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2025 Magnetic Resonance Angiography/Venography (MRA/MRV) Neck

Diagnostic Imaging

MRA-Neck-HH

Last Review Date: 04/11/2025
Previous Review Date: 10/28/2024
Guideline Initiated: 06/30/2019

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Magnetic Resonance Angiography (MRA) Neck

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*.

MRA Contraindications

An MRA is contraindicated for **ANY** of the following:

- Safety, related to clinical status (eg, body mass index exceeds MR capability, intravascular stents within recent 6 weeks)
- Safety, related to contrast material (eg, allergy, renal impairment)
- Safety, related to implanted devices (aneurysm clip, cochlear implant, insulin pump, spinal cord stimulator)

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.

References: [7] [28] [18] [15] [4]

MRA Neck Guideline

Magnetic resonance angiography (MRA) of the neck is considered medically appropriate when the documentation demonstrates suspected or known extracranial cerebrovascular disease, doppler duplex arterial ultrasound of the neck is abnormal, non-diagnostic, or indeterminate and **ANY** of the following: (*__NOTE__: *A doppler US is not required for follow-up of known cerebrovascular disease.*)

1. Aneurysm screening with fibromuscular dysplasia, Loeys-Dietz syndrome (screen every 2 years) or spontaneous coronary artery dissection (SCAD)
   References: [2] [24] [22] [12]
2. Carotid or vertebral artery dissection is suspected, due to trauma **OR** spontaneous weakness of a vessel wall.

References: [2] [8] [21]

3. Cerebrovascular disease evaluation with **ANY** of the following conditions:
    a. Asymptomatic, neck ultrasound or carotid duplex imaging (eg, aberrant arterial flow direction, carotid stenosis 70% or more, technically limited study) is abnormal, non-diagnostic or indeterminate.
    b. Ischemic stroke or transient ischemic attack (TIA) occurred recently.
    c. Symptomatic, neck ultrasound or carotid duplex imaging (eg, aberrant arterial flow direction, carotid stenosis 50% or more, technically limited study) is abnormal, non-diagnostic or indeterminate.
    d. Vertebrobasilar insufficiency (VBI) is suspected or known **AND** symptomatic (eg, ataxia, dizziness, vision changes, vomiting).

    References: [2] [26] [20] [6] [17] [1] [14]
4. Congenital vascular malformation of the head or neck is known, for further evaluation.
    References: [2] [25] [27]
5. Extracranial cerebrovascular disease is known, for follow-up evaluation.
    References: [2] [10] [24]
6. Horner's syndrome (anhidrosis, miosis, ptosis)
    References: [2]
7. Large vessel vasculitis (Giant cell or Takayasu arteritis) is suspected, with extracranial involvement.
    References: [2] [19] [3]
8. Post-surgical assessments for evaluation of complications or disease recurrence
    References: [2]
9. Pulsatile tinnitus (subjective or objective) when arterial vascular etiology is suspected.
    References: [2] [11] [23]
10. Subclavian steal syndrome when ultrasound is abnormal, non-diagnostic or indeterminate, **OR** needed for treatment planning.
    References: [2] [9] [13]
11. Tumor/mass evaluation for suspected or known masses (eg, arteriovenous fistula, atypical lymphovascular malformation, carotid body tumors, paraganglioma, pseudo-aneurysm, pulsatile). (*__NOTE__: *Pulsatile mass initial evaluation includes an ultrasound to identify if the mass is lying over or next to an artery*.)
    References: [2] [5] [25]

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 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*.
(*__NOTE__: *as of 04/15/2025 there is not criteria in LCD 34372 for magnetic resonance angiography*

LCD 34424
See also, **LCD 34424**: Magnetic Resonance Angiography at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.
*__NOTE__: *As of 04/16/2025 there is not criteria in LCD 34424 for magnetic resonance angiography*.

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 Neck Summary of Changes

MRA/MRV Neck guideline had the following version changes from 2024 to 2025:

- Added "doppler duplex arterial ultrasound of the neck is abnormal, non-diagnostic, or indeterminate" as less advanced testing is appropriate.
- Citations updated per the evidence.
- Evidence reviewed and indications remained the same.

