

2025 Computed Tomography Angiography (CTA) Chest (Non- Coronary)

Diagnostic Imaging

CTA-Chest-HH
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Pediatric Considerations for Computed Tomography

While computed tomography (CT) is used in children, magnetic resonance imaging (MRI) or ultrasound is preferred for initial evaluation to minimize radiation exposure. CT is reserved for complex cases where detailed imaging is required. By integrating ultrasound and adhering to these guidelines, healthcare providers can optimize diagnostic accuracy while minimizing risks associated with radiation.

Recommendations for CT imaging include **ALL** of the following:

1. Ultrasound first: Utilize ultrasound as the initial modality where appropriate.
2. CT for complex cases: Reserve CT for when ultrasound or MRI is inadequate.
3. Adhere to guidelines: Follow established protocols to ensure safety and efficacy.
4. Minimize radiation exposure: Especially important for children, young adults and pregnant women.

Computed Tomography Angiography (CTA) Chest (Non-Coronary)

CTA Chest (Non-Coronary) Related National Coverage Determination (NCD)/Local Coverage Determination (LCD)

Please refer to <https://www.cms.gov/medicare-coverage-database/search.aspx> if applicable to the individual's health plan membership.

Type/ID Number	Title
NCD 220.1	Computed Tomography

Clinical Judgment

These medical policies are designed to provide clinical guidance and do not supplant a provider's independent professional judgment. Physicians retain full and independent authority to determine appropriate care based on each patient's individual clinical circumstances. Although services may be subject to documentation requirements, medical necessity review, or coverage limitations, nothing in this policy is intended to restrict or interfere with a physician's independent medical judgment.

CTA General Contraindications

Computed tomography angiography (CTA) is contraindicated for **ANY** of the following:

- Clinical instability (eg, respiratory distress, severe hypotension, unstable arrhythmias)
References: [3] [7]
- Contrast allergy
References: [3] [7]
- Renal impairment (glomerular filtration rate [GFR] is less than 30 ml/min/1.73 m².)
References: [3] [7]
- **CANNOT** follow procedure directions (eg, holding breath, **NOT** moving)
References: [3] [7]

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 Chest (Non-Coronary) Guideline

Computed tomography angiography (CTA) of the chest (non-coronary) is considered medically appropriate, for intrathoracic blood vessel evaluation, when the medical record demonstrates **ANY** of the following:

1. Arterial occlusion in the chest or upper extremities is known, to determine embolic source.
References: [20]
2. Congenital malformations are suspected or known with **ANY** of the following: (***NOTE:** *chest magnetic resonance angiography (MRA) is preferred for pediatrics or repeat imaging.*)
 - a. Coarctation of the aorta is suspected and transthoracic echocardiogram (TTE) is non-diagnostic or indeterminate.
 - b. Congenital heart disease with pulmonary hypertension or vascular anomalies
 - c. Pulmonary sequestration [9]
 - d. Thoracic malformation is suspected, based on prior imaging (chest X-ray, echocardiogram [ECHO], gastrointestinal study) **OR** computed tomography [CT]) is non-diagnostic or indeterminate.**References:** [10] [16] [11]
3. Hemoptysis is known and/or recurrent.
References: [18]
4. Peri-procedural evaluation for **ANY** of the following: [5]

- a. Aortic valve replacement (AVR) plus ascending aortic root/arch repair or root repair; pre-procedure for planning and post-procedure baseline, then annually
- b. Atrial fibrillation ablation is planned.
- c. Endoleak evaluation
- d. Open repair of aorta, if **NO** residual aortopathy; follow-up within first year post-operative, then every 5 years (***NOTE: if residual aortopathy or abnormal findings on surveillance; follow-up annually.**)
- e. Post-surgical assessments for evaluation of complications or disease recurrence (within 90 days)
- f. Thoracic endovascular aortic repair (TEVAR); post-operative follow-up at 1 month, 1 year and if stable, annually.
- g. Thoracic procedure pre-operative planning evaluation **OR** if post-operative complications are suspected.
- h. Transcatheter aortic valve replacement (TAVR), for pre-intervention planning

References: [8] [12] [1] [11] [17]

5. Pulmonary embolism (PE) is suspected or known and **ANY** of the following:
 - a. PE is known, for follow-up and **EITHER** of the following:
 - i. Asymptomatic and **EITHER** of the following:
 - A. Determine cessation of anticoagulation therapy
 - B. Determine resolution of embolus
 - ii. Symptomatic (eg, dyspnea, fatigue, lightheadedness, edema) and **EITHER** of the following:
 - A. Persistent 3 months after initial diagnosis
 - B. Recurring
 - b. PE is suspected and **ANY** of the following:
 - i. PE risk is high based on shock, hypotension **OR** Well's criteria is more than 6. (See **Definitions** section).
 - ii. PE risk is intermediate or low, based on Well's criteria (See **Definitions** section) **AND** D-dimer is elevated.
 - iii. Pregnancy is known.

