



# **Cohere Medicare Advantage Policy – Computed Tomography Angiography (CTA), Chest**

*Clinical Guidelines for Medical Necessity Review*

**Version:** 1  
**Effective Date:** September 12, 2024

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## Guideline Information:

**Specialty Area:** Diagnostic Imaging

**Guideline Name:** Cohere Medicare Advantage Policy - Computed Tomography Angiography (CTA), Chest

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# Medical Necessity Criteria

**Service: Computed Tomography Angiography (CTA), Chest**

## **Benefit Category**

Not applicable.

Please Note: This may not be an exhaustive list of all applicable Medicare benefit categories for this item or service.<sup>1</sup>

## **Related CMS Documents**

Please refer to the [CMS Medicare Coverage Database](#) for the most current applicable CMS National Coverage.

- There are no NCDs and/or LCDs for CTA of the chest

## **Recommended Clinical Approach**

The referring clinician is responsible for indicating the appropriate clinical indication (e.g., Wells criteria for intermediate and high probability for pulmonary embolism) for computed tomography angiogram (CTA), CTA of the aorta, and computed tomography venography (CTV). The patient's pertinent history should justify the exam and select phase(s) of post-contrast imaging. The radiologist should protocol the examination before the patient arrives at the CT scanner.

## **Evaluation of Clinical Benefits and Potential Harms**

Cohere Health uses the criteria below to ensure consistency in reviewing the conditions to be met for coverage of CTA of the chest. This process helps to prevent both incorrect denials and inappropriate approvals of medically necessary services. Specifically, limiting incorrect approvals reduces the risks associated with unnecessary procedures, such as complications from surgery, infections, and prolonged recovery times.

The potential clinical harms of using these criteria may include:

- Inherent risk of procedure: There are inherent risks of imaging, including cumulative radiation exposure, contrast, allergy, nephrotoxicity, and contrast extravasation into surrounding tissues.<sup>23,30-32</sup>
- Relative Speed: Although generally regarded as a fast method to comprehensively evaluate the chest, the relative speed of CTA is far slower than similar, lower-intensity, less-invasive modalities such as chest radiographs.<sup>25,26</sup>
- Potential danger to pregnancy: CT imaging completed during pregnancy confers a dose of ionizing radiation to the fetus and is generally only utilized when the potential benefits of this specific imaging modality outweigh the risks to the pregnancy.<sup>28</sup> Fetal risk includes fetal demise, intrauterine growth restriction, microcephaly, delayed intellectual development, risk of childhood cancer, and fetal thyroid injury.<sup>28</sup>
- Increased healthcare costs and complications from the inappropriate use of additional interventions.<sup>29</sup>

The clinical benefits of using these criteria include:

- Accuracy: CTA of the chest is highly accurate and thorough as an imaging modality, which is especially critical in clinical scenarios that carry a high risk of morbidity and mortality, such as acute aortic disease and chest trauma.<sup>25,26</sup>
- Cost-Effective: Additionally, CTA as a first- or second-line imaging strategy appears to be a cost-saving measure over other more invasive testing and may also confer a downstream cost savings due to the avoidance of unnecessary, more costly imaging in the workup of stable chest pain, such as ICA (invasive coronary angiography).<sup>26</sup>

This policy includes provisions for expedited reviews and flexibility in urgent cases to mitigate risks of delayed access. Evidence-based criteria are employed to prevent inappropriate denials, ensuring that patients receive medically necessary care. The criteria aim to balance the need for effective treatment with the minimization of potential harms, providing numerous clinical benefits in helping avoid unnecessary complications from inappropriate care.

In addition, the use of these criteria is likely to decrease inappropriate denials by creating a consistent set of review criteria, thereby supporting optimal patient outcomes and efficient healthcare utilization.