- Removed the following as current evidence no longer supports the indication:
  - Combination studies as they are redundant
  - Prior MRA neck imaging is non-diagnostic or indeterminate. as it is too broad

MRA Neck Procedure Codes

Table 1. MRA Neck Associated Procedure Codes

CODE	DESCRIPTION
70547	Magnetic resonance angiography, neck; without contrast material(s)
70548	Magnetic resonance angiography, neck; with contrast material(s)
70549	Magnetic resonance angiography, neck; without contrast material(s), followed by contrast material(s) and further sequences

MRA Neck Definitions

Aberrant is a deviation from the normal or expected course, structure or function.
Aneurysm refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.
Anhidrosis is defined as the absence or significant reduction of sweating, which can result from various central or peripheral autonomic disorders, drug side effects, or other conditions affecting sweat gland function.
Arteriovenous fistula (AVF) is an abnormal connection between an artery and a vein. It happens when one or more arteries are directly connected to one or more veins or venous spaces called sinuses.
Ataxia is a pathological abnormality of organization or modulation of movement, typically caused by cerebellar dysfunction, but can also result from lesions in the corticospinal tract or dorsal columns of the spinal cord.
Atypical lymphovascular malformation is a rare, benign (non-cancerous) condition where there's abnormal development of lymphatic vessels, leading to fluid-filled channels or cysts, often appearing as masses or swellings.
Carotid artery dissection, also known as cervical artery dissection, is a tear in the inner layer of the wall of one of the carotid arteries, the major blood vessels in the neck that supply blood to the brain, leading to potential blood flow disruption and stroke.
Carotid body tumor (CBT) is a rare, typically benign, highly vascular tumor originating from the chemoreceptor cells at the bifurcation of the common carotid artery.
Carotid endarterectomy is a surgical procedure to remove a build-up of fatty deposits (plaque), which cause narrowing of a carotid artery. The carotid arteries are the main blood vessels that supply blood to the neck, face and brain.

Cerebrovascular disease refers to a group of conditions that affect the blood vessels supplying the brain and spinal cord, leading to ischemic or hemorrhagic injury.
Congenital vascular malformation (CVM) is a birthmark or growth, present at birth, caused by abnormal development of blood vessels (arteries, veins, capillaries, or lymph vessels) during fetal development, potentially causing functional or cosmetic problems.
Dissection refers to the separation of the layers within the wall of an artery, most commonly the aorta, due to a tear in the intimal layer, leading to the formation of a false lumen.
Fibromuscular dysplasia is a rare blood vessel disorder that causes arteries to narrow and grow larger. FMD occurs when the strong, flexible cells in arteries are replaced with less strong, less flexible cells. This makes the arteries stiffer and more likely to be damaged.
Giant cell arteritis is a systemic inflammatory vascular disease that predominantly affects adults over 50 years old, characterized by granulomatous inflammation of the blood vessel walls, particularly the branches of the carotid and vertebral arteries, and is associated with symptoms such as headache, jaw claudication, visual disturbances, and tender/thickened temporal arteries.
Horner's syndrome is a syndrome marked by sinking in of the eyeball, constriction of the pupil (miosis), drooping of the upper eyelid (ptosis), face vasodilation and anhidrosis (abnormal deficiency or absence of sweating) caused by paralysis of the cervical sympathetic nerve fibers on the affected side.
Indeterminate findings are inconclusive or insufficient for treatment planning.
Ischemic stroke occurs when the blood supply to part of the brain is interrupted or reduced, preventing brain tissue from getting oxygen and nutrients. Brain cells begin to die in minutes.
Loeys-Dietz syndrome is a rare autosomal dominant connective tissue disorder characterized by aggressive aortic aneurysms, arterial tortuosity, and distinctive craniofacial and skeletal features.
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.
Miosis is the excessive constriction of the pupil of the eye.
Non-diagnostic is a result that does not lead to a confirmed diagnosis.
Paraganglioma is a type of neuroendocrine tumor that forms near certain blood vessels and nerves outside of the adrenal glands.
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.

