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2024 Magnetic Resonance Angiography/ Magnetic Resonance Venography MRA/MRV Lower Extremities

Diagnostic Imaging

MRA-LowerExt-HH

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Magnetic Resonance Angiography/Venography (MRA/MRV) Lower Extremities

MRA Contraindications

An MRA may be contraindicated for **ANY** of the following:

- Safety, related to clinical status (eg, body mass index exceeds MR capability, intravascular stents within recent 6 weeks)
  References: [8] [23] [17] [12] [3]
- Safety, related to contrast (eg, allergy, renal impairment)
  References: [8] [23] [17] [12] [3]
- Safety, related to implanted devices (aneurysm clip, cochlear implant, insulin pump, spinal cord stimulator)
  References: [8] [23] [17] [12] [3]

IMPORTANT
Some implanted devices that were once absolute contraindications to a MRI, may now be accepted. Considerations include if the MRI is able to accommodate the device, or the device is deemed safe for MRI.

NCD 220.2
See also, **NCD 220.2**: Magnetic Resonance Imaging at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

Preamble: Pediatric Diagnostic Imaging

HealthHelp's clinical guidelines for the Diagnostic Imaging program, are intended to apply to both adults and pediatrics (21 years of age or younger), unless otherwise specified within the criteria.

MRA/MRV Lower Extremities Guideline

Magnetic resonance angiography/magnetic resonance venography (MRA/MRV) of the lower extremities is considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Deep venous thrombosis (DVT) in the lower extremity is suspected, vascular ultrasound is abnormal, non-diagnostic or indeterminate **AND** treatment depends on imaging results.
   References: [13] [15]
2. Hemodialysis graft dysfunction and ultrasound is non-diagnostic or indeterminate, for treatment planning.
   References: [14] [11]
3. Peripheral vascular disease (PVD) is suspected or known with **ANY** of the following:
   a. Claudication, when ankle/brachial index (ABI) or vascular ultrasound is abnormal, non-diagnostic or indeterminate.
   b. Critical limb ischemia with **ANY** of the following peripheral artery disease signs: (*__NOTE__: *Due to the high false-negative rate, ultrasound imaging before a CTA is not required; and if there is a negative prior ultrasound, CTA may still be appropriate.*)
      i. Gangrene
      ii. Ischemic rest pain
      iii. Tissue loss
   c. Post-revascularization procedure with **ANY** of the following:
      i. ABI is abnormal.
      ii. Pulse volume recording is abnormal, non-diagnostic or indeterminate.
      iii. Symptoms are recurrent.
      iv. Vascular ultrasound is abnormal, non-diagnostic or indeterminate.
   d. Ulcers are known and vascular cause is suspected when ABI or vascular ultrasound is abnormal, non-diagnostic or indeterminate.

   References: [18] [4] [5] [7] [20]
4. Peri-procedural care to guide pre-procedure, invasive procedure planning or post-procedural follow-up.
   References: [9] [4]
5. Popliteal artery entrapment syndrome when vascular ultrasound is abnormal.
   References: [16] [10] [6]
6. Prior MRA lower extremity imaging is non-diagnostic or indeterminate. (*__NOTE__: *One follow-up is appropriate to evaluate for changes since preceding imaging finding[s]. Further surveillance is appropriate when lesion is specified as "highly suspicious" or there is a change since last exam.*)

7. Traumatic injury is known and arterial injury is suspected, based on clinical finding.
8. Vascular disease and **EITHER** of the following:
    a. Vascular disease is suspected, prior imaging (eg, ultrasound) is abnormal, non-diagnostic or indeterminate, for **ANY** of the following:
        i. Aneurysm
        ii. Stenosis/occlusions
        iii. Trauma
        iv. Tumor invasion
        v. Vasculitis
    b. Vascular disease is suspected or known, for evaluation.

    References: [10] [22] [1]
9. Vascular malformation is suspected when vascular ultrasound is non-diagnostic or indeterminate **OR** results will change management.
    References: [19] [21] [2]

MRA/MRV Extremities Considerations for Contrast

Magnetic resonance angiography/magnetic resonance venography (MRA/MRV) of the extremities considerations for using contrast for **ANY** of the following special circumstances:

1. Arterial obstruction, acute, is suspected. (*__NOTE__: *Arteriography is preferred [gold standard].*)
    References: [5] [7]
2. Bypass graft evaluation when ultrasound is non-diagnostic or indeterminate.
    References: [11] [14]
3. Renal impairment is known and the individual is **NOT** on dialysis, and **ANY** of the following: (*__NOTE__: *Individuals on dialysis should have a CTA with contrast.*)
    a. Impairment is mild to moderate (glomerular filtration rate [GFR] of 30 ml/min to 45 ml/min) (*__NOTE__: *MRA should be ordered*.)
    b. Impairment is severe (GFR is less than 30 ml/min). (*__NOTE__: *MRA **WITHOUT** contrast should be ordered*.)