## **Medical Necessity Criteria**

### **Indications**

- **Computed tomography angiography (CTA), chest** is considered appropriate if **ANY** of the following is **TRUE**<sup>1-2</sup>:
- ◆ Trauma to the chest and cardiovascular injury is suspected<sup>3</sup>; **OR**
  - ◆ Vascular conditions, known or suspected, including **ANY** of the following:
    - Aneurysm, known or suspected by prior imaging (ascending, arch, or other thoracic) for initial diagnosis
    - Aortic disease (non-traumatic) for initial diagnosis based on prior imaging or risk factors, surgical planning, or assessing treatment response or complications with **ANY** of the following<sup>4,6-7</sup>:
      - Congenital conditions (e.g., vascular anomaly); **OR**
      - Aortic rupture; **OR**
      - Dissection; **OR**
      - Mediastinal hematoma; **OR**
      - Intramural hematoma; **OR**
      - Penetrating atherosclerotic ulcer; **OR**
      - Pseudoaneurysm; **OR**
      - Infectious vasculitis (e.g., syphilis, mycotic aneurysm); **OR**
      - Inflammatory vasculitis; **OR**
      - Large-vessel vasculitis (e.g., Takayasu arteritis, giant cell arteritis, systemic lupus erythematosus)<sup>5</sup>; **OR**
      - Medium-vessel vasculitis (e.g., vasculitis affecting main visceral arteries)<sup>5</sup>; **OR**
      - Neoplasm; **OR**
    - Suspected arterial embolism that impacts **ANY** of the following<sup>8</sup>:
      - Upper or lower extremity; **OR**
      - Mesenteric system; **OR**
      - Renal arterial system; **OR**

- Pulmonary arteriovenous malformation (PAVM), suspected, based on prior imaging or risk factors; **OR**
  - Pulmonary embolism (PE), known or suspected, as indicated by **ANY** of the following<sup>7,9-11</sup>:
    - Evaluation of PE in a pregnant patient; **OR**
    - High-risk with a validated Wells score greater than 6 (D-dimer is not needed); **OR**
    - PE likely based on modified Wells criteria (greater than 4 points); **OR**
    - PE suspected, based on modified Wells criteria (less than or equal to 4 points), with a positive D-dimer; **OR**
  - Pulmonary hypertension; **OR**
  - Chronic thromboembolic pulmonary hypertension; **OR**
  - Subclavian steal syndrome based on history, examination, or Doppler ultrasound<sup>12</sup>; **OR**
  - Subclavian artery stenosis<sup>12</sup>; **OR**
  - Systemic venous thrombosis or occlusion (includes superior vena cava [SVC] syndrome) based on clinical features or prior imaging; **OR**
  - Thoracic outlet syndrome based on clinical features or prior imaging; **OR**
- ◆ For evaluation of hemoptysis when chest radiograph or chest CT is inconclusive or requires further evaluation; **OR**
  - ◆ Follow-up evaluation of known thoracic aortic aneurysm (TAA) in a patient without syndromic and non-syndromic hereditary thoracic aneurysm disease and **ANY** of the following:
    - Annual surveillance for aneurysm less than 5.0 cm; **OR**
    - Symptoms suggestive of aneurysmal growth/dissection<sup>6</sup>; **OR**
    - 6-month evaluation for aneurysm for **ANY** of the following:
      - Greater than or equal to 5.0 cm; **OR**
      - Growing more than 0.5 cm/year; **OR**
  - ◆ Follow-up evaluation of known TAA in a patient with syndromic and non-syndromic hereditary thoracic aneurysm disease defined as **ANY** of the following:
    - Vascular Ehlers-Danlos syndrome; **OR**
    - Loeys-Dietz syndrome; **OR**
    - Marfan syndrome; **OR**