Pseudoaneurysm, also called a false aneurysm, is a leakage of blood from an artery into the surrounding tissue. It occurs when there is a breach in the arterial wall.
Ptosis is the drooping of the upper eyelid.
Pulsatile tinnitus is a rhythmic pulsing noise in one or both ears that occurs in the absence of external sound and tends to be synced with the heartbeat.
Screening is the systematic application of a test or inquiry to identify individuals at sufficient risk of a specific disorder to warrant further investigation or direct preventive action, among persons who have not sought medical attention for symptoms of that disorder.
Spontaneous coronary artery dissection (SCAD) is a tear in the wall of a coronary artery. It's an emergency condition that can slow or block blood flow to the heart. This can lead to a heart attack, heart rhythm problems or sudden death.
Stenosis is a narrowing or constriction of the diameter of a bodily passage or orifice.
Stroke, sometimes called a brain attack, occurs when something blocks blood supply to part of the brain or when a blood vessel in the brain bursts. In either case, parts of the brain becomes damaged or dies. A stroke can cause lasting brain damage, long-term disability or even death.
Subclavian steal syndrome (Vertebral artery flow reversal) is a phenomenon causing retrograde flow in an ipsilateral vertebral artery due to stenosis or occlusion of the subclavian artery, proximal to the origin of the vertebral artery.
Takayasu's arteritis is a chronic inflammatory disease especially of the aorta and its major branches (the brachiocephalic artery and left common carotid artery) that result in progressive stenosis, occlusion and aneurysm formation marked by diminution or loss of the pulse (as in the arm) and ischemic symptoms.
Transient ischemic attack (TIA) is a brief interruption of the blood supply to the brain that causes a temporary impairment of vision, speech or movement. The episode usually lasts for just a few moments but may be a warning sign of a full scale stroke.
Ultrasound is the diagnostic or therapeutic use of ultrasound and especially a noninvasive technique involving the formation of images used for the examination and measurement of internal body structures and the detection of bodily abnormalities.
Vasculitis involves inflammation of the blood vessels. The inflammation can cause the walls of the blood vessels to thicken, which reduces the width of the passageway through the vessel. If blood flow is restricted, it can result in organ and tissue damage.
Vertebral artery dissection (VAD) is a medical condition where a tear occurs in the inner lining of a vertebral artery, a blood vessel in the neck that supplies blood to the brain, potentially leading to blood clots and stroke.

Vertebrobasilar insufficiency (VBI) is defined by inadequate blood flow through the posterior circulation of the brain, supplied by the 2 vertebral arteries that merge to form the basilar artery. VBI affects the parts of the brain that control movement and balance.

MRA Neck References

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Disclaimer section

Purpose

The purpose of the HealthHelp's clinical guidelines is to assist healthcare professionals in selecting the medical service that may be appropriate and supported by evidence to safely improve outcomes. Medical information is constantly evolving, and HealthHelp reserves the right to review and update these clinical guidelines periodically. HealthHelp reserves the right to include in these guidelines the clinical indications as appropriate for the organization's program objectives. Therefore the guidelines are not a list of all the clinical indications for a stated procedure, and associated Procedure Code Tables may not represent all codes available for that state procedure or that are managed by a specific client-organization.

Clinician Review

These clinical guidelines neither preempt clinical judgment of trained professionals nor advise anyone on how to practice medicine. Healthcare professionals using these clinical guidelines are responsible for all clinical decisions based on their assessment. All Clinical Reviewers are instructed to apply clinical indications based on individual patient assessment and documentation, within the scope of their clinical license.

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National and Local Coverage Determination (NCD and LCD)

NOTICE
To ensure appropriate review occurs to the most current NCD and/or LCD, always defer to https://www.cms.gov/medicare-coverage-database/search.aspx.

Background

National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) are payment policy documents outlined by the Centers for Medicare and Medicaid Services (CMS) and the government's delegated Medicare Audit Contractors (MACs) that operate regionally in jurisdictions.
CMS introduced variation between different jurisdictions/Medicare Audit Contractors (MACs) and their associated covered code lists with the transition to ICD 10. The variation resulted in jurisdictions independently defining how codes are applied for exclusions, limitations, groupings, ranges, etc. for the medical necessity indications outlined in the NCD and LCD. Due to this variation, there is an inconsistent use/application of codes and coverage determinations across the United States between the different MACs.
In addition, **WITHOUT** notice, CMS can change the codes that indicate medical necessity and the format of the coverage determinations/associated documents (eg, Articles). This is an additional challenge for organizations to keep up with ongoing, unplanned changes in covered codes and medical necessity indications.

Medical Necessity Codes

Due to the variation in code application between jurisdictions/MACs and that updates can happen without notification, HealthHelp is not able to guarantee full accuracy of the codes listed for any Coverage Determination, and advises that prior to use, the associated Coverage Determination Articles are reviewed to ensure applicability to HealthHelp's programs and any associated NCDs and LCDs.

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11248 11249 11253 11282 11325 11328 11333 11349 11350 11351 11352 11354 11355 11356 11358 11359 11360 11361 11362 11365 11366 11367 11368 11369 11370 11374 11375 11394 11395 11396 11565