National Imaging Associates, Inc.	
Clinical guidelines **LOWER EXTREMITY MRA/MRV**	**Original Date: September 1997**
CPT Code: 73725	**Last Revised Date: April 2023~~March 2022~~**
Guideline Number: NIA_CG_058-1	**Implementation Date: January 2024~~23~~**

GENERAL INFORMATION

- *It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.*
- *Where a specific clinical indication is not directly addressed in this guideline, medical necessity determination will be made based on widely accepted standard of care criteria. These criteria are supported by evidence-based or peer-reviewed sources such as medical literature, societal guidelines and state/national recommendations.*

When a separate MRA and MRI exam is requested, documentation requires a medical reason that clearly indicates why additional MRI imaging of the lower extremity is needed.

Lower Extremity MRA & Abdomen/Pelvis Magnetic Resonance Angiography (MRA) Runoff Requests: **Two authorization requests are required, one Abdomen MRA, CPT code 74185 and one for Lower Extremity MRA, CPT code 73725.** This will provide imaging of the abdomen, pelvis, and both legs.

INDICATIONS FOR LOWER EXTREMITY MRA/MRV

Peripheral Vascular Disease

- Critical Limb ischemia **ANY** of the below with clinical signs of peripheral artery disease. Ultrasound imaging is not needed. If done and negative, it should still be approved due to high false negative rate[1, 2]
  - Ischemic rest pain
  - Tissue loss
  - Gangrene

---

*~~National Imaging Associates, Inc. (NIA) is a subsidiary of Magellan Healthcare, Inc.~~

- Claudication with abnormal or indeterminate (ankle/brachial index, pulse volume recording or arterial Doppler[3-5]
- Clinical concern for vascular cause of ulcers with abnormal or indeterminate ultrasound (ankle/brachial index, arterial Doppler)[6]
- After stenting or surgery with signs of recurrent symptoms OR abnormal ankle/brachial index; abnormal or indeterminate arterial Doppler, OR pulse volume recording)[4]

Popliteal Artery Entrapment Syndrome with abnormal arterial ultrasound[7]

Deep Venous Thrombosis with clinical suspicion of lower extremity DVT after abnormal or non-diagnostic ultrasound where a positive study would change management[8-10]

Clinical suspicion of vascular disease with abnormal or indeterminate ultrasound or other imaging

- Tumor invasion[11, 12]
- Trauma[13]
- Vasculitis[14]
- Aneurysm[15]
- Stenosis/occlusions[16]

Hemodialysis Graft Dysfunction, after Doppler ultrasound not adequate[17] for treatment decisions[18]

Vascular Malformation[18, 19]

- After initial evaluation with ultrasound and results will change management **OR**
- Inconclusive ultrasound **OR**
- For preoperative planning
    - MRI is also approvable for initial evaluation~~Non diagnostic doppler ultrasound~~
    -

Traumatic injuries with clinical findings suggestive of arterial injury – CTA preferred emergently[13]

Assessment/evaluation of suspected or known vascular disease/condition

Pre-operative/procedural evaluation

- Pre-operative evaluation for a planned surgery or procedure[3]

Post-operative/procedural evaluation

- A follow-up study may be needed to help evaluate a patient'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.[20, 21]

Special Circumstances[2]

- High suspicion of an acute arterial obstruction - Arteriography preferred (the gold standard).
- Renal impairment
    - Not on dialysis
        - Mild to moderate, GFR 30-45 ml/min MRA with contrast can be performed
        - Severe, GFR < 30 ml/min MRA without contrast
    - On dialysis
        - CTA with contrast can be done
- Doppler ultrasound can be useful in evaluating bypass grafts

---

BACKGROUND

Magnetic resonance angiography (MRA) is a noninvasive alternative to catheter angiography for evaluation of vascular structures in the lower extremity. Magnetic resonance venography (MRV) is used to image veins instead of arteries. MRA and MRV are less invasive than conventional x-ray digital subtraction angiography.

