Model Local Coverage Determination
Contractor Information

<u>Contractor Name</u>

<u>Contractor Number</u>

<u>Contractor Type</u>

<u>LCD Information</u>

<u>LCD Database ID Number</u>

<u>LCD Title</u>

Cardiac Computed Tomography (Cardiac CT) including Coronary Computed Tomographic Angiography (Coronary CTA), Calcium Volume (Calcium Score), and Computed Tomography Fractional Flow Reserve (CT-FFR)

CMS National Coverage Policy

- Title XVIII of the Social Security Act, Section 1862 (a) (7) This section excludes routine physical examinations.
- Title XVIII of the Social Security Act, Section 1862 (a) (1) (A) This section allows coverage and payment for only those services considered medically reasonable and necessary.
- Title XVIII of the Social Security Act, Section 1833 (e) This section prohibits Medicare payment for any claim which lacks the necessary information to process the claim.
- CMS Manual System, Pub 100-3, National Coverage Determination Manual, #9; Section 220.1. This section deals with diagnostic examination by CT scan.
- CMS Manual System, Pub 100-4, Medicare Claims Processing Manual, Chapter 13, Section 20. This section addresses payment conditions for radiology services.
- CMS Manual System, Pub 100-9, Contractor Beneficiary and Provider #9; Communication Manual, Chapter 5, Section 20). This section addresses standards of medical/surgical practice and the correct coding initiative (CCI).

Primary Geographic Jurisdiction

Oversight Region

Original Determination Effective Date

For service performed on or after 01/01/2010

Original Determination Ending Date

Revision Effective Date

For service performed on or after 08/01/2015

Revision Ending Date

Indications of Coverage and/or Medical Necessity

Multidetector row computed tomography (MDCT) is a well-validated imaging modality that allows for high resolution imaging of the heart, to include the coronary arteries, and major thoracic vascular structures with accuracy that correlates strongly with invasive coronary angiography.

Coronary computed tomographic angiography (coronary CTA) using MDCT requires thin detector collimation (detector width of 0.625 or less), thin slice reconstruction (image thickness ≤1.0 mm), multiple simultaneous images (e.g., 64 or more slices) and cardiac gating (often requiring beta blockers to achieve ideal heart rate control). It provides unparalleled spatial resolution compared to other non-invasive modalities. There is significant post processing. For coronary artery imaging, the resulting images show a high correlation with stenotic lesions noted on diagnostic cardiac catheterization. More importantly, coronary CTA has superior negative predictive value (>95%) allowing for safe deferral of additional testing, to include invasive angiography, when coronary artery disease is absent. Additionally, with near zero coronary event rates following a normal coronary CTA, further risk stratification can be safely deferred for up to 5 years.

The Centers for Medicare and Medicaid Services (CMS) encourages the use of high-level evidence-based indications. Coronary CTA meets this high-level evidence bar. In multiple randomized trials, coronary CTA as an initial test in symptomatic low to intermediate risk patients without known CAD was equivalent to functional stress testing with respect to patient outcomes. Importantly, coronary CTA was associated with significantly lower rates of invasive coronary angiography with findings of no CAD, thus invasive coronary angiography (ICA) was safely reserved only for patients likely to receive direct benefit from revascularization. In patients with an indication for ICA, a recent randomized prospective trial demonstrated that the use of coronary CTA prior to ICA with deferral of ICA for patients with maximal stenosis <50% was safe, cost effective, and significantly reduced the rates of normal ICA. In very large registries, rates of invasive coronary angiography demonstrating no obstructive disease were 30-50% lower with coronary CTA. Cumulatively, this data supports the use of coronary CTA as a superior gatekeeper to invasive coronary angiography. With respect to patient outcomes, initial testing with coronary CTA led to a reduction in death and non-fatal myocardial infarction. These findings are best explained by an increase in provider confidence in the patient's diagnosis and more aggressive management of cardiovascular risk factors.

Coronary CTA is well-validated as a means for rapid and safe evaluation of low to intermediate risk patients presenting to the emergency department (ED) with possible acute coronary syndrome (ACS). In six randomized trials, coronary CTA demonstrated superiority or non-inferiority in comparison to 1) stress myocardial perfusion imaging, 2) exercise treadmill testing, 3) standard of care evaluations or 4) rapid (delta) troponins. Coronary CTA in the ED resulted in a more rapid diagnosis, disposition, and reduced hospitalizations. Coronary CTA is the single best test in the evaluation of suspected coronary anomalies. Additionally, the accuracy of coronary CTA in evaluating coronary artery bypass graft patency in symptomatic patients in which evaluation of the native coronaries is not desired is equivalent to invasive angiography. Coronary CTA in this setting is also appropriate to define the relationship of grafts to the sternum and assess for adhesions that may complicate a redo sternotomy.

