

MEDICAL POLICY



MEDICAL POLICY DETAILS	
Medical Policy Title	CORONARY CALCIUM SCORING
Policy Number	6.01.13
Category	Technology Assessment
Effective Date	10/15/99
Revised Date	02/21/02, 06/19/03, 05/19/04, 04/21/05, 02/16/06, 01/18/07, 01/17/08, 12/18/08, 01/21/10, 01/20/11, 01/19/12, 03/21/13, 01/16/14, 02/19/15, 03/17/16, 03/16/17, 02/15/18, 02/21/19
Product Disclaimer	<ul style="list-style-type: none"> • If a product excludes coverage for a service, it is not covered, and medical policy criteria do not apply. • If a commercial product (including an Essential Plan product) or a Medicaid product covers a specific service, medical policy criteria apply to the benefit. • If a Medicare product covers a specific service, and there is no national or local Medicare coverage decision for the service, medical policy criteria apply to the benefit.

POLICY STATEMENT

- I. Based on our criteria and review of the peer reviewed literature, coronary calcium scoring is considered **investigational** as a *screening* technique for asymptomatic patients.
- II. Based on our criteria and review of the peer reviewed literature, it is **medically appropriate** for patients who are candidates for cardiac computed tomographic angiography (CTA) to have calcium scoring performed as part of a CTA procedure, since pre-test knowledge of extensive calcification of the coronary segment in question may diminish the interpretive value of cardiac CTA.

POLICY GUIDELINES

- I. Coronary calcium scoring (CPT:75571) should not be reported with a CTA procedure (CPT:75572 and 75574).
- II. The Federal Employees Health Benefit Program (FEHBP/FEP) requires that procedures, devices or laboratory tests approved by the U.S. Food and Drug Administration (FDA) may not be considered investigational and thus these procedures, devices or laboratory tests may be assessed only on the basis of their medical necessity.

*Refer to Corporate Medical Policy #6.01.19 regarding Low-Dose Computed (LDCT) for Lung Cancer Screening.
Refer to Corporate Medical Policy #6.01.34 regarding Cardiac Computed Tomographic Angiography (Cardiac CTA): Contrast-Enhanced.*

DESCRIPTION

Atherosclerosis of the arteries is caused by a build-up of plaque that consists of fat, cholesterol, calcium and other substances. In the coronary arteries, the calcium deposits can be measured by Computed Tomography (CT) which is reported as a coronary artery calcification score (CAC). The CAC score can reflect coronary artery disease (CAD) severity and can be used to assess an individual's cardiovascular risk. The higher the CAC score, the more advanced the coronary artery disease and the higher the risk for major adverse cardiovascular risks (MACE). For individuals classified as intermediate risk based on established models (e.g., ATP or Framingham risk factors), the CT calcium score may allow the individual to be reclassified to high or low-risk. For those individuals reclassified as high-risk, treatment may be changed. A CAC of 400 or more is suggested as a reasonable definition of advanced CAD. Calcium scoring is considered an integral part of CTA to determine the risk-benefit of dye infusion.

The Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) summarizes the NCEP's updated clinical guidelines for cholesterol testing and management. The first step in management is the classification of an individual's

Medical Policy: CORONARY CALCIUM SCORING

Policy Number: 6.01.13

Page: 2 of 6

risk 10 year risk or probability for coronary artery disease. Age, gender, total cholesterol, HDL cholesterol, smoking status, and systolic blood pressure are a few of the factors that are taken into account when determining risk based on established models.

RATIONALE

Published clinical evidence does not establish a clear role for detection of coronary artery calcification by CT in coronary disease *risk stratification* in asymptomatic or symptomatic patients. Studies have not shown that clinical outcomes can be improved by the use of CT-based determination of coronary artery calcification in *screening* for coronary artery disease. There is little available data to determine whether the added predictive value of calcium scores, in addition to conventional risk factors for detection of coronary artery disease, improves health outcomes.

Some studies show similar relationships between coronary artery calcification and coronary disease events. These studies are qualitatively similar to previous studies, showing some independent predictive capability of coronary artery calcium score. However, the impact of this predictive information on clinical outcomes is not known. The essential issue still remains, how to properly integrate such predictive capability into a practice guideline which can be expected to improve patient outcomes.

