National Imaging Associates, Inc.*	
Clinical guidelines **LOWER EXTREMITY MRA/MRV**	**Original Date: September 1997**
CPT Code: 73725	**Last Revised Date: May 2021**
Guideline Number: NIA_CG_058-1	**Implementation Date: January 2022**

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 (Shishehbor, 2016; Weiss, 2017~~8~~)
    - Ischemic rest pain
    - Tissue loss
    - Gangrene
- Claudication with abnormal (ankle/brachial index, pulse volume recording or arterial Doppler (Ahmed, 2017; Pollak, 2012, 2013)
- Clinical concern for vascular cause of ulcers with abnormal or indeterminate ultrasound (ankle/brachial index, arterial Doppler) (Rosyd, 2017)
- After stenting or surgery with signs of recurrent symptoms OR abnormal ankle/brachial index; abnormal or indeterminate arterial Doppler, OR pulse volume recording) (Pollak, 2012)

Popliteal Artery Entrapment Syndrome with abnormal arterial ultrasound (Williams, 2015)

Deep Venous Thrombosis with clinical suspicion of lower extremity DVT after abnormal or non-diagnostic ultrasound where a positive study would change management (Hanley, 2013; Karande, 2016; Katz, 2014)

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

- Tumor invasion (Jin, 2018; Kransdorf, 2018)
- Trauma (Wani, 2012)
- Vasculitis (Fonseka, 2017)
- Aneurysm (Verikokos, 2014)
- Stenosis/occlusions (Menke, 2010)

~~**For assessment/evaluation of suspected or known vascular disease/condition**~~

Vascular Malformation
(Madani, 2015; Obara, 2019)

- Non diagnostic doppler ultrasound

Traumatic injuries with clinical findings suggestive of arterial injury – CTA preferred emergently (Wani, 2012)

Assessment/evaluation of suspected or known vascular disease/condition

Pre-operative/procedural evaluation

- Pre-operative evaluation for a planned surgery or procedure (Ahmed, 2017)~~.~~

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~~.~~ (Conte, 2019; Cooper, 2018).

Special Circumstances
(Weiss, 2017)

- High suspicion of an acute arterial obstruction - Arteriography preferred (the gold standard).
- Renal impairment
    - Not on dialysis
        - Mild to moderate, GFR 30-89 ml/min MRA can be done
        - 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 h~~H~~emodynamic t~~T~~esting –

"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)~~," (ACR 2017)~~ photoplethysmography (PPG), and transcutaneous oxygen pressure measurement (TcPO2) **(Cooper, 2018)."**

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
May 2021	~~Reviewed literature for updates.~~**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**

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- ~~Simplified language~~
- ~~Updated references~~

REFERENCES

Aboyans V, Ricco JB, Bartelink MLEL, 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 arteries endorsed 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*. 2018 Mar; 39:763-816.

Ahmed O, Hanley M, Bennett SJ, et al. American College of Radiology ACR Appropriateness Criteria® - Vascular Claudication: Assessment for Revascularization. *J Am Coll Radiol*. May 2017; 14(5 Suppl):S372-379. https://acsearch.acr.org/docs/69411/Narrative/. Published 2017.

Conte MS, Bradbury AW, Kolh P, et al. Global vascular guidelines on the management of chronic limb=threatening ischemia. J Vasc Surg. 2019 Jun; 69(6S):3S-1255.e40. Epub 2019 May 28.

Cooper K, Majdalany BS, Kalva SP, et al. ACR Appropriateness Criteria lower extremity arterial revascularization – post-therapy. *J Am Coll Radiol*. 2018 May; 15(5Suppl):S104-S115.

Farber A. Chronic limb-threatening ischemia. *N Engl J Med.* 2018 Jul 12; 379(2):171-180. doi: 10.1056/NEJMcp1709326.

Fonseka CL, Galappaththi SR, Abeyaratne D, et al. A case of polyarteritis nodosa presenting as rapidly progressing intermittent claudication of right leg. *Case Rep Med*. 2017; Article ID 4219718.

