

Coronary Artery Calcium Scoring and Coronary Computed Tomography Angiography



Medical Coverage Policy

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Change Summary: Updated Coverage Determination, References

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Disclaimer

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Description

Coronary artery calcium (CAC) scoring is a noninvasive test that has been reported to detect the presence of subclinical coronary artery disease (CAD) by measuring the location, extent and characterization of calcium in the coronary arteries. Purportedly, the presence of CAC has been shown to be strongly correlated with the extent of atherosclerotic plaque as well as the severity of CAD.⁵⁷ Tests to determine CAC scoring include:

- Electron beam computed tomography (EBCT), also known as ultrafast computed tomography (UFCT) (**Refer to Coverage Limitations section**)
- Multi-slice CT (**Refer to Coverage Limitations section**)

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Coronary computed tomography angiography (CCTA) is a noninvasive imaging modality designed to be an alternative to invasive cardiac angiography (cardiac catheterization) for diagnosing CAD by visualizing the blood flow in arterial and venous vessels. The gold standard for diagnosing coronary artery stenosis is cardiac catheterization.

Automated software to work in conjunction with CCTA has been proposed to assist in quantifying and characterizing atherosclerotic plaques in an effort to determine severity of CAD. **(Refer to Coverage Limitations section)**

Fractional flow reserve (FFR) is the ratio between maximum blood flow in a narrowed coronary artery and the maximum blood flow in a normal artery, and has previously been attainable only from invasive cardiac angiography. The HeartFlow FFR_{CT} Analysis is an example of an FDA-approved software device that obtains this ratio (FFR_{CT}) noninvasively from previously acquired CCTA image data used to create three-dimensional (3D) images of the coronary arteries. Test results may assist cardiologists in determining the individual's need for intervention such as angioplasty or stenting.

The HeartFlow Planner utilizes a coronary anatomy model and physiology simulation created from the HeartFlow Analysis. Physicians are purportedly able to identify stenoses and virtually modify the vessel. For each treatment scenario, HeartFlow Planner will display the modified FFR_{CT} values in real time to enable physicians to understand the impact of the modeled treatment strategy. Common scenarios for using HeartFlow Planner include focal stenoses, serial stenoses, and borderline cases. **(Refer to Coverage Limitations section)**

Coverage Determination

Humana members may be eligible under the Plan for **CCTA** when the following criteria are met:

- All studies must be prescribed by a treating physician or a qualified nonphysician practitioner; **AND**
- Coverage of this modality for coronary artery assessment is limited to scanners that process thin, high resolution slices (1 mm or less). The multidetector row scanner must have at least 64 slices per rotation capability (collimations of at

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least 32x2 or 64x1) and with gantry rotation times of 420 milliseconds or less should be utilized; **AND**

- As an alternative to the following:
 - Invasive coronary angiography in individuals with hypertrophic cardiomyopathy who are at risk of coronary atherosclerosis before performing surgical myectomy; **OR**
 - Invasive coronary angiography in individuals with hypertrophic cardiomyopathy and symptoms or evidence of myocardial ischemia¹³; **OR**
 - Stress echocardiography or stress radionuclide scanning in [low to intermediate risk](#)* individuals with chest pain who have an equivocal or suspected inaccurate stress electrocardiogram (EKG); **OR**
- Assessment of right ventricular function and morphology in individuals with suspected arrhythmogenic right ventricular dysplasia (ARVD); **OR**
- Evaluation of the following:
 - Cardiac anatomy in preparation for electrophysiological procedures including electrophysiological testing, ablation and intervention; **OR**
 - Cause of chest pain or other symptoms that may be related to an angina equivalent (such as dyspnea) in individuals with prior bypass surgery or intracoronary artery stent placement; **OR**
 - Individuals with bicuspid aortic valve when morphology of the aortic sinuses, sinotabular junction or ascending aorta cannot be assessed accurately or fully by echocardiography¹²; **OR**
 - [Low to intermediate risk](#)* individuals with chest pain who are without known CAD in an outpatient setting (includes emergency department); **OR**
 - Native or prosthetic cardiac valvular mass and pericardial dysfunction and inadequate visualization with other noninvasive methods; **OR**

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- If stress echocardiography or stress radionuclide scanning is equivocal or indeterminate or has artifact; **OR**
- Left bundle branch block, congestive heart failure or myocardial systolic or diastolic dysfunction to exclude significant CAD as a cause of these presentations; **OR**
- Preoperative assessment of the aortic valve annulus prior to anticipated transcatheter aortic valve replacement (TAVR) (For information regarding coverage determination/limitations for TAVR, please refer to [Transcatheter Valve Procedures](#) Medical Coverage Policy); **OR**
- Suspected congenital anomalies of the coronary circulation

*Please refer to [CVD risk calculator](#) for additional information regarding cardiovascular risk stratification

Humana members may be eligible under the Plan for **FFR_{CT}** when the following criteria are met:

- Absence of [contraindications](#) listed in the Coverage Limitations section; **AND**
- Evaluation of individuals with a CCTA which has shown CAD with 30-90% stenosis

Note: The criteria for **CCTA** are not consistent with the Medicare National Coverage Policy, and therefore may not be applicable to Medicare members. Refer to the [CMS website](#) for additional information.

Coverage Limitations

Humana members may **NOT** be eligible under the Plan for **CAC scoring tests or HeartFlow Planner**. These are considered experimental/investigational as they are not identified as widely used and generally accepted for the proposed uses as reported in nationally recognized peer-reviewed medical literature published in the English language.