A Scientific Statement was published in October 2006 by the American Heart Association Committee on Cardiovascular Imaging and Intervention, Council on Cardiovascular Radiology and Intervention, and Committee on Cardiac Imaging, Council on Clinical Cardiology: Assessment of Coronary Artery Disease by Cardiac Computed Tomography. This statement recommends coronary calcium assessment for: patients with chest pain, with equivocal or normal ECG's and negative cardiac enzyme studies; assessment of symptomatic patients, especially in the setting of equivocal treadmill or functional testing; and to measure atherosclerosis burden in clinically selected intermediate CD risk patients (e.g. those with a 10-20% Framingham 10-year risk assessment) to refine clinical risk prediction and to select patients for more aggressive target values for lipid-lowering therapies. This statement does not recommend coronary calcium assessment: to establish the presence of obstructive disease for subsequent revascularization; or serial imaging for assessment of progression of coronary calcification.

In the 2010 ACCF/AHA Guideline for Assessment of Cardiovascular Risk in Asymptomatic Adults; Iia recommendations for calcium scoring methods state that measurement of CAC is reasonable for cardiovascular risk assessment in asymptomatic adults at intermediate risk (10% to 20% 10-year risk). (Level of Evidence: B). The Iib recommendation states that measurement of CAC may be reasonable for cardiovascular risk assessment in persons at low to intermediate risk (6% to 10% 10-year risk). (Level of Evidence: B). No benefit was found for persons at low risk (less than 6% 10-year risk).

The 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol Iia recommendations for intermediate-risk adults or selected borderline-risk adults in whom a CAC score is measured for the purpose of making a treatment decision include the following: if the coronary calcium score is zero, it is reasonable to withhold statin therapy and reassess in 5 to 10 years, as long as higher risk conditions are absent (diabetes mellitus, family history of premature CHD, cigarette smoking). If CAC score is 1 to 99, it is reasonable to initiate statin therapy for patients greater than or equal to 55 years of age. If CAC score is 100 or higher or in the 75th percentile or higher, it is reasonable to initiate statin therapy.

The U.S. Preventive Services Task Force (USPSTF), October 2012, found there is insufficient evidence to determine the percentage of persons with an intermediate coronary heart disease (CHD) risk who would be reclassified by screening with nontraditional risk factors (e.g., high-sensitivity C-reactive protein (hs-CRP), ankle-brachial index (ABI), leukocyte count, fasting blood glucose level, periodontal disease, carotid intima-media thickness (carotid IMT), CAC score on electron-beam computed tomography (EBCT), homocysteine level, and lipoprotein(a) level. The evidence is insufficient to determine the percentage of intermediate-risk individuals who would be reclassified by screening with nontraditional risk factors, other than hs-CRP and ABI. Little evidence is available to determine the harms of using nontraditional risk factors in screening. Potential harms include lifelong use of medications without proven benefit and psychological and other harms from being misclassified in a higher risk category.

Medical Policy: CORONARY CALCIUM SCORING

Policy Number: 6.01.13

Page: 3 of 6

The U.S. Preventive Services Task Force (USPSTF), July 2018, found there is insufficient evidence to determine the balance of benefits and harms of adding the ankle-brachial index (ABI), high-sensitivity C-reactive protein (hsCRP) level, or CAC score to traditional risk assessment for cardiovascular disease (CVD) in asymptomatic adults to prevent CVD events. Harms of testing for CAC score include exposure to radiation and incidental findings on computed tomography of the chest, such as pulmonary nodules, that may lead to further invasive testing and procedures. Abnormal test results may lead to further testing, procedures, and lifelong medication use without proof of benefit but with expense and potential adverse effects for the patient. Psychological harms may result from reclassification into a higher-risk category for CVD events.

Pre-test knowledge of extensive calcification of the coronary segment in question may diminish the interpretive value of cardiac CT angiography.

The ACCF/SCCT/ACR/AHA/ASE/ASNC/NASCI/SCAI/SCMR/STS 2013 multimodality appropriate use criteria for the detection and risk assessment of stable ischemic heart disease states calcium scoring may be appropriate for asymptomatic individuals who have either intermediate and high global risk of coronary artery disease and uninterpretable ECG regardless of ability to exercise. The Task Force states calcium is rarely appropriate for symptomatic individuals regardless of CAD risk, ECG or exercise tolerance as well as for other cardiac conditions.

CODES

- Eligibility for reimbursement is based upon the benefits set forth in the member's subscriber contract.
- **CODES MAY NOT BE COVERED UNDER ALL CIRCUMSTANCES. PLEASE READ THE POLICY AND GUIDELINES STATEMENTS CAREFULLY.**
- Codes may not be all inclusive as the AMA and CMS code updates may occur more frequently than policy updates.