OVERVIEW

Noninvasive testing - **Noninvasive hemodynamic testing** – "Noninvasive testing (NIVT), both before and after intervention, has been used for decades as a first-line investigatory tool in the diagnosis and categorization of PAD. It is widely available and provides a large amount of information at low cost without the use of ionizing radiation. NIVT can consist of one or more of the following components: the ABI, segmental pressure measurements (SPMs), pulse-volume recordings (PVRs), photoplethysmography (PPG), and transcutaneous oxygen pressure measurement (TcPO2)."[21] The ankle- brachial index (ABI) is the ratio of systolic blood pressure at the ankle divided by the systolic pressure of the upper arm. The normal range lies between 0.9-1.4. An ABI of less than 0.9 is a reliable indicator of the presence of lower extremity PAD, indicating athero-occlusive arterial disease. The upper limit of normal ABI should not exceed 1.40. An ABI >1.40 is suggestive of arterial stiffening (~~i.e.~~i.e., medial arterial calcification) and is also associated with a higher risk of cardiovascular events and is seen in elderly patients, typically in those with diabetes or chronic kidney disease (CKD).

MRA of Foot – Fast contrast-enhanced time-resolved 3D MR angiography is used in evaluating the arterial supply of the foot. It does not require the use of ionizing radiation and iodinated contrast medium and it is minimally invasive, safe, fast, and accurate. Dorsalis pedis bypass surgery is an option for preserving a foot in a patient with arterial occlusive disease and MRA may be used in the preoperative evaluation. It can discriminate arteries from veins and can provide other key information, e.g., patency of the pedal arch, presence of collateral pathways, and depiction of target vessel suitable for surgical bypass. Time-resolved gadolinium-enhanced MRA can identify injured fat pads in the foot before they have become ulcerated.

MRA and arterial obstructive disease – Catheter angiography is the standard of reference for assessing arterial disease but MRA with contrast-enhanced media has gained acceptance and can image the entire vascular system. Contrast agents such as high dose gadolinium have been associated with the development of nephrogenic systemic fibrosis in patients with chronic renal insufficiency, but newer agents are safer in this regard. Gadolinium dosage may be decreased without compromising image quality in high-spatial-resolution contrast-enhanced MRA of the lower extremity.

POLICY HISTORY

Date	**Summary**
2023	- Updated references - Modified background section - Added vascular malformations - Added graft evaluation - Added indeterminate prior imaging findings
March 2022	Clarified renal impairment, not on dialysis, mild to moderate, GFR 30-45 ml/min MRA with contrast can be performed
May 2021	No changes
May 2020	• Clarified that CTA does not include a baseline CT exam • Expanded section about vascular malformation to include initial testing. • Added information about renal function and contrast agents • Added acute arterial obstruction and renal impairment • Simplified language • Updated references
May 2019	• Added initial statement about approvals: 'Some indications are for MRI, CT, or MR or CT Arthrogram. More than one should not be approved at the same time'. • Added background information and updated references