Coronary CTA is a well-validated, invaluable test in patients with equivocal functional stress testing in which post-testing likelihood of obstructive CAD remains in the low to intermediate range. Coronary CTA serves as an effective gatekeeper to invasive coronary angiography in this setting given its superior negative predictive value. Additionally, coronary CTA can replace invasive coronary angiography as the definitive test for patients with discordant functional testing and ongoing symptoms despite normal functional testing.

Cardiac CTA (which may or may not allow for accurate coronary artery evaluation) is the standard of care in pre-procedure planning and assessment of suitability of the patient prior to transcatheter aortic valve replacement (TAVR) and evaluating pulmonary vein and left atrial anatomy prior to endocardial arrhythmia ablation. Additionally, cardiac CTA can serve as a useful adjunct to other noninvasive testing for the evaluation of left or right ventricular function, assessment of suspected prosthetic valve dysfunction, or prosthetic valve endocarditis. Cardiac CTA also provides invaluable information for the evaluation of complex congenital heart disease, particularly in the evaluation of thoracic anatomical relationships prior to a planned re-intervention.

In addition to its superior diagnostic accuracy when compared to ICA and outcomes data, coronary CTA is associated with low effective radiation dose when compared to single-photon emission computed tomography (SPECT). Multiple prospective published data from the PROTECTION investigators and others demonstrated significant dose reductions with implementation of low kVp imaging in nonobese patients and routine use of prospective, ECG-triggered imaging resulted in a 31% and 69%, respectively, reduction in effective dose. The mean radiation exposure from coronary CTA with implementing this protocol was 3.5mSv±2.1mSv. When compared with SPECT in a randomized, prospective population of acute chest pain patients evaluated in the ED, coronary CTA was associated with a lower effective radiation dose ($p=0.02$).

Asymptomatic Patients

1. Quantitative evaluation of coronary calcium score can be performed in asymptomatic patients at intermediate global risk of CAD or coronary CTA can be performed in asymptomatic low global risk with a family history of premature CAD or severe risk factors.

Coronary artery calcium (CAC) score is the most accurate tool for cardiovascular risk assessment among asymptomatic persons, has demonstrated additional incremental and independent prognostic information to risk calculators (i.e.- Framingham or Pooled Risk Equations), and resulted in lower downstream health care costs to those with CAC scores of zero compared to those who did not receive a CAC scan. CAC a accurately predicts cardiovascular event rates better than these current clinically-based risk scores and improves individual determinations for more or less intensive risk modification. CAC reclassifies patients into either higher or lower risk groups (net reclassification) in approximately half of the patients studied, which determine appropriate use of preventative therapies, including aspirin, statins and blood pressure lowering.

2. The evaluation of abnormal electrocardiograms (such as bundle branch blocks or q-waves) in which CAD is a possible etiology.

Application of coronary CTA effectively and accurately rules out significant coronary artery disease as a cause of these common abnormalities. For example, left bundle branch block (LBBB) is often evaluated by nuclear stress test that is frequently equivocal due to artifacts in the anteroseptal wall segment attributable to the LBBB. Patients that have unclear diagnosis of previous myocardial infarction clinically or by abnormal testing can utilize coronary CTA to exclude occlusive coronary disease as a cause.

Stable Chest Pain

3. Initial assessment of chest pain or other symptoms that may be due to CAD in patients without known obstructive coronary artery disease and low to intermediate pre-test probability based on validated risk assessment tools (Diamond-Forrester, CAD consortium, etc.).

The rationale for using coronary CTA based evaluation to assess chest pain is to determine if a coronary artery blockage might be the source of chest pain. When no coronary artery blockages are seen, the high negative predictive value of coronary CTA (99%) obviates the need for further cardiac testing at higher reliability than myocardial perfusion imaging, stress echocardiography or treadmill ECG-based evaluation.

4. The test of choice as an alternative to invasive coronary angiography in patients with equivocal results, suspected inaccurate testing, or unclear clinical symptoms.

