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2024 Computed Tomography Angiography/Venograpy (CTA/ CTV) Lower Extremities

Diagnostic Imaging

CTA-LowerExt-HH

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Computed Tomography Angiography/Venography (CTA/CTV) Lower Extremities

NCD 220.1
See also, **NCD 220.1**: Computed Tomography 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.

CTA/CTV Lower Extremities Guideline

Computed tomography angiography/computerized tomography venography (CTA/CTV) of the lower extremities is considered medically appropriate when the documentation demonstrates **ANY** of the following: (*__NOTE__: *CPT Code 75635 [CTA Abdominal Arteries] includes run off, so this is* ***NEVER*** *approved when CTA/CTV Lower Extremities is approved.*) [15]

1. Deep venous thrombosis (DVT) in the lower extremity is suspected **AND** ultrasound is abnormal, non-diagnostic or indeterminate **AND** treatment depends on imaging results. [11] [14]
2. Peripheral vascular disease evaluation when aortoiliac disease is **NOT** a concern, there is **NO** recent CTA of the abdominal arteries, to evaluate **ANY** of the following: [1] [8] [20]
    a. Claudication, when ankle/brachial index (ABI), pulse volume recording or ultrasound is abnormal, non-diagnostic or indeterminate. [4]
    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.*) [16] [6]
        i. Gangrene
        ii. Ischemic rest pain
        iii. Tissue loss
    c. Post revascularization procedure and **ANY** of the following:
        i. ABI is abnormal.

ii. Pulse volume recording is abnormal, non-diagnostic or indeterminate.

iii. Recurrent symptoms (eg, cramping, numbness, weakness)

iv. Ultrasound is abnormal, non-diagnostic or indeterminate.

d. Ulcers are known, vascular cause is suspected **AND** ABI or ultrasound is abnormal, non-diagnostic or indeterminate.

3. Popliteal artery entrapment syndrome when ultrasound is abnormal, non-diagnostic or indeterminate. [5] [17] [9]
4. Pre-procedure (eg, revascularization) planning evaluation **OR** post-procedure evaluation of complications or treatment progress. [8] [4]
5. Prior CTA lower extremities 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.*)
6. Traumatic injuries with signs of vascular injury (eg, bleeding, bruising, fractured bones) [9] [24] [23]
7. Vascular access dysfunction when ultrasound is non-diagnostic or indeterminate **AND** treatment depends on imaging results. [10] [12]
8. Vascular disease is suspected when prior imaging (eg, ultrasound) is abnormal, non-diagnostic or indeterminate for **ANY** of the following: [9] [15] [1]
    a. Aneurysm
    b. Stenosis/occlusions
    c. Tumor invasion
    d. Vasculitis [2]
9. Vascular disease is known, for evaluation. [9] [1]
10. Vascular malformation is suspected when ultrasound is non-diagnostic or indeterminate **AND magnetic resonance angiography (MRA) is contraindicated or unavailable**. (*__NOTE__: *CTA may be useful in delineating high flow lesions [eg, arteriovenous malformation].*) [19] [22]

CTA/CTV Extremities: Special Circumstances

Computed tomography angiography/computed tomography venography (CTA/CTV) of the extremities may be indicated for **ANY** of the following special circumstances:

1. Arterial obstruction, acute, is suspected. (*__NOTE__: *Arteriography is preferred [gold standard].*) [18] [6]

2. Bypass graft evaluation when ultrasound is non-diagnostic or indeterminate. [10] [13]
3. Renal impairment is known and **ANY** of the following:
    a. On dialysis (*__NOTE:__ *CTA with contrast should be ordered*.)
    b. **NOT** on dialysis and **ANY** of the following:
        i. Impairment is mild to moderate (glomerular filtration rate [GFR] of 30 ml/min to 45 ml/min) (*__NOTE:__ *magnetic resonance angiography (MRA) should be ordered*.)
        ii. Impairment is severe, (GFR is less than 30 ml/min). (*__NOTE__: *MRA without contrast should be ordered.*)

CTA General Contraindications

Computed tomography angiography (CTA) is contraindicated for **ANY** of the following: [3] [7] [26]

- Contrast allergy
- Heart failure is decompensated.
- Hemodynamic instability (eg, abnormal laboratory values, blood pressure instability)
- Renal impairment (glomerular filtration rate is 30 mL/min/1.73m^2)
- Protocol can **NOT** be followed (eg, technical or related to individual).

CTA/CTV Lower Extremities Procedure Codes

Table 1. CTA Lower Extremity Associated Procedure Codes

CODE	DESCRIPTION
73706	Computed tomographic angiography, lower extremity, with contrast material(s), including noncontrast images, if performed, and image postprocessing

CTA Lower Extremities Summary of Changes

CTA lower extremities guideline had the following version changes from 2023 to 2024:

- Added the following to keep in line with current research:
    - "Prior imaging is non-diagnostic or indeterminate" indication
- Mid-cycle update: added Pediatric Preamble

CTA/CTV 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.
Arteriography is radiography of an artery carried out after injection of a radio-opaque substance.
Bypass graft is a procedure that takes a blood vessel from another part of the body and attaches it to the artery above and below the narrowed area or blockage to restore blood flow.
Claudication is a condition in which cramping pain in the leg is induced by exercise, typically caused by obstruction of the arteries.
Computed tomography angiography (CTA) is a medical test that combines a computed tomography (CT) scan with an injection of a special dye to produce pictures of blood vessels and tissues in a part of the body.
Computed tomography venography (CTV) is a technique targeted to assess venous anatomy, determine venous patency and delineate collateral circulation, often using contrast matierial.
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.
Estimated glomerular filtration rate (eGFR) is a measure of how well the kidneys are working. eGFR is an estimated number based on a blood test, age, sex, body type and race.
Gangrene is localized death of soft tissues due to loss of blood supply or serious bacterial infection.
Glomerular filtration rate (GFR) is a blood test that measures how much blood your kidneys filter each minute. It's the primary way to measure kidney function.
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.
Ischemia is a deficient supply of blood to a body part (such as the heart or brain) due to obstruction of the inflow of arterial blood.
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 angiography (MRA) is a procedure that uses radio waves and a powerful magnet linked to a computer to create detailed pictures of the blood vessels and blood flow inside the body. A dye may be injected into a vein to make the blood vessels and blood flow easier to see.
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 artery disease (PAD) is a narrowing or blockage of the blood vessels that carry blood from the heart to the legs. It's caused by a buildup of plaque, also known as atherosclerosis.
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.
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.

CTA/CTV Lower Extremities References

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