REFERENCES

1. Shishehbor MH, White CJ, Gray BH, et al. Critical Limb Ischemia: An Expert Statement. *J Am Coll Cardiol*. Nov 1 2016;68(18):2002-2015. doi:10.1016/j.jacc.2016.04.071
2. Weiss CR, Azene EM, Majdalany BS, et al. ACR Appropriateness Criteria(®) Sudden Onset of Cold, Painful Leg. *J Am Coll Radiol*. May 2017;14(5s):S307-s313. doi:10.1016/j.jacr.2017.02.015
3. Ahmed O, Hanley M, Bennett SJ, et al. ACR Appropriateness Criteria(®) Vascular Claudication-Assessment for Revascularization. *J Am Coll Radiol*. May 2017;14(5s):S372-s379. doi:10.1016/j.jacr.2017.02.037
4. Pollak AW, Norton PT, Kramer CM. Multimodality imaging of lower extremity peripheral arterial disease: current role and future directions. *Circ Cardiovasc Imaging*. Nov 2012;5(6):797-807. doi:10.1161/circimaging.111.970814
5. Pollak AW, Kramer CM. MRI in Lower Extremity Peripheral Arterial Disease: Recent Advancements. *Curr Cardiovasc Imaging Rep*. Feb 1 2013;6(1):55-60. doi:10.1007/s12410-012-9175-z
6. Rosyid FN. Etiology, pathophysiology, diagnosis and management of diabetics' foot ulcer. *Int J Res Med Sci*. 2017;5(10):4206-13. doi:http://dx.doi.org/10.18203/2320-6012.ijrms20174548
7. Williams C, Kennedy D, Bastian-Jordan M, Hislop M, Cramp B, Dhupelia S. A new diagnostic approach to popliteal artery entrapment syndrome. *J Med Radiat Sci*. Sep 2015;62(3):226-9. doi:10.1002/jmrs.121
8. American College of Radiology. ACR Appropriateness Criteria® Suspected Lower Extremity Deep Vein Thrombosis. American College of Radiology. Updated 2018. Accessed January 23, 2023. https://acsearch.acr.org/docs/69416/Narrative/
9. Karande GY, Hedgire SS, Sanchez Y, et al. Advanced imaging in acute and chronic deep vein thrombosis. *Cardiovasc Diagn Ther*. Dec 2016;6(6):493-507. doi:10.21037/cdt.2016.12.06
10. Katz DS, Fruauff K, Kranz A-O, Hon M. Imaging of deep venous thrombosis: A multimodality overview. Applied Radiology, Anderson Publishing. Updated March 5, 2014. Accessed January 23, 2023. https://www.appliedradiology.com/articles/imaging-of-deep-venous-thrombosis-a-multimodality-overview
11. Jin T, Wu G, Li X, Feng X. Evaluation of vascular invasion in patients with musculoskeletal tumors of lower extremities: use of time-resolved 3D MR angiography at 3-T. *Acta Radiol*. May 2018;59(5):586-592. doi:10.1177/0284185117729185
12. Kransdorf MJ, Murphey MD, Wessell DE, et al. ACR Appropriateness Criteria(®) Soft-Tissue Masses. *J Am Coll Radiol*. May 2018;15(5s):S189-s197. doi:10.1016/j.jacr.2018.03.012
13. Wani ML, Ahangar AG, Ganie FA, Wani SN, Wani NU. Vascular injuries: trends in management. *Trauma Mon*. Summer 2012;17(2):266-9. doi:10.5812/traumamon.6238
14. Fonseka CL, Galappaththi SR, Abeyaratne D, Tissera N, Wijayaratne L. A Case of Polyarteritis Nodosa Presenting as Rapidly Progressing Intermittent Claudication of Right Leg. *Case Rep Med*. 2017;2017:4219718. doi:10.1155/2017/4219718
15. Verikokos C, Karaolanis G, Doulaptsis M, et al. Giant popliteal artery aneurysm: case report and review of the literature. *Case Rep Vasc Med*. 2014;2014:780561. doi:10.1155/2014/780561

16. Menke J, Larsen J. Meta-analysis: Accuracy of contrast-enhanced magnetic resonance angiography for assessing steno-occlusions in peripheral arterial disease. *Ann Intern Med*. Sep 7 2010;153(5):325-34. doi:10.7326/0003-4819-153-5-201009070-00007
17. Richarz S, Isaak A, Aschwanden M, Partovi S, Staub D. Pre-procedure imaging planning for dialysis access in patients with end-stage renal disease using ultrasound and upper extremity computed tomography angiography: a narrative review. *Cardiovascular Diagnosis and Therapy*. 2022;13(1):122-132.
18. Madani H, Farrant J, Chhaya N, et al. Peripheral limb vascular malformations: an update of appropriate imaging and treatment options of a challenging condition. *Br J Radiol*. Mar 2015;88(1047):20140406. doi:10.1259/bjr.20140406
19. Obara P, McCool J, Kalva SP, et al. ACR Appropriateness Criteria® Clinically Suspected Vascular Malformation of the Extremities. *J Am Coll Radiol*. Nov 2019;16(11s):S340-s347. doi:10.1016/j.jacr.2019.05.013
20. Conte MS, Bradbury AW, Kolh P, et al. Global vascular guidelines on the management of chronic limb-threatening ischemia. *J Vasc Surg*. Jun 2019;69(6s):3S-125S.e40. doi:10.1016/j.jvs.2019.02.016
21. Cooper K, Majdalany BS, Kalva SP, et al. ACR Appropriateness Criteria(®) Lower Extremity Arterial Revascularization-Post-Therapy Imaging. *J Am Coll Radiol*. May 2018;15(5s):S104-s115. doi:10.1016/j.jacr.2018.03.011

