

04-70540-18

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Reviewed: 04/28/22

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Subject: Magnetic Resonance Angiography (MRA) Brain (Head)

THIS MEDICAL COVERAGE GUIDELINE IS NOT AN AUTHORIZATION, CERTIFICATION, EXPLANATION OF BENEFITS, OR A GUARANTEE OF PAYMENT, NOR DOES IT SUBSTITUTE FOR OR CONSTITUTE MEDICAL ADVICE. ALL MEDICAL DECISIONS ARE SOLELY THE RESPONSIBILITY OF THE PATIENT AND PHYSICIAN. BENEFITS ARE DETERMINED BY THE GROUP CONTRACT, MEMBER BENEFIT BOOKLET, AND/OR INDIVIDUAL SUBSCRIBER CERTIFICATE IN EFFECT AT THE TIME SERVICES WERE RENDERED. THIS MEDICAL COVERAGE GUIDELINE APPLIES TO ALL LINES OF BUSINESS UNLESS OTHERWISE NOTED IN THE PROGRAM EXCEPTIONS SECTION.

[Position Statement](#)

[Billing/Coding](#)

[Reimbursement](#)

[Program Exceptions](#)

[Definitions](#)

[Related Guidelines](#)

[Other](#)

[References](#)

[Updates](#)

DESCRIPTION:

Magnetic resonance angiography (MRA) is a noninvasive imaging technology used for the evaluation and imaging of vessels in the head and neck. Magnetic resonance angiography (MRA) or magnetic resonance venography (MRV) may be used as a first line investigation of intracranial vascular disease. It is an alternative to invasive intracatheter angiography. A contrast agent (gadolinium) may be used with MRA/MRV for better visualization and may be used in individuals who have a history of contrast allergy and who are at high risk of kidney failure.

POSITION STATEMENT:

Documentation Requirements

Documentation containing the medical necessity of the magnetic resonance angiography (MRA)/magnetic resonance venography (MRV) of the brain (head) and imaging results (e.g., images, clinical reports) should be maintained in the member's medical record. Documentation may be requested as part of the review process.

Magnetic resonance angiography (MRA)/magnetic resonance venography (MRV) of the brain (head) **meets the definition of medical necessity** for the following:

Evaluation of known intracranial vascular disease

- Known intracranial aneurysm or arteriovenous malformation (AVM)
- Known vertebral basilar insufficiency (VBI)
- Vascular abnormality visualized on previous brain imaging

- Known vasculitis, reversible cerebral vasoconstriction syndrome or Moyomoya disease

Evaluation for suspected intracranial vascular disease

- **Aneurysm screening**
 - Screening for suspected intracranial aneurysm in member with a first-degree familial history (parent brother, sister, or child) of intracranial aneurysm
 - Screening for aneurysm in polycystic kidney disease (after age 30), Loeys-Dietz syndrome, fibromuscular dysplasia, spontaneous coronary arteries dissection (SCAD), or known aortic coarctation.
- **Vascular abnormalities**
 - Suspected vascular malformation (arteriovenous malformation (AVM) or dural arteriovenous fistula) in member with previous or indeterminate imaging study
 - Thunderclap headache with continued concern for underlying vascular abnormality after initial negative work-up:
 - Negative Brain CT **AND** Negative Lumbar Puncture **OR**
 - Negative Brain MRI.
 - Headache associated with exercise or sexual activity
 - Isolated third nerve palsy (oculomotor) with pupil involvement to evaluate for aneurysm
 - Pulsatile tinnitus to identify a vascular etiology.
- **Cerebrovascular Disease**
 - Ischemic
 - Recent ischemic stroke or transient ischemic attack
 - Known or suspected vertebrobasilar insufficiency (VBI) in members with symptoms such as dizziness, vertigo, headaches, diplopia, blindness, vomiting, ataxia, weakness in both sides of the body, or abnormal speech.
 - Hemorrhagic
 - Known subarachnoid hemorrhage (SAH)
 - Known cerebral intraparenchymal hemorrhage with concern for underlying vascular abnormality.
 - Venous-MRV*
 - Suspected central venous thrombosis (dural sinus thrombosis)
 - Distinguishing benign intracranial hypertension (pseudotumor cerebri) from dural sinus thrombosis.
 - Sickle cells disease (ischemic and/or hemorrhagic)
 - Neurological signs or symptoms in sickle cell members

- High stroke risk in sickle cell members (2 - 16 years of age) with a transcranial doppler velocity > 200.
- **Vasculitis with initial laboratory workup (such as ESR, CRP, serology)**
 - Suspected secondary CNS vasculitis based on neurological sign or symptoms in the setting of an underlying systemic disease with abnormal inflammatory markers or autoimmune antibodies
 - Suspected primary CNS vasculitis based on neurological signs and symptoms with completed infectious/inflammatory lab work-up
 - Giant cell arteritis with suspected intracranial involvement.
- **Other intracranial vascular disease**
 - Suspected Moyomoya disease
 - Suspected reversible cerebral vasoconstriction syndrome.