Coronary CTA is appropriate in patients who have an equivocal or suspected inaccurate stress (or stress imaging) test and or an unclear clinical presentation. The rationale is that coronary CTA has a superior negative predictability with strong correlation to invasive coronary angiography thereby limiting the number of normal invasive coronary angiograms performed. Coronary CTA also avoids missing serious coronary disease in those suspected of having an inaccurate stress test result or a negative test with discordant symptoms.

5. Evaluation of new, continued, or worsening symptoms concerning for CAD in the setting of a prior normal stress imaging or an intermediate risk exercise treadmill stress test.

Patients with normal stress imaging studies but new, worsening, or continued symptoms are often referred for a definitive coronary artery assessment by a costly invasive coronary angiogram. Coronary CTA's high negative predictive value to exclude CAD (99 percent) acts as is an effective gate-keeper to the catheterization laboratory. This reduces the rates of normal or non-obstructive CAD at invasive angiography by 30 to 50 percent, as well as avoids low, but not negligible, invasive angiography complications.

Acute Chest Pain

6. Evaluation of acute chest pain without definite acute coronary syndrome (ACS) in the Emergency Department (ED)

Coronary CTA rapidly triages patients and accurately eliminates coronary artery disease as the cause of acute symptoms. Coronary CTA has high sensitivity and negative predictive value (>90%) for ruling out coronary artery disease in this setting. In five randomized trials, coronary CTA led to significant reductions in cost, radiation exposure, Emergency Department stay and time to diagnosis over standard of care imaging (mostly nuclear perfusion imaging and exercise treadmill) in low-intermediate chest pain populations.

Heart Failure

7. New-onset systolic or diastolic cardiac dysfunction of unknown etiology to exclude significant coronary artery disease.

Coronary CTA allows for the exclusion of obstructive CAD in patients with new-onset heart failure or asymptomatic systolic dysfunction in whom obstructive CAD is suspected.

Cardiac Function/Structural Assessment

8. Assessment of right ventricular function and morphology in patients of suspected arrhythmogenic right ventricular dysplasia/cardiomyopathy (ARVD/C), Ebstein's anomaly, cardiac sarcoidosis, prior right ventricular infarct, Tetralogy of Fallot, or other similar conditions.

Coronary CTA in this setting can be used for this diagnosis in the absence of availability of cardiac magnetic resonance imaging (cMRI) and as an alternative to other imaging modalities to assess right ventricular morphology, quantitative size, and function.

9. Evaluation of native or prosthetic cardiac valve, cardiac mass or pericardial abnormality.

Multiphase cardiac CT is used either in isolation or in conjunction with other imaging modalities to evaluate for suspected prosthetic heart valve dysfunction and is considered a first-line modality for this indication. CT also allows for visualization of cardiac or valvular masses as well as the pericardium. Cardiac CT can also accurately assess for myocardial abscess cavities, valvular vegetation size, mobility, and the presence of perivalvular complications/abscess in the setting of valvular infective endocarditis.

Preoperative/Preprocedural Planning

10. Low to intermediate pre-test probability of coronary artery disease prior to non-coronary cardiac surgery.

Selected low pre-test risk and all intermediate pre-test risk patients should undergo evaluation for obstructive CAD prior to a non-coronary cardiovascular intervention (e.g. heart valve surgery, ASD/VSD closure, thoracic aorta surgery, etc.) to ensure that concomitant bypass grafting should not be performed. The safety and accuracy of using coronary CTA to assess the coronary arteries in this setting was validated in a recently published meta-analysis.

11. Assessment of cardiac anatomy for electrophysiological procedures including electrophysiological testing, ablation, intervention and device implantation.

Cardiac CT visualizes the cardiac structures, including coronary and pulmonary veins, to plan electrophysiological procedures and to facilitate intraprocedural electroanatomic mapping. Pulmonary vein catheter radiofrequency isolation sequesters electrical activity from the pulmonary veins to eliminate recurrent atrial fibrillation. Since pulmonary vein anatomy varies from patient to patient, three dimensional CT pulmonary venous anatomic maps may reduce procedural complications and allow more accurate, expeditious, and successful procedures. Cardiac CTA also identifies anatomic variants, previous injury from intervention, and the anatomic relationships between the left atrium and pulmonary veins with surrounding vital non-cardiac structures such as the esophagus and descending thoracic aorta which may affect the electrophysiology approach. Additionally, appropriately protocoled pre-procedural cardiac CTA can effective identify or exclude atrial thrombus, particularly in the left atrial appendage, when transesophageal echocardiography can be equivocal.