~~ADDITIONAL RESOURCES~~

~~1. Aboyans V, Ricco JB, Bartelink MEL, et al. 2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases, in collaboration with the European Society for Vascular Surgery (ESVS): Document covering atherosclerotic disease of extracranial carotid and vertebral, mesenteric, renal, upper and lower extremity arteriesEndorsed by: the European Stroke Organization (ESO)The Task Force for the Diagnosis and Treatment of Peripheral Arterial Diseases of the European Society of Cardiology (ESC) and of the European Society for Vascular Surgery (ESVS). *Eur Heart J*. Mar 1 2018;39(9):763-816. doi:10.1093/eurheartj/ehx095~~
~~2. American College of Radiology. ACR Appropriateness Criteria® Acute Trauma to the Knee. American College of Radiology (ACR). Updated 2019. Accessed January 23November 22, 2023~~1. ~~https://acsearch.acr.org/docs/69419/Narrative/~~
~~3. Farber A. Chronic Limb-Threatening Ischemia. *N Engl J Med*. Jul 12 2018;379(2):171-180. doi:10.1056/NEJMcp1709326~~
~~4. Gerhard-Herman MD, Gornik HL, Barrett C, et al. 2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol*. Mar 21 2017;69(11):e71-e126. doi:10.1016/j.jacc.2016.11.007~~

~~Reviewed / Approved by NIA Clinical Guideline Committee~~

POLICY HISTORY

Date	Summary
April 2023	• Updated references • Modified background section • Added vascular malformations • Added graft evaluation • General Information moved to beginning of guideline with added statement on clinical indications not addressed in this guideline • Added indeterminate prior imaging findings
March 2022	Clarified renal impairment, not on dialysis, mild to moderate, GFR 30-45 ml/min MRA with contrast can be performed

Reviewed / Approved by NIA Clinical Guideline Committee

Disclaimer: *National Imaging Associates, Inc. (NIA) authorization policies do not constitute medical advice and are not intended to govern or otherwise influence the practice of medicine. These policies are not meant to supplant your normal procedures, evaluation, diagnosis, treatment and/or care plans for your patients. Your professional judgement must be exercised and followed in all respects with regard to the treatment and care of your patients. These policies apply to all Evolent Health LLC subsidiaries including, but not limited to, National Imaging Associates ("NIA"). The policies constitute only the reimbursement and coverage guidelines of NIA. Coverage for services varies for individual members in accordance with the terms and conditions of applicable Certificates of Coverage, Summary Plan Descriptions, or contracts with governing regulatory agencies. NIA reserves the right to review and update the guidelines at its sole discretion. Notice of such changes, if necessary, shall be provided in accordance with the terms and conditions of provider agreements and any applicable laws or regulations.*

~~**GENERAL INFORMATION**~~

~~It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.~~

~~**Disclaimer:** Magellan Healthcare service authorization policies do not constitute medical advice and are not intended to govern or otherwise influence the practice of medicine. These policies are not meant to supplant your normal procedures, evaluation, diagnosis, treatment and/or care plans for your patients. Your professional judgement must be exercised and followed in all respects with regard to the treatment and care of your patients. These policies apply to all Magellan Healthcare subsidiaries including, but not limited to, National Imaging Associates ("Magellan"). The policies constitute only the reimbursement and coverage guidelines of Magellan. Coverage for services varies for individual members in accordance with the terms and conditions of applicable Certificates of Coverage, Summary Plan Descriptions, or contracts with governing regulatory agencies. Magellan reserves the right to review and update the guidelines at its sole discretion. Notice of such changes, if necessary, shall be provided in accordance with the terms and conditions of provider agreements and any applicable laws or regulations.~~