- Coarctation of the aorta; **OR**
  - Tetralogy of Fallot, transposition of the great vessels, truncus arteriosus; **OR**
  - Turner syndrome; **OR**
  - Familial bicuspid aortic valve; **OR**
  - Known predisposition as defined by the presence of genetic markers; **AND**
  - Surveillance CTA at baseline, then follow up at 6–12 months, then every 6–24 months if stable<sup>13-14</sup>; **OR**
  - Symptoms suggestive of aneurysmal growth/dissection<sup>6-7</sup>; **OR**
- ◆ Ongoing monitoring for possible TAA in patients at high-risk of but no prior documented TAA with **ANY** of the following:
    - Loeys–Dietz syndrome monitoring annually if the patient is stable and low risk (less than 0.3 cm aneurysm growth/year) and less than 4.0 cm; **OR**
    - Turner syndrome every 5 to 10 years; **OR**
    - Bicuspid aortic valve every 2 years if TTE/TEE inconclusive; **OR**
    - Marfan syndrome every 2 years; **OR**
  - ◆ Initial screening CTA for relatives of a patient with thoracic aortic disease with **ANY** of the following:
    - First-degree relative (parent, sibling, or child) and **ANY** of the following:
      - Family history of Marfan syndrome, Loeys–Dietz syndrome, or vascular Ehlers–Danlos; **OR**
      - Family history of TAA due to **ANY** of the following:
        - ◆ ACTA2, MYH11, PRKG1, MYLK; **OR**
        - ◆ TAA without identified pathogenic variants in a known gene for HTAD; **OR**
        - ◆ TAA and bicuspid aortic valve; **OR**
        - ◆ Family history of intracranial or peripheral aneurysm; **OR**
        - ◆ Turner syndrome; **OR**
        - ◆ Coarctation of the aorta; **OR**
        - ◆ Congenital heart defects such as tetralogy of Fallot, transposition of the great vessels, truncus arteriosus; **OR**

- ◆ Transcatheter aortic valve replacement (TAVR) pre-intervention planning with an assessment of **ANY** of the following<sup>17</sup>:
  - Aortic root and supra-avalvular aorta; **OR**
  - Vascular access; **OR**
- ◆ Pulmonary vein mapping (e.g., prior to atrial fibrillation ablation); **OR**
- ◆ Thoracic endovascular aneurysm repair (TEVAR) for the treatment of thoracic aortic disease and **ANY** of the following is **TRUE**<sup>18-20</sup>:
  - Pre-repair; **OR**
  - Post-repair; **OR**
- ◆ Post-treatment of acute aortic dissection at **ANY** of the following intervals:
  - 1 month; **OR**
  - 6 months; **OR**
  - Annually; **OR**
- ◆ Chronic dissection, annually; **OR**
- ◆ Re-evaluation of known ascending aortic dilation or history of aortic dissection with a change in clinical status (including cardiac exam or other findings that may alter management); **OR**
- ◆ Non-invasive clinical staging of a tumor to define vascular invasion; **OR**
- ◆ Congenital or acquired conditions as indicated by **ANY** of the following<sup>21</sup>:
  - Pulmonary sequestration; **OR**
  - Heart disease with **ANY** of the following:
    - Known single ventricle physiology and postoperative evaluation needed after stage 3 single ventricle palliation (total cavopulmonary connection); **OR**
    - Known or suspected anomalous pulmonary venous return; **OR**
    - Repaired tetralogy of Fallot or pulmonary valve stenosis with concern for pulmonary valve dysfunction or branch pulmonary artery stenosis; **OR**
    - Suspected aortic coarctation; **OR**
    - Transposition of the great arteries after arterial switch; **OR**

- Transposition of the great arteries after atrial switch;  
**OR**
- ◆ Repeat imaging (defined as repeat request following recent imaging of the same anatomic region with the same modality), in the absence of established guidelines, will be considered reasonable and necessary if **ANY** of the following is **TRUE**:
  - New or worsening symptoms, such that repeat imaging would influence treatment; **OR**
  - One-time clarifying follow-up of a prior indeterminate finding; **OR**
  - In the absence of change in symptoms, there is an established need for monitoring which would influence management.

### Non-Indications

- **Computed tomography angiography (CTA), chest with contrast** is not considered if **ANY** of the following is **TRUE**<sup>22</sup>:
  - ◆ History of anaphylactic allergic reaction to iodinated contrast media.

\*NOTE: The referring professional and radiologist should discuss the risks and benefits of contrast media administration, including possible prophylaxis, in patients with chronic or worsening kidney disease or severe renal failure.

\*\*NOTE: CT in pregnant patients should be requested at the discretion of the ordering provider and obstetric care provider.