Cardiac CT can define cardiac venous anatomy that can assist in placement of a pacemaker lead in the lateral or appropriate cardiac vein in order to resynchronize cardiac contraction in patients with heart failure. Cardiac CTA for electrophysiological applications have been documented to reduce procedural time in the electrophysiology laboratory, reduce contrast and radiation requirements, and lead to lower utilization of catheters.

12. Pre-procedural planning of vascular access and implant sizing prior to transcatheter valve implantation.

Cardiac CTA, given its superior spatial resolution, provides highly accurate data that allows for sizing of transcatheter valves. Utilizing cardiac CTA for transcatheter valve sizing results in reduced post-procedure para-valvular aortic regurgitation (which is associated with increased post-implant mortality) while minimizing intra-procedural access and aortic complications. Additional thoracic and abdominal anatomic information also improves pre-procedural planning and possible catheter approaches to TAVR or other valve implantations.

13. Evaluation of anatomy, for device sizing, and preprocedural planning in patients undergoing cardiac device placement to include cardiac resynchronization device, left atrial appendage occluder/closure device, mitral valve clip, atrial/ventricular septal occlude, or other intracardiac implants.

The use of cardiac CT in this setting is pre-procedural to determine the anatomy, size and presence of calcification in the valvular annulus in anticipation of percutaneous intervention, and/or to define the anatomy of the left atrial appendage to size an occluder. CTA is used in conjunction with other imaging modalities to define the anatomy, motion and prolapse of the mitral valve in anticipation of determining the suitability for either surgical or percutaneous repair procedure.

Congenital Heart Disease

14. Suspected congenital or acquired anomalies of the coronary circulation or complex coronary anatomy.

Coronary CTA can accurately assess patients suspected of having a congenital, acquired or complex coronary anatomy. The 3-dimensional and high spatial resolution of coronary CTA defines exact coronary anatomy to estimate potential adverse outcomes based on the anatomic anomaly, and then to refine procedural planning and interventions. Coronary CTA may be used as the first test or following a non-diagnostic invasive coronary angiogram. Coronary CTA may also be of assistance in planning the approach, risks and chances of success in a completely occluded coronary artery.

15. Congenital heart disease and variants of normal including anomalies of great vessels, thoracic vessels and cardiac chambers and valves. Cardiac CTA is also appropriate for the evaluation of a previous complex congenital heart disease correction, palliation, or repair prior to planned re-intervention.

Coronary CTA offers very high spatial resolution, as well as unlimited viewing angles that are often needed for the evaluation of complex congenital heart diseases and to plan appropriate treatment.

16. Evaluation of a previous complex congenital heart disease correction, palliation, or repair prior to planned re-intervention.

Coronary CTA accurately assesses patients with acquired or complex coronary anatomy. The 3-dimensional and high spatial resolution of coronary CTA defines exact coronary anatomy to estimate potential adverse outcomes based on the anatomic anomaly, and then to refine procedural planning and interventions.

Symptomatic Patients with Known CAD/Prior Revascularization

17. Evaluate the patency of coronary bypass grafts in the setting of chest pain or other symptoms or abnormal noninvasive testing which may be related to graft stenosis.

Coronary bypass grafts are well delineated with coronary CTA, with documented diagnostic accuracy near 100% for stenosis and occlusion compared to invasive angiography. The rationale for coronary CTA is to determine the patency and severity of possible graft stenosis that may be the source of chest pain. Also, coronary CTA could to determine if a graft had been missed during invasive angiography. Additionally, the exact location of the coronary arteries and other non-coronary cardiac especially in repeat cardiac surgery structures (such as right ventricle approximation to the sternum) can impact pre-procedural planning. The use of coronary CTA in this population may mitigate the procedural risk to the patient of an invasive coronary angiogram and provide additional multidimensional information for safer surgical procedures.

18. Assess bypass graft location and exclude sternal adhesions in patients with prior CABG in planning for repeat sternotomy.

The exact location of the coronary arteries and other non-coronary cardiac especially in repeat cardiac surgery structures (such as right ventricle approximation to the sternum) can impact pre-procedural planning. The use of coronary CTA in this population may mitigate the procedural risk to the patient of an invasive coronary angiogram and provide additional multidimensional information for safer surgical procedures.