References: [15] [14]

6. Thoracic aortic disease is suspected or known and **ANY** of the following:
 - a. Aneurysm is suspected based on prior imaging (ECHO, ultrasound or X-ray).
 - b. Aortic dissection, follow-up **AFTER** medical treatment: acute dissection at 1 month, 6 months, then annually; chronic dissection annually
 - c. Aortic syndrome, acute, is suspected with sudden painful ripping sensation in chest or back.
 - d. Bicuspid aortic valve personal history, for screening of the thoracic aorta, and transthoracic echocardiogram (TTE) is non-diagnostic or indeterminate; baseline and every 3 years thereafter.
 - e. Connective tissue disease (Ehlers-Danlos, Loays-Dietz or Marfan syndromes) or genetic condition is known **AND** there is predisposal to aortic aneurysm or dissection, imaging is as follows:
 - i. Ehlers-Danlos, vascular; at diagnosis and every 18 months thereafter (more frequently if abnormalities are found)
 - ii. Fibromuscular dysplasia; 1-time vascular study from brain to pelvis
 - iii. Loays-Dietz syndrome; at diagnosis and then every two years thereafter
 - iv. Marfan syndrome; at diagnosis and every 3 years thereafter **OR** annually for history of dissection, dilation of aorta beyond aortic root or prior aortic root ascending aorta TTE is non-diagnostic or indeterminate.
 - v. Takayasu's arteritis; at diagnosis and then clinically as indicated
 - vi. Turner's syndrome-related screening when there is **NO** vascular abnormality; at diagnosis, every 5 years until 18 years old, then every 10 years thereafter **OR** annually for known aortic dilation, bicuspid aortic valve, coarction of the aorta, hypertension
 - vii. Williams syndrome; concern for vascular disease is demonstrated on prior imaging or abnormal physical exam.
 - f. Dysphagia or expiratory wheezing with vascular cause is suspected **AND** prior imaging is non-diagnostic or indeterminate.
 - g. First-degree relative (child, parent, sibling) with a bicuspid aortic valve
 - h. First-degree relatives (child, parent, sibling) with a thoracic aortic aneurysm that is more than 50% above normal or dissection (*see **Definitions** section for explanation of "normal"*)
 - i. Thoracic aorta aneurysm, for assessment of rate of change from most recent CT, and **ANY** of the following:

- i. 4.4 cm or less; annual surveillance
- ii. 6 month follow-up after initial finding
- iii. More than 4.4 cm; every 6 month follow-up

References: [10] [13] [2] [8] [13] [19] [21]

7. Trauma, blunt to the chest is known and cardiac injury is suspected.

References: [23]

8. Vascular disease is suspected or known for evaluation of **ANY** of the following:
 - a. Pulmonary hypertension is suspected based on ECHO or right-heart catheterization.
 - b. Subclavian steal syndrome evaluation **AND** ultrasound is abnormal, non-diagnostic or indeterminate.
 - c. Superior vena cava (SVC) syndrome
 - d. Thoracic outlet syndrome

References: [4] [22] [6] [24]

CTA Chest Summary of Changes

CTA Chest guideline had the following version changes from 2024 to 2025:

- Added the following to keep in line with current evidence:
 - "Coarctation of the aorta is suspected" under "Congenital malformations are suspected or known" new indication per ACR
 - "Glomerular filtration rate" to "Renal impairment" under Contraindications
 - "PE is known" criteria under "PE is suspected or known" new criteria per ACR
 - "TTE is non-diagnostic or indeterminate" to " Bicuspid aortic valve history" under " Thoracic aortic aneurysm" as less advanced imaging is appropriate
 - Under "Connective tissue disease (Ehlers-Danlos, Loeys-Dietz or Marfan syndromes) or genetic condition is known" as they have screening indications per EBM
 - "Fibromuscular dysplasia"
 - "Turner's syndrome"
 - "Williams syndrome"
 - Under "Peri-procedural" per ACR:
 - "Endoleak"