Pre-operative/procedural evaluation for treatment, procedure, intervention or brain/skull surgery

- Pre-operative evaluation for a planned surgery or procedure
- Refractory trigeminal neuralgia when done for surgical planning.

Post-operative/procedural evaluation

- A follow-up study may be needed to help evaluate a member's progress after treatment, procedure, intervention or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested.

Indications for brain MRA/neck MRA combination studies

- Recent ischemic stroke or transient ischemic attack (TIA)
- Known or suspected vertebrobasilar insufficiency (VBI) in members with symptoms such as dizziness, vertigo, headaches, diplopia, blindness, vomiting, ataxia, weakness in both sides of the body, or abnormal speech
- Suspected carotid or vertebral artery dissection; due to trauma or spontaneous due to weakness of vessel wall
- Asymptomatic members with an abnormal ultrasound of the neck or carotid duplex imaging (e.g., carotid stenosis \geq 70%, technically limited study, aberrant direction of flow in the carotid or vertebral arteries) and member is surgery or angioplasty candidate
- Symptomatic members with an abnormal ultrasound of the neck or carotid duplex imaging (e.g., carotid stenosis \geq 50%, technically limited study, aberrant direction of flow in the carotid or vertebral arteries) and member is surgery or angioplasty candidate
- Pulsatile tinnitus to identify vascular etiology.

Indications for brain MRI/brain MRA combination studies

- Recent ischemic stroke or transient ischemic attack
- Thunderclap headache with continued concern for underlying vascular abnormality after initial negative work-up:
 - Negative Brain CT; **AND**
 - Negative Lumbar Puncture.
- Acute, sudden onset of headache with personal history of a vascular abnormality or first-degree family history of aneurysm
- Headache associated with exercise or sexual activity
- Suspected venous thrombosis (dural sinus thrombosis) – MRV*.

Indications for brain MRI/brain MRA/neck MRA combination studies

- Recent ischemic stroke or transient ischemic attack (TIA)
- Approved indications as noted above and being performed in a child under 8 years of age who will need anesthesia for the procedure and there is a suspicion of concurrent intracranial pathology.

***Magnetic resonance venography (MRV) and central venous thrombosis**

MRV is indicated for the evaluation of a central venous thrombosis/dural sinus thrombosis. The most frequent presentations are isolated headache, intracranial hypertension syndrome, seizures, focal neurological deficits and encephalopathy. Risk factors are hypercoagulable states inducing genetic prothrombotic conditions, antiphospholipid syndrome and other acquired prothrombotic diseases such as cancer, oral contraceptives, pregnancy, puerperium (6 weeks postpartum), infections, and trauma. Since venous thrombosis can cause subarachnoid hemorrhage (SAH), infarctions and hemorrhage parenchymal imaging with MRI/CT is also appropriate.

BILLING/CODING INFORMATION:

CPT Coding:

70544	Magnetic resonance angiography, head; without contrast material(s)
70545	Magnetic resonance angiography, head; with contrast material(s)
70546	Magnetic resonance angiography, head; without contrast material(s), followed by contrast material(s) and further sequences

REIMBURSEMENT INFORMATION:

Refer to section entitled **POSITION STATEMENT.**

Re-imaging or additional imaging due to poor contrast enhanced exam or technically limited exam is the responsibility of the imaging provider.

LOINC Codes:

The following information may be required documentation to support medical necessity: physician history and physical, physician progress notes, plan of treatment and reason for magnetic resonance angiography (MRA) of the brain (head).

Documentation Table	LOINC Codes	LOINC Time Frame Modifier Code	LOINC Time Frame Modifier Codes Narrative
Physician history and physical	28626-0	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Attending physician progress note	18741-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Plan of treatment	18776-5	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology reason for study	18785-6	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology comparison study-date and time	18779-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology comparison study observation	18834-2	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology-study observation	18782-3	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology-impression	19005-8	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology study-recommendation (narrative)	18783-1	18805-2	Include all data of the selected type that represents observations made six months or

			fewer before starting date of service for the claim
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PROGRAM EXCEPTIONS:

Federal Employee Plan (FEP): Follow FEP guidelines.

Medicare Advantage products

The following Local Coverage Determination (LCD) was reviewed: Magnetic Resonance Angiography (MRA), (L34372) located at fcso.com.