19. Coronary CTA is appropriate to evaluate the cause of chest pain or other possibly ischemic symptoms in patients with previous stents providing stent diameter and location is appropriate for adequate visualization and in the absence of excessive calcium.

Coronary CTA in this setting can evaluate the extent of coronary artery disease which led to a prior cardiac event or symptoms as well as for in-stent stenosis in stents >2.5 mm diameter. New or recurrent symptoms may or may not relate to a change in the coronary anatomy and can potentially be assessed with coronary CTA.

20. Noninvasive assessment of ischemia by cardiac CTA may be performed in patients with nondiagnostic or indeterminant stenosis on coronary CTA.

Clinical trial data currently supports functional assessment for ischemia by cardiac CTA utilizing various techniques, to include CT-FFR and CT perfusion, as a clinically helpful adjunct to coronary CTA in patients with a >30% stenosis. CT-FFR allows for assessment of stenosis-specific hemodynamic significance without the need for an additional noninvasive test utilizing computational fluid dynamics and simulated hyperemia on an existing coronary CTA dataset. When compared to invasive coronary angiography and invasive FFR, CT-FFR significantly increased the diagnostic accuracy when compared to coronary CTA alone in 3 separate randomized, prospective trials. CTP allows for assessment of ischemia utilizing differential distribution of iodinated contrast on a cardiac CTA dataset following administration of a chemical stress agent (regadenoson, adenosine, or dobutamine). CTP compares favorably to SPECT and PET in the diagnosis of obstructive CAD.

IN GENERAL

Coverage is considered appropriate for the indications deemed “appropriate,” as defined in the document referenced below *

Medicare covers cardiac CT and coronary CTA for those indications deemed “appropriate” with a median rating of 7 or higher.

Medicare covers only upon medical review, cardiac CT and coronary CTA for those indications deemed “uncertain” or “may be appropriate” with a median rating of 4 to 6.

Medicare does not cover cardiac CT and coronary CTA for indications deemed “inappropriate” or “rarely appropriate.”

*Appropriate Use Criteria for Cardiac Computed Tomography” published by The American College of Cardiology Foundation Appropriate Use Criteria Task Force, The Society of Cardiovascular Computed

Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the North American Society for Cardiovascular Imaging, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance.

Additional considerations

1. The test is never covered for routine screening, i.e., in the absence of signs, symptoms or disease.

2. The selection of the test should be made within the context of other cardiac testing, such as stress testing (including nuclear and echocardiography) and clinical information; so that the resulting information facilitates the management decision, and does not merely add a new layer of testing.

3. Coverage of this modality for coronary artery assessment is limited to scanners that process thin, high resolution slices, detectors of 0.625 or less. The multidetector row scanner must have at least 64 slices per rotation capability (collimations of at least 32x2 or 64x1) and with gantry rotation times of 420 milliseconds or less.

4. The administration of beta-blockers or calcium channel blockers and the monitoring of the patient during cardiac CT by a physician or a qualified non-physician practitioner experienced in the use of cardiovascular drugs and contrast reaction are included here in and are not separately payable services. Administration of beta-blocker, nitroglycerin and other medications by nurses and health care providers must be under the general supervision of a physician as required by local law.

5. All studies must be ordered by a physician or a qualified non-physician practitioner similar to any other clinical cardiac testing.

6. For contrast-enhanced examinations a physician or a qualified non-physician practitioner must be available during testing in accordance with local law.

7. The electron beam computed tomography (ECBT) technology, or MDCT with less than 64-slice detector technology is not covered by this LCD for coronary artery (ie coronary CTA) examination except for calcium volume.

8. The study must be performed under the principles of As Low As Reasonable Achieveable **(ALARA).** Centers must report and monitor patient-specific and population radiation exposure. Additionally, centers must be accredited by recognized national organizations (such as ACR and IACT) and be incompliance with local law for radiation reporting requirements and accreditation agencies.

It is important to note that the fact that a new service or procedure has been issued a CPT code or is FDA approved does not, in itself, make the procedure medically reasonable and necessary. (Carrier Name) evaluates new services, procedures, drugs or technology and considers national and local policies before these new services may be considered covered services.

9. Technical limitations are guided by guidelines for scanning from the Society of Cardiovascular Computed Tomography. Any substantial changes in published guidelines for scanning by this organization are to be considered as incorporated into this LCD by two years from the date of such publication.