- "Post-surgical assessments for evaluation of complications or disease recurrence" new indication
- "Thoracic procedure pre-operative planning evaluation"
- Changed "D-dimer is positive" to "D-dimer is elevated" for more clarity under "PE is suspected" under "Pulmonary embolism (PE) is suspected or known"
- Moved the following:
 - "Pulmonary hypertension from its own indication to under "Vascular disease" for clarity
 - "Takayasu's arteritis from under "Vascular disease" to under "Connective tissue disease" for clarity
 - under "Thoracic aortic disease"
 - "Aneurysm is suspected based on prior imaging" for clarity
 - "Aortic dissection" for clarity
 - "Aortic syndrome" for clarity
- Removed the following as current evidence no longer supports the indication:
 - "Acute aortic dissection is suspected" as this is an emergent criteria and would not be done in an outpatient setting.
 - "Ascending aortic dilation is suspected or known **OR** ascending aortic dissection is known" under "Thoracic aneurysm surveillance" per ACR
 - Combination studies as they are redundant
 - "Prior CTA chest imaging is non-diagnostic or indeterminate" as it is too broad
 - Thoracic aortic aneurysm, as it is combined into 1 surveillance per EBM
 - "Aortic root or ascending aorta"
 - "Descending aorta"
 - "Genetically mediated"

CTA Chest (Non-Coronary) Procedure Codes

Table 1. CTA Chest (Non-Coronary) Associated Procedure Codes

CODE	DESCRIPTION
71275	Computed tomographic angiography, chest (noncoronary), with contrast material(s), including noncontrast images, if performed, and image postprocessing

CTA Chest (Non-Coronary) Definition

Ablation therapy is a medical procedure that involves the destruction of abnormal tissue using various energy sources such as heat, cold or electrical energy.

Acute refers to initial diagnosis, up to 4 weeks.

Aneurysm refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.

Anticoagulant is a substance that is used to prevent and treat blood clots in blood vessels and the heart.

Aortic root is the section of the aorta that extends from the aortic valve annulus to the sinotubular junction, including the aortic valve, sinuses of Valsalva, and the origin of the coronary arteries.

Aortic valve replacement (AVR) is a surgical procedure to replace a malfunctioning aortic valve with a prosthetic valve, indicated for severe symptomatic aortic stenosis or regurgitation.

Aortopathy is defined as any disease of the aorta, often associated with conditions that predispose to aortic aneurysm, dissection, or rupture.

Artery occlusion is a condition where the flow of blood through an artery is partially or completely blocked. This blockage can lead to ischemia and tissue damage due to reduced blood flow.

Atrial fibrillation (AF) is a cardiac rhythm disorder characterized by uncontrolled atrial activation without effective atrial contraction. On the electrocardiogram (ECG), P waves are absent. AF is characterized by rapid oscillations or fibrillatory waves that vary in amplitude, shape and timing associated with an irregular ventricular response.

- **Paroxysmal AF** terminates spontaneously or with intervention within 7 days of onset. Episodes typically convert back to sinus rhythm within 48 hours.
- **Persistent AF** is continuous AF sustained beyond 7 days. is a type of arrhythmia, or abnormal heartbeat. Afib is caused by extremely fast and irregular beats from the upper chambers of the heart (usually more than 400 beats per minute).

Bicuspid aortic valve (BAV) is a heart defect that occurs when the aortic valve has two leaflets instead of three. BAV is the most common type of congenital heart disease. It's present from birth and can go unnoticed until later in life.

Chronic refers to 3 months or more.

Coarctation is a stricture or narrowing especially of a canal or vessel.

Computed tomography (CT) is an imaging test that uses X-rays to computer analysis to generate cross sectional images of the internal structures of the body that can be displayed in multiple planes.

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.

Congenital is a condition or trait present from birth.

D-dimer is a protein fragment that's produced when a blood clot breaks down in the body. D-dimer is usually undetectable or only detectable at very low levels unless the body is forming and breaking down significant blood clots.

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.

Dysphagia is difficulty with swallowing or the sensation of food getting stuck in the esophagus.

Echocardiogram (ECHO) is a test that uses high frequency sound waves (ultrasound) to make pictures of the heart. The test is also called echocardiography or diagnostic cardiac ultrasound. An ECHO uses sound waves to create pictures of the heart's chambers, valves, walls and the blood vessels (aorta, arteries, veins). A probe called a transducer is passed over the chest. The probe produces sound waves that bounce off the heart and "ECHO" back to the probe. These waves are changed into pictures viewed on a video monitor.

Endoleak is the complication of persistent blood flow in the aneurysm sac after endovascular aneurysm repair (EVAR).

- Type I is an absence or loss of complete sealing at the proximal (type 1a) or distal (type 1b) seal zone.
- Type II is when there is retrograde flow from the lumbar and/or inferior mesenteric arteries.
- Type III is component separation or fabric disruption.
- Type IV is related to the porosity of the graft fabric.
- Type V is endotension, expanding aneurysm without demonstrable blood flow.

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, that has traveled from another part of the body.

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.

Hemoptysis is the expectoration of blood from some part of the respiratory tract.