\*\*\*NOTE: CT in patients with claustrophobia should be requested at the discretion of the ordering provider.

### Disclaimer on Radiation Exposure in Pediatric Population

Due to the heightened sensitivity of pediatric patients to ionizing radiation, minimizing exposure is paramount. At Cohere, we are dedicated to ensuring that every patient, including the pediatric population, has access to appropriate imaging following accepted guidelines. Radiation risk is dependent mainly on the patient's age at exposure, the organs exposed, and the patient's sex, though there are other variables. The following technical guidelines are provided to ensure safe and effective imaging practices:

**Radiation Dose Optimization:** Adhere to the lowest effective dose principle for

pediatric imaging. Ensure that imaging protocols are specifically tailored for pediatric patients to limit radiation exposure.<sup>23-24</sup>

**Alternative Modalities:** Prioritize non-ionizing imaging options such as ultrasound or MRI when clinically feasible, as they are less likely to expose the patient to ionizing radiation. For instance, MRI or ultrasound should be considered if they are more likely to provide an accurate diagnosis than CT, fluoroscopy, or radiography.<sup>23-24</sup>

**Cumulative Dose Monitoring:** Implement systems to track cumulative radiation exposure in pediatric patients, particularly for those requiring multiple imaging studies. Regularly reassess the necessity of repeat imaging based on clinical evaluation.<sup>23-24</sup>

**CT Imaging Considerations:** When CT is deemed the best method for achieving a correct diagnosis, use the lowest possible radiation dose that still yields reliable diagnostic images.<sup>23-24</sup>

### **Cohere Imaging Gently Guideline**

The purpose of this guideline is to act as a potential override when clinically indicated to adhere to Imaging Gently and Imaging Wisely guidelines and As Low As Reasonably Possible (ALARA) principles.

#### **Level of Care Criteria**

Inpatient and Outpatient

#### **Procedure Codes (CPT/HCPCS)**

<b>CPT/HCPCS Code</b>	<b>Code Description</b>
71275	Computed tomographic angiography (CTA), chest; with contrast material(s), including non-contrast images, if performed, and image postprocessing

## **Medical Evidence**

Ko et al. (2021) review the utilization of chest CT angiography (CTA) to diagnose acute aortic syndromes. To ensure optimal quality of images, the authors address technical parameters of chest CTA, including non-contrast

imaging, timing of contrast-enhanced imaging, volume and type of contrast material used, kilovolt potential, tube-current modulation, and decisions regarding electrocardiographic-gating and ultra-fast imaging. Acute aortic syndromes, especially those involving the ascending aorta, carry high morbidity and mortality rates and encompass conditions such as classic aortic dissection, penetrating atherosclerotic ulcer, and acute intramural hematoma. Recognition of related entities like ulcerated plaque, ulcer-like projections, intramural blood pools, and mimics such as vasculitis and aortic thrombus is crucial to avoid interpretive errors.<sup>25</sup>

Carrabba et al. (2019) present the results of a clinical trial that evaluated the efficacy of CTA for diagnosing coronary artery disease (CAD) in patients with new-onset chest pain. The 208 patients included had an unknown CAD diagnosis. Approximately half of the participants received standard testing care and CTA as a secondary investigation (group A), while the other half underwent CTA as their initial investigation (group B). Patients with obstructive CAD (O-CAD) demonstrated greater than 50% stenosis in the principal branch. According to the CTA results, the rates of CAD in group A compared to group B were as follows (P=0.001): 31.1% versus 27.4% for normal or minimal CAD; 42.5% versus 63.7% for no O-CAD; and 26.4% versus 8.8% for O-CAD.<sup>26</sup>

Baliyan et al. (2018) report on acute aortic syndromes in an emergency setting. CTA is the preferred imaging modality as it can be performed quickly and identify variations in anatomy including coarctation. Incidental findings are often identified (89%) when performing chest CTA. An alternative is MRA when CTA cannot be performed due to allergy to renal dysfunction or iodinated contrast.<sup>27</sup>

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## Review History

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