Acceptable Levels of Competence for Performance and Interpretation

While it is not the Carrier's intention or jurisdiction to credential providers, Medicare does expect a satisfactory level of competence from providers who submit claims for services rendered. It is well known that substandard studies often lead to preventable repetition of studies and overutilization of services.

The acceptable levels of competence, as defined by the American College of Cardiology (ACC)/American Heart Association (AHA) Clinical Competence Statement on Cardiac Imaging with Computed Tomography and Magnetic Resonance (2007) and the American College of Radiology (ACR) Clinical Statement on Noninvasive Cardiac Imaging (2005), are outlined as follows:

For the technical portion, a recommended level of competence is fulfilled when the image acquisition is obtained under all of the following conditions:

a. The service is performed by a technologist who is credentialed by a nationally recognized credentialing body (American Registry of Radiologic Technologists or equivalent) and meets state licensure requirements where applicable. Technologists performing coronary CT should have received specialized training regarding coronary CT and the particular scanner.

b. When intravenous beta blockers, calcium channel blockers or nitrates are to be given prior to a coronary CTA, the test must be under the direct supervision of a certified registered nurse or health care provider and the indirect supervision of a physician, as required by local law, who is available to respond to medical emergencies. It is strongly recommended that the certified registered nurse, health care provider and physician be ACLS certified.

c. When contrast studies are performed, the supervising/responsible physician must be available for questions or concerns and the radiologic technologist or registered nurse administering the contrast must have appropriate training on the use and administration of contrast media as required by local law.

d. The study must be performed under the principles of **ALARA**. Radiation exposure must be monitored and reported as required by state law and accreditation agencies.

For the professional portion, a recommended level of competence is fulfilled when the interpretation is performed by a physician meeting the following requirements:

a. The physician should be in compliance with current standards of reporting, acquisition, nomenclature and training as provided by guidelines set forth by the ACC, ACR, SCCT and associated relevant professional societies. For example:

COCATS 4 Task Force 7: Training in Cardiovascular Computed Tomographic Imaging. J Am Coll Cardiol 2015;65(17):1810-21

Training, Competency, and Certification in Cardiac CT: A summary statement from the Society of Cardiovascular Computed Tomography. Journal of Cardiovascular Computed Tomography. 2011;5:279–285

2. Model LCD

SCCT guidelines for the interpretation and reporting of coronary CT angiography: A report of the Society of Cardiovascular Computed Tomography Guidelines Committee. Journal of Cardiovascular Computed Tomography 2014;8:342-358

ACR Practice Guideline for the Performance and Interpretation of Cardiac Computed Tomography (CT). J Am Coll Radiol 2006;3(9):677-85

ACCF/AHA Clinical Competence Statement on Cardiac Imaging With Computed Tomography and Magnetic Resonance. J Am Coll Cardiol 2005;46(2):383-402

SNMMI/ASNC/SCCT Guideline for Cardiac SPECT/CT and PET/CT 1.0; Journal of Nuclear Medicine August 1, 2013 vol. 54 no. 8 1485-1507.

b. The physician has appropriate medical staff privileges to interpret Coronary CT Angiograms at a hospital that participates in the Medicare program, and is actively training in cardiac CT (as in paragraph a). A grace period of 24 months should be allowed to acquire the necessary training.

Documentation Requirements

1. Each claim must be submitted with ICD-10-CM codes that reflect the condition of the patient, and indicate the reason(s) for which the service was performed. Claims submitted without ICD-10-CM codes will be returned.

2. The documentation of the study requires a formal written report, with clear identifying demographics, the name of the interpreting provider, the reason for the tests, an interpretive report and copies of images. Reporting should be standardized in accordance with published societal guideline statements (ie SCCT or CAD-RADs). The computerized data with image reconstruction should also be maintained.

3. Documentation must be available to Medicare upon request.

Compliance with the provisions in this policy is subject to monitoring by post payment data analysis and subsequent medical review.

Coding Information

Bill Type Codes:
Contractors may specify Bill Types to help providers identify those Bill Types typically used to report this service. Absence of a Bill Type does not guarantee that the policy does not apply to that Bill Type. Complete absence of all Bill Types indicates that coverage is not influenced by Bill Type and the policy should be assumed to apply equally to all claims.

