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2024 Computed Tomography Angiography (CTA) of the Abdominal Aorta and Bilateral Iliofemoral Lower Extremity Run-off

Diagnostic Imaging

CTA-ABDarteries-HH

Last Review Date: 10/28/2024
Previous Review Date: 06/23/2024
Guideline Initiated: 07/25/2023

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CTA General Contraindications

Computed tomography angiography (CTA) is contraindicated for **ANY** of the following: [2023 ACR Manual on Contrast Media] [3] [5]

- 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).

Computed Tomography Angiography (CTA) of the Abdominal Aorta and Bilateral Iliofemoral Lower Extremity Run-off

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*.

CTA General Contraindications

Computed tomography angiography (CTA) is contraindicated for **ANY** of the following: [2023 ACR Manual on Contrast Media] [3] [5]

- Contrast allergy
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- Protocol can **NOT** be followed (eg, technical or related to individual).

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.

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Computed Tomography Angiography (CTA) of the Abdominal Aorta and Bilateral Iliofemoral Lower Extremity Run-off Guideline

Computed tomography angiography (CTA) of the abdominal aorta and bilateral iliofemoral lower extremity run-off is considered medically appropriate when the documentation demonstrates **ANY** of the following:

1. Abdominal, pelvis or peripheral vascular disease is suspected or known and **ANY** of the following:
    a. Peripheral artery disease (claudication, ulcer with suspected vascular cause) is suspected or known **AND** non-invasive studies (ankle-brachial index [ABI], pulse volume recording, segmental pressures, toe brachial index) are abnormal, non-diagnostic or indeterminate.
    b. Critical limb ischemia with **ANY** of the following signs of peripheral artery disease: [2]
        i. Gangrene
        ii. Ischemic rest pain
        iii. Tissue loss
2. Peri-procedural abdominal procedure care to guide invasive procedure planning or post-operative follow-up. [1]
3. Prior CTA abdominal arteries 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.*)

Combination CTA Chest and CTA Abdominal Arteries

Computed tomography angiography (CTA) chest combined with CTA abdominal arteries is considered medically appropriate when the documentation demonstrates lower extremity vascular disease, to evaluate for embolic source. [4]

LCD 33959
See also, **LCD L33959**: Cardiac Catheterization and Coronary Angiography https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

2024 Computed Tomography Angiography (CTA) of the Abdominal Aorta and Bilateral Iliofemoral Lower Extremity Run-off

Diagnostic Imaging

Last Review Date:

Previous Review Date: NEW

Guideline Initiated: NEW

Pediatric Computed Tomography Angiography (CTA) of the Abdominal Aorta and Bilateral Iliofemoral Lower Extremity Run-off Guideline

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*.

Computed tomography angiography (CTA) of the abdominal aorta and bilateral iliofemoral lower extremity run-off is considered medically appropriate, in a pediatric individual, when the documentation demonstrates **ANY** of the following:

1. Abdominal, pelvis or peripheral vascular disease is suspected or known and **ANY** of the following:
    a. Peripheral artery disease (claudication, ulcer with suspected vascular cause) is suspected or known **AND** non-invasive studies (ankle-brachial index [ABI], pulse volume recording, segmental pressures, toe brachial index) are abnormal, non-diagnostic or indeterminate.
    b. Critical limb ischemia with **ANY** of the following signs of peripheral artery disease: [2]
        i. Gangrene
        ii. Ischemic rest pain
        iii. Tissue loss
2. Peri-procedural abdominal procedure care to guide invasive procedure planning **OR** post-operative follow-up. [1]

3. Prior CTA abdominal arteries 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.*)

Pediatric Combination CTA Chest and CTA Abdominal Arteries

Computed tomography angiography (CTA) chest combined with CTA abdominal arteries is considered medically appropriate, in a pediatric individual (age is 18 years or less), when the documentation demonstrates lower extremity vascular disease, to evaluate for embolic source. [4]

LCD 33959
See also, **LCD L33959**: Cardiac Catheterization and Coronary Angiography https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

CTA/CTV Abdominal Arteries Definition section

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.
Embolism is an obstruction of an artery, typically by a clot of blood or an air bubble.
Gangrene is localized death of soft tissues due to loss of blood supply or serious bacterial infection.
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.
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 blood circulation disorder in the arteries that supply the limbs. PAD may be partial (due to a stenosis) or complete (due to an occlusion).
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.
Segmental pressures are measured by combining Doppler ultrasound with blood pressure measurements at various locations in the arms and legs. By detecting differences in blood pressure at specific locations in different limbs, this test helps to diagnose arterial blockages and other circulation problems.
Toe Brachial Index (TBI) is defined as the ratio between the systolic blood pressure in the right or left toe and the higher of the systolic pressure in the right or left arms.
Ulcerated is a break in the skin or mucous membrane with loss of surface tissue, disintegration and necrosis of epithelial tissue and often pus.

