

Subject: Brain MRA Angiography Brain (70544 ,70545, 70546)		Original Effective Date: 12/13/17
Policy Number: 609	Revision Date(s): 11/21/18	
Review Date: 12/13/17, 12/13/18		

DISCLAIMER

This Molina Clinical Review (MCR) is intended to facilitate the Utilization Management process. It expresses Molina's determination as to whether certain services or supplies are medically necessary, experimental, investigational, or cosmetic for purposes of determining appropriateness of payment. The conclusion that a particular service or supply is medically necessary does not constitute a representation or warranty that this service or supply is covered (i.e., will be paid for by Molina) for a particular member. The member's benefit plan determines coverage. Each benefit plan defines which services are covered, which are excluded, and which are subject to dollar caps or other limits. Members and their providers will need to consult the member's benefit plan to determine if there are any exclusion(s) or other benefit limitations applicable to this service or supply. If there is a discrepancy between this policy and a member's plan of benefits, the benefits plan will govern. In addition, coverage may be mandated by applicable legal requirements of a State, the Federal government or CMS for Medicare and Medicaid members. CMS's Coverage Database can be found on the CMS website. The coverage directive(s) and criteria from an existing National Coverage Determination (NCD) or Local Coverage Determination (LCD) will supersede the contents of this Molina Clinical Review (MCR) document and provide the directive for all Medicare members.

DESCRIPTION OF PROCEDURE/SERVICE/PHARMACEUTICAL

Magnetic Resonance Angiography (MRA) is a non-X-ray (no ionizing radiation) imaging scan that uses a strong magnetic field and radiofrequency waves to produce detailed images of vascular structures. MRA may be performed either without or with the injection of (gadolinium) contrast material into a vein. MRA images are electronically processed to remove surrounding non-vascular anatomy, so that only the arteries or veins of interest are displayed. These vascular images can be reconstructed and rotated in different planes. MRA can sometimes replace or can be used to supplement conventional invasive catheter angiography. Note: A single authorization covers either or both MRA and MRV.

RECOMMENDATIONS

Aneurysm or Dissection

- For evaluation of a known or suspected aneurysm, dissection or AVM
- For evaluation of headaches in a patient with a medical condition known to be associated with cerebral aneurysms or having a first degree family member with a history of cerebral aneurysm.
- For evaluation of known or suspected vertebrobasilar insufficiency (VBI) in patients with symptoms such as vision changes, vertigo, or abnormal speech.
- Screening for aneurysm in asymptomatic patients with two family members having a history of a known aneurysm. Can be repeated every 5-10 years.
- Screening for aneurysm in asymptomatic patients known to have fibromuscular dysplasia, polycystic kidney disease, neurofibromatosis, Ehlers-Danlos syndrome, Marfan's syndrome

known aortic coarctation, or other medical conditions not explicitly mentioned which have associations with cerebral aneurysms. Can be repeated every 5-10 years.

- Evaluation of pulsatile tinnitus

Embolism or other occlusions

- For evaluation of suspected embolism or thrombus of the brain
- For evaluation of suspected central venous sinus thrombosis
- For distinguishing pseudotumor cerebri (benign intracranial hypertension) from central venous sinus thrombosis
- For evaluation of known or suspected vasculitis (e.g. Takayasu's arteritis)
- For evaluation of new TIA or stroke
- Evaluation of cognitive or neurologic problem or headache in sickle cell patient
- For evaluation of stroke risk in a patient with sickle cell and elevated transcranial Doppler studies when results will be used to guide treatment

Fistula

- For evaluation of known or suspected arteriovenous malformation

Tumors

- Differentiate between vascular and nonvascular tumors

Evaluate hemorrhage or trauma

- To evaluate the source of hemorrhage
- To evaluate the vascular compromise due to trauma

Congenital

- To evaluate congenital disorders of the blood vessels involving the brain

Pre/Post Procedural

- Pre-operative/pre-procedural evaluation when blood vessel detail is needed
- Post-operative/post-procedural for routine recommended follow up or for potential post-operative complications.
- A repeat study may be needed to help evaluate a patient's progress after treatment procedure intervention or surgery. The reason for the repeat study and that it will affect care must be clear.

Combination - Brain MRA with Brain MRI and Neck MRA

- Evaluation of new stroke symptoms
- Pulsatile tinnitus

ADDITIONAL CRITICAL INFORMATION

The above medical necessity recommendations are used to determine the best diagnostic study based on a patient's specific clinical circumstances. The recommendations were developed using

evidence based studies and current accepted clinical practices. Medical necessity will be determined using a combination of these recommendations as well as the patient's individual clinical or social circumstances.

- Tests that will not change treatment plans should not be recommended.
- Same or similar tests recently completed need a specific reason for repeat imaging.

