Cohere Medical Policy - Coronary Computed Tomography Angiography (CCTA), with or without Fractional Flow Reserve (FFR)

Clinical Guidelines for Medical Necessity Review

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Important Notices

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Other Notices:

Guideline Information:

Specialty Area: Diagnostic Imaging
Guideline Name: Cohere Medical Policy - Coronary Computed Tomography Angiography (CCTA), with or without Fractional Flow Reserve (FFR)

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Service: Coronary Computed Tomography Angiogram (CCTA) with or without Fractional Flow Reserve (FFR)

Recommended Clinical Approach

Computed tomography coronary angiography (CCTA) is a non-invasive alternative to cardiac catheterization performed with iodinated contrast. The radiologist may consider additional phases, dynamic sequences, positioning of the patient, and the use of markers. The referring clinician is responsible for the appropriate clinical indication in consultation with a cardiac imaging expert. The patient's pertinent medical history should justify the exam. The physician laboratory director should choose the scanning protocol for the study before the patient's arrival. Following a positive CCTA, non-invasive fractional flow reserve (FFR) may be medically necessary to guide decisions about invasive coronary angiography in patients with intermediate or high-risk coronary anatomy on imaging.[1-5] CT-FFR is not recommended in patients with complex congenital heart disease.

Medical Necessity Criteria

Indications

- ➔ **CCTA with or without FFR** is considered appropriate if **ANY** of the following is **TRUE**[3,6-12]:
    - ◆ There is a suspicion of coronary artery anomalies[12]; **OR**
    - ◆ Possible acute coronary syndrome which has stabilized without an acute MI (no evidence of myocardial injury such as a non-ST-Segment Elevation Myocardial Infarction [STEMI]); **OR**
    - ◆ No known coronary artery disease (CAD) with an intermediate-high pre-test probability of obstructive CAD (based on symptoms and objective cardiovascular data) and **ANY** of the following[3,12]:
        - Stable chest pain (or ischemic equivalent) after an inconclusive or abnormal exercise ECG or stress imaging study; **OR**
        - Stable chest pain (or ischemic equivalent) after a negative stress test but with high clinical suspicion of CAD; **OR**
        - Stable chest pain (or ischemic equivalent); **OR**

- CAD is known and previously determined to be non-obstructive (less than 50%), but there has been a clinical change that suggests CAD in the native coronary arteries has progressed[13]; **OR**
- Previous coronary revascularization was performed and there is a clinical change suggesting CAD progression in bypass grafts, in stented vessels with a diameter greater than 3mm, or in ungrafted coronary arteries; **OR**
- Acute chest pain with suspected aortic dissection[12]; **OR**
- Dyspnea with suspected cardiac origin[15-16]; **OR**
- Unexplained congestive heart failure[16]; **OR**
- Presyncope or syncope (if clinical symptoms or signs are consistent with a cardiac diagnosis known to cause presyncope/syncope, including but not limited to hypertrophic cardiomyopathy and heart failure)[17-18]; **OR**
- Nontraumatic aortic disease[19]; **OR**
- FFR is for **ANY** of the following[20,21]:
    - For functional evaluation of coronary CTA lesions, which are 40-90% stenosed in a proximal to a middle coronary segment on CCTA[3,20]; **OR**
    - For evaluating multivessel disease and identifying culprit lesions seen on CCTA that may be causing symptoms; **OR**
    - For evaluating the physiologic severity of multiple lesions in a single vessel[3]; **OR**
- FFR may be repeated if a CCTA has been performed within the preceding month and **ALL** of the following are true:
    - There is documented clinical necessity; **AND**
    - No existing follow-up guideline for that indication; **AND**
    - Prior imaging results of the specific area or structure, obtained using the same imaging modality, must be documented and available for comparison; **AND**
    - **ANY** of the following is **TRUE**:
        - A change in clinical status has occurred (e.g., worsening or new symptoms) that may influence the treatment approach; **OR**
        - The requirement for interval reassessment, which may alter the treatment plan; **OR**
        - One-time follow-up of a prior indeterminate finding to assess for interval change; **OR**
        - Reimaging is needed either before or after

performing an invasive procedure; **OR**

- Repeat imaging of a specific area or structure using the same imaging modality (in the absence of an existing follow-up guideline) is considered appropriate when **ALL** of the following is **TRUE**:
  - There is documented clinical necessity; **AND**
  - Prior imaging results of the specific area or structure, obtained using the same imaging modality, must be documented and available for comparison; **AND**
  - **ANY** of the following is **TRUE**:
    - A change in clinical status, such as worsening symptoms or the emergence of new symptoms, that may influence the treatment approach; **OR**
    - The requirement for interval reassessment, which may alter the treatment plan; **OR**
    - One-time follow-up of a prior indeterminate finding to assess for interval change; **OR**
    - The need for re-imaging either before or after performing an invasive procedure.