CTA/CTV Abdominal Arteries References

[1] Azene, E.M., Steigner, M.L., . . . Kalva, S.P. (2022). ACR Appropriateness Criteria Lower Extremity Arterial Claudication-Imaging Assessment for Revascularization: 2022 Update. *Journal of the American College of Radiology, 19*(11), S364-S373.
[2] Browne, W.F., Sung, J., . . . Steigner, M.J. (2023). ACR Appropriateness Criteria Sudden Onset of Cold, Painful Leg: 2023 Update. *Journal of the American College of Radiology, 20*(11), S565-S573.
[3] Canan, A., Rajah, P. & Abbara, S. (2023). Cardiac computed tomography. G.N. Levine, (Ed.). *Cardiology Secrets* (6), (pp. 85-96). Philadelphia, PA: Elsevier.
[4] Parenti, V.G., Vijay, K., . . . Dill, K.E. (2023). ACR Appropriateness Criteria Workup of Noncerebral Systemic Arterial Embolic Source. *Journal of the American College of Radiology, 20*(5), S285-S300.
[5] Witte, D.H. (2021). Advanced Imaging in Orthopaedics. F.M. Azar & J.H. Beaty (Eds.). *Campbell's Operative Orthopaedics* (14), (pp. 141-176). Philadelphia, PA: Elsevier.

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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.

For Internal Use Only:

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

CTA Abdominal Arteries APC section

Table 1. CTA Abdominal Arteries Associated Procedure Codes

Code	Description
75635	Computed tomographic angiography, abdominal aorta and bilateral iliofemoral lower extremity runoff, with contrast material(s), including noncontrast images, if performed, and image postprocessing

CTA Abdominal Arteries Summary of Changes

CTA Abdominal Arteries had the following changes from 2023 to 2024:

- Added "Prior imaging" indication to keep in line with current research
- Mid-cycle update: added Pediatric Preamble

CTA Abdomen Definitions

Aneurysm refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.
Angiotensin-converting enzyme (ACE) inhibitors are medicines that help relax the veins and arteries to lower blood pressure.
Angiotensin receptor blockers (ARBs) are a class of medications used to treat high blood pressure. ARBs bind to and inhibit the angiotensin II type 1 receptor.
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.
Arteriovenous malformation (AVM) is a tangle of abnormal blood vessels connecting arteries and veins.
Bruit is a vascular sound that's caused by turbulent 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.
Creatinine is a waste product that comes from the digestion of protein in food and the normal breakdown of muscle tissue. It is removed from the blood through the kidneys.
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.
Dissection is the abnormal and usually abrupt formation of a tear or separation of the layers inside the wall of an artery.

Diuretic is a drug that makes the kidneys produce more urine. Diuretics, also known as water pills, help the body get rid of extra fluid and salt. They are used to treat high blood pressure, edema, heart failure, and other conditions.
Edema an abnormal infiltration and excess accumulation of serous fluid in connective tissue or in a serous cavity.
Ehlers-Danlos syndrome is a group of hereditary connective tissue disorders that manifests clinically with skin hyperelasticity, hypermobility of joints, atrophic scarring, and fragility of blood vessels.
Embolism is an obstruction of an artery, typically by a clot of blood or an air bubble.
Endoscopy is a procedure that uses an endoscope to examine the inside of the body. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.
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.
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.
Fistula is an abnormal connection that leads from an abscess, hollow organ or part to the body surface, or from one hollow organ or part to another, and may be surgically created to permit passage of fluids or secretions.
Flash pulmonary edema is a clinical term for a severe form of acute heart failure. It's caused by sudden physiological changes.
Gangrene is localized death of soft tissues due to loss of blood supply or serious bacterial infection.
Giant cell arteritis is arterial inflammation often involving the temporal arteries that may lead to blindness when the ophthalmic artery and its branches are affected, characterized by the formation of giant cells and can be accompanied by fever, malaise, fatigue, anorexia, weight loss and arthralgia.
Hematoma is a mass of usually clotted blood that forms in a tissue, organ or body space as a result of a broken blood vessel.
Hemodynamic stability is the term used to describe stable blood flow. When it is said that someone is hemodynamically stable, it means the blood pressure and heart rate of that person are stable or not changing.

Table 1. Hemodynamic Assessment

Hemodynamic Parameters	Stable Circulation	Compensated Shock	Hypotensive Shock
Conscious Level	Clear and lucid	Clear and lucid	Restless, combative

Hemodynamic Parameters	Stable Circulation	Compensated Shock	Hypotensive Shock
Capillary refill	Brisk (less than 2 seconds)	Prolonged (greater than 2 seconds)	Very prolonged, mottled skin
Extremities	Warm and pink	Cool peripheries	Cold, clammy
Peripheral pulse	Good volume	Weak and thready	Feeble or absent
Heart Rate	Normal heart rate for age	Tachycardia for age	Severe tachycardia or bradycardia in late shock
Blood Pressure	Normal blood pressure and pulse pressure for age	Normal systolic pressure but rising diastolic pressure; Narrowing pulse pressure; Postural hypertension	Narrow pulse pressure (greater than or equal to 20 mm/Hg; Hypotension for age; Unrecordable blood pressure
Respiratory Rate	Normal respiratory rate for age	Tachypnea	Hyerpnea or Kussmaul's breathing (metabolic acidosis)
Urine Output	Normal	Reducing trend	Oliguria or anuria

Hemorrhage is a copious or heavy discharge of blood from the blood vessels.