REFERENCES USED FOR DETERMINATIONS

1. American College of Radiology. (2017). ACR Appropriateness Criteria® Retrieved from <https://acsearch.acr.org/list>.
2. Wen PY. Assessment of disease status and surveillance after treatment in patients with brain tumors. UpToDate Inc., Waltham, MA. Last reviewed September 2015.
3. American College of Radiology (ACR), North American Society for Cardiovascular Imaging (NASCI), Society for Pediatric Radiology (SPR). ACR-NASCI-SPR practice guideline for the performance of pediatric and adult body magnetic resonance angiography (MRA). [online publication]. Reston (VA): American College of Radiology (ACR); 2010. Available at: <http://www.guideline.gov/content.aspx?id=32520&search=magnetic+resonance+angiography+AND+endovascular+leak>. Accessed 10/16/2014
4. Ayanzen, R.H., Bird, C.R., Keller, P.J., McCully, F.J., Theobald, M.R., & Heiserman, J.E. (2000). Cerebral MR Venography: Normal anatomy and potential diagnostic pitfalls. *AJNR*
Am J Neuroradiology, 21(1), 74-78. Retrieved from: <http://www.ajnr.org/content/21/1/74.long>.
5. Chalouhi, N., Chitale, R., Jabbou, P., Tjoumakaris, S., Dumont, A.S., Rosenwasser, R., Gonzalez, L.F. (2011). The case for family screening for intracranial aneurysms. *Neurosurg Focus*. Dec;31(6):E8. <http://thejns.org/doi/full/10.3171/2011.9.FOCUS11210>
6. Hofmann, E., Behr, R., Neumann-Haefelin, T., & Schwager, K. (2013). Pulsatile Tinnitus: Imaging and Differential Diagnosis. *Deutsches Ärzteblatt International*, 110(26), 451–458. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3719451/>
7. Khan, S., Cloud, G. C., Kerry, S., & Markus, H. S. (2007). Imaging of vertebral artery stenosis: a systematic review. *Journal of Neurology, Neurosurgery, and Psychiatry*, 78(11), 1218–1225. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2117584/>
8. Miller JP, Acar F, Hamilton BE, Burchiel KJ. Radiographic evaluation of trigeminal neurovascular compression in patients with and without trigeminal neuralgia. *J Neurosurg*. 2009;110(4):627-632.
9. Leker, R., Steiner, I. (1999). Features of dural sinus thrombosis simulating pseudotumor cerebri. *Eur J Neurol*. Sep;6(5):601-4. <http://www.ncbi.nlm.nih.gov/pubmed/10457395>
10. Obusez, E.C., Hui, F., Hajj-Ali, R.A., Cerejo, R., Calabrese, L.H., Hammad, T., & Jones, S.E. (2014). High-resolution MRI vessel wall imaging: spatial and temporal patterns of reversible cerebral vasoconstriction syndrome and central nervous system vasculitis. *American Journal of Neuroradiology*, 35(8), 1527-1532. <http://www.ajnr.org/content/early/2014/04/10/ajnr.A3909.full.pdf>
11. Ryan K, Chawla A, Space S, Heeney M., (2003) NEPSCC Prevention and Treatment of Stroke for Pediatric Patients with Sickle Cell Disease. <http://www.nepssc.org/NewFiles/CVA%20CPG%20NEPSCC%20Dec03.pdf>

12. Sanelli, P.C., Sykesa, J.B., Ford, A.L., Lee, J.M., Vod, K.D., and Hallam, D.K. (2014) Imaging and Treatment of Patients with Acute Stroke: An Evidence-Based Review. Am. J. Neuroradiol. 35:1045-1051 Retrieved from: <http://www.ajnr.org/content/35/6/1045.full>
13. Chowdhury AH, Ghose SK, Mohammad QD, et al. Digital subtraction angiography is superior to magnetic resonance angiography in diagnosis of cerebral arteriovenous malformation. Mymensingh Med J. 2015;24(2):356-365.
14. Brain Aneurysm Foundation. Early Detection and Screening of Brain Aneurysm <https://www.bafound.org/about-brain-aneurysms/diagnosis/early-detection-and-screening/>
15. Bor AS, Koffijberg H, Wermer MJ, Rinkel GJ. Optimal screening strategy for familial intracranial aneurysms: a cost-effectiveness analysis. Neurology 2010; 74:1671.
16. Fitzgerald, Susan. Screening for Familial Aneurysms Every Seven Years Is Found Cost-Effective. Neurology Today. 10(12):27-28, June 17, 2010

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	Description
70544	70544: MR (Magnetic Resonance Imaging) Angiography Brain without contrast)
70545	70545: MR (Magnetic Resonance Imaging) Angiography Brain with contrast)
70546	70546: MR (Magnetic Resonance Imaging) Angiography Brain without and with contrast)