CPT Codes

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

Copyright © 2019 American Medical Association, Chicago, IL

HCPCS Codes

Code	Description
No specific codes	

ICD10 Codes

Code	Description
I25.10-I25.119	Atherosclerotic heart disease of native coronary artery (code range)

REFERENCES

*Agency for Healthcare Research and Quality. Screening for asymptomatic coronary artery disease: a systematic review for the U.S. Preventive Services Task Force. Systematic Evidence Review No. 22; 2003 Dec 8.

*Agency for Healthcare Research and Quality. Screening for asymptomatic coronary artery disease: using nontraditional risk factors in coronary heart disease risk assessment. Evidence Review No. 22. 2009 Oct.

Almoudi M, et al. Coronary artery calcium score: re-evaluation of its predictive value for coronary artery disease. World J Cardiol 2012 Oct 26;4(10):284-7.

*Berman DS, et al. Relationship between stress-induced myocardial ischemia and atherosclerosis measured by coronary calcium tomography. J Am Coll Cardiol 2004 Aug 18;44(4):923-30.

Medical Policy: CORONARY CALCIUM SCORING

Policy Number: 6.01.13

Page: 4 of 6

*Blaaha MJ, et al. Associations between C-reactive protein, coronary artery calcium, and cardiovascular events: implications for the JUPITER population from MESA, a population-based cohort study. Lancet 2011 Aug 20;378(9792):684-92.

BlueCross BlueShield Association. Computed tomography to detect coronary artery calcification. Medical Policy Reference Manual Policy #6.01.03. 2018 Sep 13.

*Budoff MJ, et al. Assessment of coronary artery disease by cardiac computed tomography, a scientific statement from the American Heart Association Committee on Cardiovascular Imaging and intervention, Council on Cardiovascular Radiology and intervention, and Committee on Cardiac Imaging, Council on Clinical Cardiology. Circ 2006 Oct 17;114(16).

*Budoff MJ, et al. Progression of coronary artery calcium predicts all-cause mortality. JACC Cardiovasc Imaging 2010 Dec;3(12):1229-36.

Budoff MJ, et al. Prognostic value of coronary artery calcium in the PROMISE study (Prospective Multicenter Imaging Study for Evaluation of Chest Pain). Circulation 2017 Nov 21;136(21):1993-2005.

*Cheng YJ, et al. Comparison of coronary artery calcium detected by electron beam tomography in patients with to those without symptomatic coronary heart disease. Am J Cardiol 2003 Sep 1;92(5):498-503.

Ferret BS, et al. Systematic review of guidelines on imaging of asymptomatic coronary artery disease. J Am Coll Cardiol 2011 Apr 12;57(15):1591-600.

Fernandez-Friera L, et al. Diagnostic value of coronary artery calcium scoring in low-intermediate risk patients evaluated in the emergency department for acute coronary syndrome. Am J Cardiol 2011 Jan;107(1):17-23.

Gepner AD, et al. Comparison of carotid plaque score and coronary artery calcium score for prediction cardiovascular disease events: the Multi-Ethnic Study of Atherosclerosis. J Am Heart Assoc. 2017 Feb 14;6(2). pii: e005179.

*Greenland P, et al. 2010 ACCF/AHA guideline for assessment of cardiovascular risk in asymptomatic adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2010; 56(25):e50-103.

Grundy SM, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol. 2018 Nov 8 [Epub ahead of print].

Greenland P, et al. Coronary calcium score and cardiovascular risk. J Am Coll Cardiol 2018;72:434-447.

*Joshi PH, et al. What is the role of calcium scoring in the age of coronary computed tomographic angiography? J Nucl Cardiol 2012 Dec;19(6):1226-1235.

Kelkar AA, et al. Long-term prognosis after coronary artery calcium scoring among low-intermediate risk women and men. Circ Cardiovasc Imaging 2016 Apr;9(4):e003742.

Knapper KT, et al. Coronary calcium scoring for long-term mortality prediction in patients with and without a family history of coronary disease. Heart 2016 Feb 1;102(3):204-8.

*Kondos GT, et al. Electron-beam tomography coronary artery calcium and cardiac events: a 37-month follow-up of 5,635 initially asymptomatic low- to intermediate-risk adults. Circ 2003 May 27;107(20):2571-6.

*Lee TH, et al. Direct to consumer marketing of high technology screening tests. NEJM 2002 Feb 14;346(7):529-31.

Nasir, K, et al. Implications of coronary artery calcium testing among statin candidates according to the American College of Cardiology/American Heart Association Cholesterol Management Guidelines. J Am Coll Cardiol 2015 Oct 13;66(15):1657-68.

*National Cholesterol Educational Program. Third report of the National Cholesterol Education Program (NCEP) Expert Panel on detection, evaluation, and treatment of high blood cholesterol in adults (Adult Treatment Panel III). NIH Publication No. 01-3670. May 2001.