999x	Not Applicable

Revenue Codes:
Contractors may specify Revenue Codes to help providers identify those Revenue Codes typically used to report this service. In most instances Revenue Codes are purely advisory; unless specified in the policy services reported under other Revenue Codes are equally subject to this coverage determination. Complete absence of all Revenue Codes indicates that coverage is not influenced by Revenue Code and the policy should be assumed to apply equally to all Revenue Codes.

99999	Not Applicable

CPT/HCPCS Codes

Category I CPT Codes for Cardiac CT and Coronary CTA took effect on January 01, 2010. Select the name of the procedure or service that accurately identifies the service performed. Do not select a CPT code that merely approximates the service provided.

These codes replace all CPT codes previously used for these procedures. The use of Category I CPT Codes is mandatory to report cardiac CT and coronary CTA.

CPT 75571 Computed tomography, heart without contrast material, with quantitative evaluation of coronary calcium

CPT 75572 Computed tomography, heart, with contrast material, for evaluation of cardiac structure and morphology (including 3D image post processing, assessment of cardiac function, and evaluation of venous structures, if performed)

CPT 75573 Computed tomography, heart, with contrast material, for evaluation of cardiac structure and morphology in the setting of congenital heart disease (including 3D image post processing, assessment of LV cardiac function, RV structure and function and evaluation of venous structures, if performed)

CPT 75574 Computed tomographic angiography, heart, coronary arteries and bypass grafts (when present), with contrast material, including 3D image post processing (including evaluation of cardiac structure and morphology, assessment of cardiac function, and evaluation of venous structures, if performed)

CPT 0501T Noninvasive estimated coronary fractional flow reserve (FFR) derived from coronary computed tomography angiography data using computation fluid dynamics physiologic simulation software analysis of functional data to assess the severity of coronary artery disease; data preparation and transmission, analysis of fluid dynamics and simulated maximal coronary hyperemia, generation of estimated FFR model, with anatomical data review in comparison with estimated FFR model to reconcile discordant data, interpretation and report.

CPT 0502T Data preparation and transmission

CPT 0503T Analysis of fluid dynamics and simulated maximal coronary hyperemia, and generation of estimated FFR model

CPT 0504T Anatomic data review in comparison with estimated FFR model to reconcile discordant data, interpretation and report

Only one code should be used, the code that best describes the reason for the test. 75571 is the code for a calcium score. 75574 is the code for a contrasted coronary CTA done to evaluate for coronary disease. Sometimes a patient may have a calcium scan done at the time of a coronary CTA. In this circumstance, only one code - 75574 - would be utilized. If a scan is done primarily for the evaluation of cardiac venous anatomy prior to an electrophysiological procedure such as pacer placement or pulmonary venous abalation the code is 75572. If on the same scan the patient was evaluated also for congenital heart disease (75573) and coronary disease (75574), these codes would not be used, but only the primary code for evaluation of cardiac venous anatomy. With respect to CT-FFR, 0501T should only be used when a single site performs the coronary CTA, processes, and reviews estimated FFR data to reconcile discordant data onsite. If CT-FFR data processing is to be performed off-site by an external vendor, then the technical component for data set preparation and transmission (0502T) and for analysis and estimation of CT-FFR (0503T) will be split and the professional component for final physician reconciliation of discordant data incorporating estimated FFR (0504T) should be used.

ICD-10 Codes that Support Medical Necessity

ICD-10-CM code listings may cover a range and include truncated codes. It is the provider's responsibility to avoid truncated codes by selecting a code(s) carried out to the highest level of specificity and selected from the ICD-10-CM book appropriate to the year in which the service was performed. It is not enough to link the procedure code to a correct, payable ICD-10-CM code. The diagnosis or clinical signs/symptoms must be present for the procedure to be paid.