Gerhard-Herman MD, Gornik HL. 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.* 2017 Mar; 69(11).

Hanley M, Donahue J, Rybicki FJ, et al. American College of Radiology ACR Appropriateness Criteria® - Clinical Condition: Suspected Lower-Extremity Deep Vein Thrombosis. https://acsearch.acr.org/docs/69416/Narrative/. Published 2013.

Jin T, Wu G, Li X, et al. Evaluation of vascular invasion in patients with musculoskeletal tumors of lower extremities: Use of time-resolved 3D MR angiography at 3-T. *Acta Radiol.* 2018 May; 59(5):586-592.

Karande GY, Hedgire SS, Sanchez Y, et al. Advanced imaging in acute and chronic deep vein thrombosis. *Cardiovasc Diagn Ther*. 2016; 6(6):493-507. http://doi.org/10.21037/cdt.2016.12.06.

Katz DS, Fruauff K, Kranz A, et al. Imaging of deep venous thrombosis: A multimodality overview. *Appl Radiol*. March 2014.

Kransdorf MJ, Murphey MD, Wessell DE, et al. ACR Appropriateness Criteria® Soft-Tissue Masses. *J Am Coll Radiol*. 2018; 15:S189-S97.

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*. 2015; 88(1047):20140406.

Menke J, Larsen J. Meta-analysis: Accuracy of contrast-enhanced magnetic resonance angiography for assessing steno-occlusions in peripheral arterial disease. *Ann Intern Med*. 2010; 153(5):325-334. doi: 10.7326/0003-4819-153-5-201009070-00007.

Obara P, McCool J, Kalva SP, et al. ACR Appropriateness Criteria clinically suspected vascular malformation of the extremities. *J Am Coll Radiol.* 2019 Nov; 16(11S):S340-S347.

Pollak AW, Kramer CM. MRI in lower extremity peripheral arterial disease: Recent advancements. *Curr Cardiovasc Imaging Rep*. 2013 Feb 1; 6(1): 55–60.

Pollak AW, Norton P, Kramer CM. Multimodality imaging of lower extremity peripheral arterial disease: Current role and future directions. *Circ Cardiovasc Imaging*. 2012 Nov 1; 5(6):797–807.

Rosyd FN. Etiology, pathophysiology, diagnosis and management of diabetics' foot ulcer. *Int J Res Med Sci.* 2017 Oct; 5(10):4206-4213.

Shishehbor MH, White CJ, Gray BH, et al. Critical limb ischemia. *Am Coll Cardiol*. 2016; 68 (18):2002–15.

Tuite M, Kransdorf M, Beaman F, et al. American College of Radiology (ACR). ACR Appropriateness Criteria® - Acute Trauma to the Knee. http://www.jacr.org/article/S1546-1440(15)00831-5/fulltext. Published 2018.

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.

Wani ML, Ahangar AG, Ganie FA, et al. Vascular injuries:Trends in management. *Trauma Mon*. 2012; 17(2):266–269.

Weiss CR, Azene EM, Majdalany BS, et al. ACR Appropriateness Criteria ® Sudden Onset of Cold, Painful Leg. *J Am Coll Radiol*. 2017;14(5S):S307-S313. doi:10.1016/j.jacr.2017.02.015.

~~Weiss C, Azene ER, Azene EM, et al. American College of Radiology (ACR). ACR Appropriateness Criteria® – Sudden Onset of Cold, Painful Leg. *Journal of the American College of Radiology*. Volume 14, Issue 5, Supplement, May 2017, Pages S307-S313.~~

Williams C, Kennedy D, Bastian-Jordan M, et al. A new diagnostic approach to popliteal artery entrapment syndrome. *J Med Radiat Sci*. 2015; 62(3):226–229.

Reviewed / Approved by NIA Clinical Guideline Committee

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.

Reviewed / Approved by  M. Atif Khalid, M.D., Medical Director, Radiology

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