Hepatic portal system is the system of veins that transports blood from the digestive tract to the liver. It consists of the hepatic portal vein and other veins that drain into the hepatic portal vein, viz. the superior mesenteric vein, the inferior mesenteric vein, and the splenic vein.

Hypertension (high blood pressure) is when the pressure in your blood vessels is too high (140/90 mmHg or higher). It is common but can be serious if not treated.

Indeterminate findings are inconclusive or insufficient for treatment planning.

Intramural hematoma (IMH) is a life-threatening aortic disease that occurs when blood leaks through the innermost layer of the aortic wall. The blood flows between the inner and outer walls of the aorta, but it doesn't happen because of a tear in the wall.

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.

Loeys-Dietz syndrome is a disorder that affects the connective tissues of the body and increases the risk of aneurysm in arteries such as the aorta.

Magnetic resonance imaging (MRI) is a non-invasive diagnostic technique that produces computerized images of internal body tissues and is based on nuclear magnetic resonance of atoms within the body induced by the application of radio waves.

Malignant hypertension is severe hypertension characterized by acute onset, causing necrosis (tissue death) of arteriolar walls in kidney and retinal hemorrhages and is rapidly progressive with poor prognosis.

Marfan syndrome is a disorder of connective tissue inherited as a dominant trait, characterized by abnormal elongation of the long bones and often with ocular and circulatory defects.

Mesenteric is a fold of membrane that attaches the intestine to the abdominal wall and holds it in place.

Nephrotic syndrome is a kidney disorder that causes the body to pass too much protein in the urine. Nephrotic syndrome is usually caused by damage to the clusters of small blood vessels in the kidneys that filter waste and excess water from the blood.

Neurofibromatosis is a rare genetic disorder that causes benign tumors to grow on nerves and other parts of the body. There are three types of neurofibromatosis: neurofibromatosis 1 (NF1), neurofibromatosis 2 (NF2) and schwannomatosis.

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.

Portal venous system is a paired network of valveless veins responsible for blood from all of the abdominal viscera, excluding the kidneys and adrenal glands.

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.

Resistant hypertension is defined as a blood pressure that remains above goal despite concurrent use of three antihypertensive agents of different classes taken at maximally tolerated doses, one of which should be a diuretic (the diuretic should be selected based upon kidney function).

Segmental pressures are measured by combining Doppler ultrasound with blood pressure measurements at various locations in the arms and legs. By detecting differences in blood pressure at specific locations in different limbs, this test helps to diagnose arterial blockages and other circulation problems.

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.

Surveillance in cancer is the ongoing, timely and systematic collection and analysis of information on new cancer cases, extent of disease, screening tests, treatment, survival and cancer deaths.

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.

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.

Toe Brachial Index (TBI) is defined as the ratio between the systolic blood pressure in the right or left toe and the higher of the systolic pressure in the right or left arms.

Transcatheter Aortic Valve Implantation/Replacement (TAVI/TAVR) is a minimally invasive procedure that replaces a diseased aortic valve with a man-made or animal tissue valve. TAVR is for patients with severe aortic stenosis, which is a narrowing of the valve opening. The procedure only requires a small cut in the skin and does not require open-heart surgery.

Transjugular intrahepatic portosystemic shunt (TIPS) is a procedure that creates a new connection between two blood vessels in the liver. The procedure involves inserting a stent (tube) into the liver to connect the portal veins to adjacent blood vessels with lower pressure.

Tuberous sclerosis is a genetic disorder of the skin and nervous system that is characterized by the formation of small benign tumors in various organs (such as the brain, kidney, eye and heart), is accompanied by variable symptoms including seizures, developmental delay or intellectual disability, skin lesions (as hypopigmented macules of the trunk and limbs or telangiectatic facial papules), and is inherited as an autosomal dominant trait or results from spontaneous mutation.

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.

Williams syndrome is a developmental disorder that affects many parts of the body. This condition is characterized by mild to moderate intellectual disability or learning problems, unique

personality characteristics, distinctive facial features, and heart and blood vessel (cardiovascular) problems.

CTA/CTV Abdominal Arteries References

[1] Azene, E.M., Steigner, M.L., . . . Kalva, S.P. (2022). ACR Appropriateness Criteria Lower Extremity Arterial Claudication-Imaging Assessment for Revascularization: 2022 Update. *Journal of the American College of Radiology, 19*(11), S364-S373.

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