LCD 34372
See also, **LCD 34372**: Magnetic Resonance Angiography (MRA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

LCD 33633
See also, **LCD 33633**: Magnetic Resonance Angiography (MRA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

LCD 34865
See also, **LCD 34865**: Magnetic Resonance Angiography (MRA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

MRA/MRV Lower Extremities Procedure Codes

Table 1. MRA Lower Extremity Associated Procedure Codes

CODE	DESCRIPTION
73725	Magnetic resonance angiography, lower extremity, with or without contrast material(s)
C8912	Magnetic resonance angiography with contrast, lower extremity
C8913	Magnetic resonance angiography without contrast, lower extremity
C8914	Magnetic resonance angiography without contrast followed by with contrast, lower extremity

MRA/MRV Lower Extremities Summary of Changes

MRA/MRV Lower Extremities guideline had the following version changes from 2023 to 2024:

- Added the following to keep in line with current research:
  - "Hemodialysis graft dysfunction" indication
  - "Prior MRA lower extremity imaging"
  - "Traumatic injuries" indication
- Citations updated per the evidence.

- Mid-cycle update: added Pediatric Preamble

MRA/MRV Lower Extremities Definitions

Aneurysm refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.
Ankle-brachial index (ABI) is a measure of the difference in the systolic blood pressure of the arm and ankle calculated by dividing the blood pressure of the ankle by that of the arm.
Claudication is a condition in which cramping pain in the leg is induced by exercise, typically caused by obstruction of the arteries.
Critical limb ischemia is a severe blockage in the arteries of the lower extremities. It's a serious form of peripheral arterial disease and can significantly increase the risk of heart problems and a shorter lifespan.
Gangrene is localized death of soft tissues due to loss of blood supply or serious bacterial infection.
Hemodialysis is a medical procedure that removes waste products and fluid from the blood. It also corrects electrolyte imbalances. Hemodialysis is used to treat both acute and chronic kidney failure.
Indeterminate findings are inconclusive or insufficient for treatment planning.
Ischemic rest pain is severe pain in the legs and feet while a person is not moving, or non-healing sores on the feet or legs.
Magnetic resonance angiogram (MRA) is a test that uses a magnetic field and pulses of radio wave energy to provide images of blood vessels inside the body, allowing for evaluation of blood flow and blood vessel wall condition. MRA is used to look for aneurysms, clots, tears in the aorta, arteriovenous malformations and stenosis caused by plaque in the carotid arteries (neck) or blood vessels leading to the lungs, kidneys or legs.
Magnetic resonance venogram (MRV) is a diagnostic procedure that uses a combination of a large magnet, radiofrequencies, and a computer to produce detailed images of organs and structures within the body. An MRV uses magnetic resonance technology and intravenous (IV) contrast dye to visualize the veins. Contrast dye causes the blood vessels to appear opaque on the X-ray image, allowing the visualization the blood vessels being evaluated. MRV is useful in some cases because it can help detect causes of leg pain other than vein problems.
Non-diagnostic is a result that does not lead to a confirmed diagnosis.
Pediatric approximate ages are defined by the US Department of Health (USDH), the Food and Drug Administration (FDA), and the American Academy of Pediatrics (AAP) as the following:

- Infancy, between birth and 2 years of age
- Childhood, from 2 to 12 years of age
- Adolescence, from 12 to 21 years of age, further defined by the AAP into:

1. Early (ages 11–14 years)
2. Middle (ages 15–17 years),
3. Late (ages 18–21 years)
4. Older ages may be appropriate for children with special healthcare needs.

Peripheral vascular disease (PVD) is a systemic disorder that involves the narrowing of peripheral blood vessels (vessels situated away from the heart or the brain). This happens as a result of arteriosclerosis, or a buildup of plaque, and can happen with veins or arteries.
Popliteal artery entrapment syndrome (PAES) is an uncommon condition in which an abnormally positioned or enlarged calf muscle presses on the main artery behind the knee (popliteal artery). The artery becomes trapped, making it harder for blood to flow to the lower leg and foot.
Pulse volume recording (PVR) uses a blood pressure cuff and hand-held Doppler ultrasound device to determine the presence and severity of peripheral artery disease (PAD). The Doppler ultrasound records sound waves that bounce off moving objects, such as blood, to measure speed and flow.
Stenosis is a narrowing or constriction of the diameter of a bodily passage or orifice.
Thrombosis is the formation of a blood clot (partial or complete blockage) within blood vessels, whether venous or arterial, limiting the natural flow of blood and resulting in clinical sequela.
Ulcerated is a break in the skin or mucous membrane with loss of surface tissue, disintegration and necrosis of epithelial tissue and often pus.
Ultrasound is the diagnostic or therapeutic use of ultrasound and especially a noninvasive technique involving the formation of a two-dimensional image used for the examination and measurement of internal body structures and the detection of bodily abnormalities.

MRA/MRV Lower Extremities References

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Purpose

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