The following National Coverage Determination (NCD) was reviewed: Magnetic Resonance Angiography, (220.3) and Magnetic Resonance Imaging (MRI), (220.2) located at cms.gov.

DEFINITIONS:

No guideline specific definitions apply.

RELATED GUIDELINES:

[Magnetic Resonance Angiography \(MRA\) Abdomen and Pelvis, 04-70540-21](#)

[Magnetic Resonance Angiography \(MRA\) Chest, 04-70540-20](#)

[Magnetic Resonance Angiography \(MRA\) Extremity \(Upper and Lower, 04-70540-22](#)

[Magnetic Resonance Angiography \(MRA\) Neck, 04-70540-19](#)

[Magnetic Resonance Angiography \(MRA\) Spinal Canal, 04-70540-23](#)

OTHER:

None applicable.

REFERENCES:

1. American College of Radiology ACR Appropriateness Criteria®: Ataxia, 2018.
2. American College of Radiology ACR Appropriateness Criteria®: Cerebrovascular Disease, 2016.
3. American College of Radiology ACR Appropriateness Criteria®: Focal Neurological Deficit, 2012.
4. American College of Radiology ACR Appropriateness Criteria®: Headache, 2019.
5. American College of Radiology ACR Appropriateness Criteria®: Head Trauma, Last review date: 2015.
6. American College of Radiology ACR Appropriateness Criteria® Pre-Irradiation Evaluation and Management of Brain Metastases, 2014.
7. ACR-NASCI-SPR Practice Parameter for the Performance of Cervicocerebral Magnetic Resonance Angiography (MRA), 2015.

8. Brott TG, Halperin JL, Abbara S et al. 2011
ASA/ACCF/AHA/AANN/AANS/ACR/ASNR/CNS/SAIP/SCAI/SIR/SNIS/SVM/SVS guideline on the management of patients with extracranial carotid and vertebral artery disease: executive summary. A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, and the American Stroke Association, American Association of Neuroscience Nurses, American Association of Neurological Surgeons, American College of Radiology, American Society of Neuroradiology, Congress of Neurological Surgeons, Society of Atherosclerosis Imaging and Prevention, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of NeuroInterventional Surgery, Society for Vascular Medicine, and Society for Vascular Surgery. *Circulation* 2011 Jul 26;124(4):489-532.
9. Centers for Medicare & Medicaid Services. National Coverage Determination (NCD) Magnetic Resonance Angiography (220.3); accessed at cms.gov.
10. Centers for Medicare & Medicaid Services. National Coverage Determination (NCD) Magnetic Resonance Imaging (220.2); accessed at cms.gov.
11. First Coast Service Options, Inc. Local Coverage Determination (LCD) Magnetic Resonance Angiography (MRA) (L34372); accessed at fcso.com.
12. Colen TW, Wang LC, Ghodke BV, et al. Effectiveness of MDCT angiography for the detection of intracranial aneurysms in patients with nontraumatic subarachnoid hemorrhage. *American Journal of Roentgenology* 2007; 89:898-903.
13. Dong-Kee K, Yong Sam S, Jae Hong L et al 2012. Pulsatile Tinnitus as the Sole Manifestation of an Internal Carotid Artery Aneurysm Successfully Treated by Coil Embolization. *Clinical and Experimental Otorhinolaryngology* 2012; 5(3): 170-172.
14. National Imaging Associates, Inc. MR Angiography Head/Brain Clinical Guidelines, 2022.
15. Wermer MJH, Rinkel GJE, van Gijn J. et al. Repeated screening for intracranial aneurysms in familial subarachnoid hemorrhage, *Stroke*, 2003; 34:2788-2791.

COMMITTEE APPROVAL:

This Medical Coverage Guideline (MCG) was approved by the Florida Blue Medical Policy & Coverage Committee on 04/28/22.

GUIDELINE UPDATE INFORMATION:

11/15/13	New Medical Coverage Guideline.
11/15/14	Added magnetic resonance venography (MRV).
04/15/15	Annual review. Revised description. Revised indication for pre-operative evaluation (brain/skull). Updated references.
08/15/18	Revision; revised position statement. Updated references.
03/15/20	Review/revision. Expanded criteria for known intracranial vascular disease, suspected intracranial vascular disease, combination studies. Added indication pre-operative/procedural evaluation for treatment, procedure, intervention or brain/skull surgery and magnetic resonance venography and central venous thrombosis. Added indication and criteria for: brain MRI/brain MRA combination studies, brain MRI/brain MRA/neck MRA combination studies. Updated references.

05/15/22	Review: Position statements and references updated.
07/01/22	Revision to Program Exceptions section.