Hypotension is a medical condition characterized by low blood pressure. It occurs when the force of blood pushing against the artery walls is lower than normal, typically defined as a systolic pressure below 90 mmHg and/or a diastolic pressure below 60 mmHg. In other words, it is a condition in which the blood pressure is too low.

Indeterminate findings are inconclusive or insufficient for treatment planning.

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.

Marfan syndrome is a congenital connective tissue disorder that is primarily associated with cardiac pathology (eg, mitral valve prolapse, aortic root dilation), skeletal pathology (eg, lengthening of long bones, joint laxity) and ocular pathology (eg, ectopia lentis).

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:

1. Infancy, between birth and 2 years of age
2. Childhood, from 2 to 12 years of age
3. Adolescence, from 12 to 21 years of age, further defined by the AAP into:
 - a. Early (ages 11–14 years)
 - b. Middle (ages 15–17 years),
 - c. Late (ages 18–21 years)
 - d. Older ages may be appropriate for children with special healthcare needs.

Periprocedural is a medical term that means occurring before, during, or after a medical procedure. "Perioperative" is another term that refers to the time around surgery.

Pulmonary embolism is an obstruction of a pulmonary artery or one of its branches that is usually produced by a blood clot originated in a vein of the leg or pelvis and traveled to the lungs that is marked by labored breathing, chest pain, fainting, rapid heart rate, cyanosis, shock and sometimes death.

Pulmonary hypertension is a chronic, progressive condition characterized by elevated pressure in the pulmonary arteries, defined as a mean pulmonary arterial pressure greater than 20 mm Hg at rest.

Pulmonary sequestration vascular syndrome is a condition in which a segment or lobe of dysplastic lung tissue exists with no communication with the rest of the tracheobronchial tree and receives an anomalous systemic vascular supply, separate from the rest of the lung. It is, therefore, a nonfunctional tissue.

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.

Shock is the body's response to a sudden drop in blood pressure. At first, the body responds to this life-threatening situation by constricting (narrowing) blood vessels in the extremities (hands and feet). This is called vasoconstriction and it helps conserve blood flow to the vital organs.

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.

Superior vena cava syndrome (SVC) is a condition characterized by elevated venous pressure of the upper extremities with accompanying distension of the affected veins and swelling of the face and neck. Caused by blockage (as by a thrombus or an aneurysm) or compression (as by a tumor) of the superior vena cava.

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.

Thoracic aortic aneurysm is an abnormal widening of the aorta between the aortic valve and the diaphragm. An aneurysm is defined as dilatation of the artery that is more than 50% of normal diameter for a given segment. Aneurysm formation is caused by a weakening of the medial layer of the aorta, which stretches outward, causing an out-pouching of the vessel wall. Thoracic aneurysms take four forms: fusiform, saccular, dissecting and false aneurysms.

Thoracic endovascular aortic repair (TEVAR) is a minimally invasive procedure that treats aneurysms in the upper part of the aorta, or body's largest artery. TEVAR is especially suited to treat aneurysms in the descending aorta, which moves down through the chest toward the abdomen.

Thoracic outlet syndrome is a condition caused by the compression of neurovascular structures as they pass through the thoracic outlet, leading to symptoms such as pain, paresthesia, and weakness in the upper extremity.

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.

Turner's syndrome is a genetically determined condition that is typically associated with the presence of only one complete X chromosome and no Y chromosome. It is characterized by a female phenotype with underdeveloped (and usually infertile) ovaries and short stature.

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.

Wells score is a point-based system that assesses a patient's risk of developing deep vein thrombosis (DVT). The score is based on clinical criteria and categorized into three risk groups.

Table 1. Wells Score Criteria

Criteria	Score
Clinical symptoms of deep vein thrombosis (DVT) (leg swelling, pain with palpation)	3.0
Other diagnosis less likely than pulmonary embolus	3.0
Heart rate more than 100 beats per minute (BPM)	1.5
Immobilization (3 or more days) or surgery in the previous 4 weeks	1.5
Previous DVT or pulmonary embolism (PE)	1.5
Hemoptysis	1.0
Malignancy	1.0

Table 2. Probability

Probability	Score
High	more than 6.0
Moderate	2.0 to 6.0
Low	less than 2.0

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 Chest (Non-Coronary) 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.

Payment

The use of these clinical guidelines does not provide authorization, certification, explanation of benefits, or guarantee of payment; nor do the guidelines substitute for, or constitute, medical advice. Federal and State law, as well as member benefit contract language (including definitions and specific contract provisions/exclusions) take precedence over clinical guidelines and must be considered first when determining eligibility for coverage. All final determinations on coverage and payment are the responsibility of the health plan. Nothing contained within this document can be interpreted to mean otherwise.

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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.



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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