I06.9, I06, I35.8, I35.9, I08, Q23.0, Q23.1, I35.9, I51.9	Aortic valve disorders, congenital, nonrheumatic, and rheumatic
I05.9, I34.-, Q89.9, I05.8, I05.0, I08.-, Q23.2, Q23.3	Mitral valve disorders, congenital, nonrheumatic, and rheumatic
I200	Intermediate coronary syndrome
I252	Old myocardial infarction
I208	Angina pectoris
I201	Angina decubitus
I208, I209	Other unspecified angina pectoris

I2510	Other forms of chronic ischemic heart disease
I2510	Coronary atherosclerosis
I2510	Coronary atherosclerosis, unspecified type of vessel, native or graft
I2510	Coronary atherosclerosis of native coronary artery
I25810	Coronary atherosclerosis of autologous vein bypass graft
I25810	Coronary atherosclerosis of nonautologous biological bypass graft
I25810	Coronary atherosclerosis of artery bypass graft
I25810	Coronary atherosclerosis of unspecified type of bypass graft
I25811	Coronary atherosclerosis of native coronary artery transplanted heart
I25812	Coronary atherosclerosis of bypass graft (artery) (vein) transplanted heart
I2541	Aneurysm of coronary vessels
I2542	Dissection of coronary artery
I255, I2589, I259	Other specified forms of chronic ischemic heart disease
I259	Chronic ischemic heart disease, unspecified
I423 I42.8	Cardiomyopathy Arrhythmogenic right ventricular dysplasia
I447	Other left bundle branch block
I4891, I4892, I4901, I4902	Atrial and Ventricular fibrillation
I509	Heart Failure
I509	Congestive heart failure
I501	Left heart failure
I5020	Systolic heart failure
I5030	Diastolic heart failure
I5040	Combined systolic and diastolic heart failure
I509	Heart failure, unspecified
I515	Myocardial degeneration
I517	Cardiomegaly
I970, I97110, I97130, I97190	Functional disturbance following cardiac surgery
I5181	Takotsubo syndrome

746.9 Q203, Q201, Q205, Q208, Q209, Q210, Q211, Q212, Q213, Q218, Q219, Q220, Q221, Q222, Q223, Q225, Q229, Q231, Q232, Q233, Q234, Q238, Q240, Q241, Q242, Q243, Q244, Q245, Q246, Q248, Q249	Congenital anomalies of the heart
Q250	Other congenital anomalies of circulatory system, patent ductus arteriosus
Q262	Total anomalous pulmonary venous connection
Q263	Partial anomalous pulmonary venous connection
Q260, Q261, Q268	Other anomalies of great veins
Q289	Unspecified anomaly of circulatory system
R42	Dizziness and giddiness
R55	Syncope and collapse
R0602	Shortness of breath
R079	Chest pain, unspecified
R072	Chest pain, precordial pain
R0782, R0789	Other chest pain
R9430	Cardiovascular, abnormal function study, unspecified
R9431 Q238, Q248 I5189	Cardiovascular, abnormal electrocardiogram Pericardial Disease Cardiac Mass

Diagnoses that Support Medical Necessity

All ICD-10-CM codes listed in this policy under ICD-10-CM Codes that Support Medical Necessity above.

ICD-10 Codes that DO NOT Support Medical Necessity

All ICD-10-CM codes not listed in this policy under ICD-10-CM Codes that Support Medical Necessity above.

ICD-10 Codes that DO NOT Support Medical Necessity Asterisk Explanation

Diagnoses that DO NOT Support Medical Necessity

All ICD-10-CM codes not listed in this policy under ICD-10-CM Codes that Support Medical Necessity above.

General Information

Documentation Requirements

The medical record must be made available to Medicare upon request.

It is not enough to link the procedure code to a correct, payable ICD-10-CM code. The diagnosis or clinical signs/symptoms must be

The HCPCS/CPT code(s) may be subject to Correct Coding Initiative (CCI) edits. This policy does not take precedence over CCI ed
specific applicable code combinations prior to billing Medicare.

The documentation of the study requires a formal written report, with clear identifying demographics, the name of the interpreting p
course of treatment will be altered based on the findings, an interpretive report and copies of images. The computerized data with im
document the extent and necessity of the services.

When the documentation does not meet the criteria for the service rendered or the documentation does not establish the medical nec
reasonable and necessary under Section 1862(a)(1) of the Social Security Act.

When requesting a written redetermination (formerly appeal), providers must include all relevant documentation with the request.

Appendices

Not applicable

Utilization Guidelines

The frequency of the studies exam must be reasonable and justified by the course of the patient's illness.

Sources of Information and Basis for Decision

This document was prepared by the Society of Cardiovascular Computed Tomography.

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Advisory Committee Meeting Notes

Start Date of Comment Period

End Date of Comment Period

2. Model LCD

Start Date of Notice Period

Revision History Number

Revision History Explanation

Reason for Change

Last Reviewed On Date

2. Model LCD

Related Documents

LCD Attachments