Non-Indications

➔ **CCTA** is not considered appropriate if **ANY** of the following is **TRUE**[5,11]:

- The patient has undergone advanced imaging of the same body part and for the same indication within 3 months, without being on treatment; **OR**
- If **ANY** of the following is **TRUE** if contrast is used:
  - History of anaphylactic allergic reaction to iodinated contrast media; **OR**
  - Renal insufficiency with no provided detailed guidelines; **OR**
- The patient uses metformin (if not held); **OR**
- The patient has uncontrolled rapid atrial fibrillation; **OR**
- Normal coronary angiogram or CCTA with no stenosis or plaque within the last two years and stable symptoms; **OR**
- Normal stress test within the previous year (given adequate stress) with stable symptoms; **OR**
- If FFR is performed, it is not considered appropriate if **ANY** of the following conditions is **TRUE**[3,21]:
  - The original CCTA was of suboptimal quality; **OR**
  - The patient is not a candidate for revascularization; **OR**

- The patient has a metal intracoronary stent in the vessel to be studied; **OR**
- Coronary anatomy seen on CCTA is non-obstructive[20]; **OR**
- The patient has complex congenital heart disease; **OR**
- There is a contraindication to the use of adenosine.

*NOTE: CT in patients with claustrophobia should be requested at the discretion of the ordering provider.
**NOTE: CT in pregnant patients should be requested at the discretion of the ordering provider and obstetric care 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.[24,25]

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.[24,25]

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.[24,25]

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.[24,25]

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

Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
75574	Computed tomographic angiography (CTA), heart, coronary arteries and bypass grafts (when present); with contrast material, including 3D image postprocessing (including evaluation of cardiac structure and morphology, assessment of cardiac function, and evaluation)
75580	Noninvasive estimate of coronary fractional flow reserve (FFR) derived from augmentative software analysis of the data set from a coronary computed tomography angiography, with interpretation and report by a physician or other qualified healthcare professional

Medical Evidence

In the 2021 chest pain guideline for the American College of Cardiology, Gulati et al. give several recommendations for the use of coronary computed tomography angiography (CCTA), including for intermediate-risk patients with acute chest pain and no known coronary artery disease (CAD) who require diagnostic testing following a negative evaluation for acute coronary syndrome. Additionally, CCTA is a proven approach for evaluating patients with stable chest pain with a strong (Class 1) strength of recommendation[3]. The writers state that CCTA helps exclude atherosclerotic plaque and obstructive CAD. A recommendation was given for CCTA to diagnose obstructive CAD in patients at intermediate risk with acute pain and mildly abnormal previous stress testing. When evaluating patients in the emergency department with acute chest pain, CCTA may reduce the time to diagnosis and possible earlier safe discharge.[3]

Taylor et al. (2010) developed appropriate use criteria for cardiac computed tomography. The use of CCTA in low or intermediate-risk patients with pretest probability for CAD may be considered. Testing in high-risk patients, routinely repeating testing, and use for general cardiac screening were not viewed favorably. Lowest appropriateness ratings were assigned in urgent presentations with acute symptoms with suspicion of acute coronary syndrome, such as in definite myocardial infarction (MI), persistent ST-segment elevation on ECG (when MI excluded), and acute chest pain of uncertain cause prompting rule out of pulmonary embolism, aortic dissection and acute coronary syndrome.[6]

Driessen and colleagues (2019) published post hoc single-center study results comparing CCTA, FFR, and perfusion imaging for ischemia diagnosis for the American College of Cardiology. The 208 patients were enrolled with suspicion of CAD and underwent CCTA, SPECT, and PET scans with routine FFR study of all major coronary arteries. All patients were prospectively tested noninvasively and invasively with FFR within 2 weeks, regardless of their results. Of the 208 patients, the CCTA images of 75% of patients were entirely sufficient for evaluation by FFR_{CT}. The group concluded that FFR_{CT} showed high diagnostic performance for vessel-specific ischemia, provided that the CCTA images were adequate for FFR evaluation. PET scanning yielded the highest diagnostic performance due to the often high rejection rate of the FFR_{CT}.[9]

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Clinical Guideline Revision History/Information

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Version 2	8/2/2024	Annual review and policy restructure.