purposes. Gadolinium-enhanced MRA of the neck is the preferred choice for patients who can safely receive gadolinium contrast.<sup>31</sup>

AbuRahma et al. (2022) review clinical guidelines for managing extracranial cerebrovascular disease published by the Society for Vascular Surgery. Contrast-enhanced MRA can produce three-dimensional images that rival those from a formal arteriography. A key advantage of MRA is less radiation exposure to the individual, and the use of iodinated-based contrast materials is not needed. Further, MRA allows for the integration of MRI of the brain, enabling the identification of clinically silent cerebral infarction. It also facilitates the assessment of plaque morphology, focusing on detecting intraplaque hemorrhage. The severity of carotid stenosis is more identifiable with MRA than CTA. While MRA excels in various aspects, it is unsuitable for screening carotid artery disease due to its substantial cost.<sup>32</sup>

Cummins et al. (2022) discuss the role of TOF MRA for pulsatile tinnitus (PT) and the identification of vascular causes of PT, including dural arteriovenous fistulas (DAVFs). The annual intracranial hemorrhage risk of DAVFs is over 24%. TOF-MRA is one of the most sensitive and specific noninvasive methods for diagnosing DAVF. The diagnosis of arterial aneurysms is aided by the use of TOF MRA, with a sensitivity greater than 90% and specificity over 80%. MRA also detects stenoses (a sensitivity of 95.5% and specificity of 87.2%). When severe carotid artery stenosis is a cause of PT, the sensitivity and specificity of TOF MRA is nearly 100%. The advantages of MRA include a greater pooled sensitivity for diagnosis than CT and excellent spatial resolution and the most powerful sequence for DAVF diagnosis. In addition, MRA can diagnose intracranial and high cervical arterial etiologies (e.g., fibromuscular dysplasia,

carotid stenosis, variant anatomy). Disadvantages include high cost, scanning time, and the dephasing of tortuous vessels.<sup>33</sup>

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# Clinical Guideline Revision History/Information

Original Date: April 1, 2022		
<b>Review History</b>		
Version 2	8/15/2024	Annual review and policy restructure.
Version 3	10/30/2024	Edited repeat imaging criteria language.