Medical Policy: CORONARY CALCIUM SCORING

Policy Number: 6.01.13

Page: 5 of 6

McClelland RL, et al. 10-year coronary heart disease risk prediction using coronary artery calcium and traditional risk factors. J Am Coll Cardiol 2015;66(15):1643-53.

Mitchell JD, et al. Impact of Statins on Cardiovascular Outcomes Following Coronary Artery Calcium Scoring. J Am Coll Cardiol. 2018 Dec 25;72(25):3233-3242.

Mulders TA, et al. Coronary artery calcification score as tool for risk assessment among families with premature coronary artery disease. Atherosclerosis 2016 Feb;24:155-60.

*Okwuosa TM, et al. Distribution of coronary artery calcium score by Framingham 10-year risk strata in the MES (Multi-Ethnic Study of Atherosclerosis) potential implications for coronary risk assessment. J Am Coll Cardiol 2011 May 3;57(18):1838-45.

*O'Malley PG, et al. Impact of electron beam tomography, with or without case management, on motivation, behavioral change, and cardiovascular risk profile, a randomized controlled clinical trial. JAMA 2003 May 7;289(17):2215-23.

Orringer CE. The absence of coronary calcium: clinical and therapeutic implications for the clinical lipidologist. J Clin Lipidol 2010 Nov-Dec;4(6):472-7.

Paixao ARM, et al. Coronary artery calcium improves risk classification in younger populations. J Am Coll Cardiol 2015 Nov;8(11):1285-93.

Polak JF, et al. Carotid intima-media thickness score, positive of coronary artery calcium score, and incident coronary heart disease: the Multi-Ethnic Study of Atherosclerosis. J Am Heart Assoc 2017 Jan 21;6(1). pii:e004612.

Premartante M, et al. Using coronary calcification to exclude an ischemic etiology for cardiomyopathy: a validation study and systematic review. Int J Cardiol 2017 Mar 1;230:518-22.

*Rozanski A, et al. Impact of coronary artery calcium scanning on coronary risk factors and downstream testing. J Am Coll Cardiol 2011; 57(15):1622-32.

*Schroeder B, et al. Early atherosclerosis detection in asymptomatic patients: a comparison of carotid ultrasound, coronary artery calcium score, and coronary computed tomography angiography. Can J Cardiol 2013 Dec;29(12):1687-94.

*Taylor AJ, et al. ACCF/SCCT/ACR/AHA/ASE/ASNC/NASCI/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography. A report of 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. J Cardiovasc Comput Tomog 2010 Nov-Dec;49(6):407.e1-e33.

Tay SY, et al. The proper use of coronary calcium score and coronary computed tomography angiography for screening asymptomatic patients with cardiovascular risk factors. Sci Rep 2017 Dec 15;7(1):17653.

US Preventative Services Task Force Recommendation Statement: Risk Assessment for Cardiovascular Disease With Nontraditional Risk Factors. JAMA 2018;323(3):272-280.

*Wolk MJ, et al. ACCF/SCCT/ACR/AHA/ASE/ASNC/NASCI/SCAI/SCMR/STS 2013 multimodality appropriate use criteria for the detection and risk assessment of stable ischemic heart disease: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Failure Society of American, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and Society of Thoracic Surgeons. J Am Coll Cardiol 2014 Feb 4;63(4):380-406.

Yerramasu A, et al. Diagnostic role of coronary calcium scoring in the rapid access chest pain clinic: prospective evaluation of NICE guidance. Eur Heart J Cardiovasc Imaging 2014 Aug;15(8):886-82.

*Key Article

Medical Policy: CORONARY CALCIUM SCORING

Policy Number: 6.01.13

Page: 6 of 6

KEY WORDS

Calcium scoring, helical CT, multidetector row CT, ultrafast CT.

CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

There is currently a Local Coverage Determination (LCD) for Cardiac Computed Tomography (CCT) and Coronary Computed Tomography Angiography (CCTA). Please refer to the following LCD website for Medicare Members:

<https://www.cms.gov/medicare-coverage-database/details/lcd->

[details.aspx?LCDId=33559&ContrId=298&ver=14&ContrVer=1&CtrctrSelected=298*1&Ctrctr=298&s=41&DocType=2&bc=AAgAAAQAAAA&](https://www.cms.gov/medicare-coverage-database/details/lcd-details.aspx?LCDId=33559&ContrId=298&ver=14&ContrVer=1&CtrctrSelected=298*1&Ctrctr=298&s=41&DocType=2&bc=AAgAAAQAAAA&)