Humana members may **NOT** be eligible under the Plan for **CCTA** for any indications other than those listed above, including but may not be limited to:

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- The test is never covered for screening; **OR**
- The selection of the test should be made within the context of other testing modalities such as stress myocardial perfusion images or cardiac ultrasound results so that the resulting information facilitates the management decision and does not merely add a new layer of testing; **OR**
- If there is pretest knowledge of sufficiently extensive coronary artery calcification, which would diminish the interpretive value or the presence of arrhythmia; **OR**
- Individuals with an allergy or intolerance to iodinated contrast material; **OR**
- Use of software programs in conjunction with CCTA for automated quantification and characterization of coronary atherosclerotic plaque to assess severity of coronary disease

These are considered not medically necessary as defined in the member's individual certificate. Please refer to the member's individual certificate for the specific definition.

Humana members may **NOT** be eligible under the Plan for **FFR_{CT}** for any indications other than those listed above, including but may not be limited to, the following:

- CCTA does not demonstrate CAD with at least 30% stenosis; **OR**
- Use in individuals known to have the following:
 - A body mass index greater than 35; **OR**
 - Complex congenital heart disease; **OR**
 - Coronary vessels with excessive calcification; **OR**
 - Intracoronary metallic stents; **OR**
 - Prior coronary artery bypass graft (CABG) surgery; **OR**

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- Prior pacemaker or internal defibrillator lead implantation; **OR**
- Prosthetic heart valves; **OR**
- Recent prior myocardial infarction within 30 days; **OR**
- Require emergent procedures or have any evidence of ongoing or active clinical instability, including sudden onset acute chest pain, cardiogenic shock, unstable blood pressure with systolic blood pressure less than 90 mmHg, severe congestive heart failure ([New York Heart Association \[NYHA\] III or IV](#)) or acute pulmonary edema; **OR**
- Significant arrhythmias or tachycardia (uncontrolled by medication) that would preclude CT acquisition; **OR**
- Suspicion of acute coronary syndrome (ACS) where acute myocardial infarction or unstable angina have not been ruled out⁸⁴

These are considered experimental/investigational as they are not identified as widely used and generally accepted for any other proposed uses as reported in nationally recognized peer-reviewed medical literature published in the English language.

Background

Additional information about **CAD** may be found from the following websites:

- [American Heart Association](#)
- [National Library of Medicine](#)

Medical Alternatives

Alternatives to **CAC scoring, CCTA or FFR_{CT}** include, but may not be limited to, the following:

- Coronary angiogram
- Fractional flow reserve (as component of coronary angiogram)
- Stress echocardiography

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- Stress EKG
- Stress radionuclide myocardial perfusion imaging (SPECT or PET)

Physician consultation is advised to make an informed decision based on an individual's health needs.

Provider Claims Codes Any CPT, HCPCS or ICD codes listed on this medical coverage policy are for informational purposes only. Do not rely on the accuracy and inclusion of specific codes. Inclusion of a code does not guarantee coverage and or reimbursement for a service or procedure.

CPT® Code(s)	Description	Comments
75571	Computed tomography, heart, without contrast material, with quantitative evaluation of coronary calcium	Not Covered
75572	Computed tomography, heart, with contrast material, for evaluation of cardiac structure and morphology (including 3D image postprocessing, assessment of cardiac function, and evaluation of venous structures, if performed)	Not Covered if used to report CCTA performed as a screening test
75573	Computed tomography, heart, with contrast material, for evaluation of cardiac structure and morphology in the setting of congenital heart disease (including 3D image postprocessing, assessment of LV cardiac function, RV structure and function and evaluation of venous structures, if performed)	Not Covered if used to report CCTA performed as a screening test
75574	Computed tomographic angiography, 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 of venous structures, if performed)	Not Covered if used to report CCTA performed as a screening test
93799	Unlisted cardiovascular service or procedure	Not Covered if used to report any test outlined in Coverage Limitations section

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CPT® Category III Code(s)	Description	Comments
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	
0502T	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	
0503T	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; analysis of fluid dynamics and simulated maximal coronary hyperemia, and generation of estimated FFR model	
0504T	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; anatomical data review in comparison with estimated FFR model to reconcile discordant data, interpretation and report	

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0523T	Intraprocedural coronary fractional flow reserve (FFR) with 3D functional mapping of color-coded FFR values for the coronary tree, derived from coronary angiogram data, for real-time review and interpretation of possible atherosclerotic stenosis(es) intervention (List separately in addition to code for primary procedure)	
0623T	Automated quantification and characterization of coronary atherosclerotic plaque to assess severity of coronary disease, using data from coronary computed tomographic angiography; data preparation and transmission, computerized analysis of data, with review of computerized analysis output to reconcile discordant data, interpretation and report	Not Covered New Code Effective 01/01/2021
0624T	Automated quantification and characterization of coronary atherosclerotic plaque to assess severity of coronary disease, using data from coronary computed tomographic angiography; data preparation and transmission	Not Covered New Code Effective 01/01/2021
0625T	Automated quantification and characterization of coronary atherosclerotic plaque to assess severity of coronary disease, using data from coronary computed tomographic angiography; computerized analysis of data from coronary computed tomographic angiography	Not Covered New Code Effective 01/01/2021
0626T	Automated quantification and characterization of coronary atherosclerotic plaque to assess severity of coronary disease, using data from coronary computed tomographic angiography; review of computerized analysis output to reconcile discordant data, interpretation and report	Not Covered New Code Effective 01/01/2021
HCPCS Code(s)	Description	Comments
S8092	Electron beam computed tomography (also known as ultrafast CT, cine CT)	Not Covered

References

1. Agency for Healthcare Research and Quality (AHRQ). Comparative Effectiveness Review. Noninvasive technologies for the diagnosis of coronary

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artery disease in women. <http://www.ahrq.gov>. Published June 12, 2012. Accessed February 2, 2021.

2. Agency for Healthcare Research and Quality (AHRQ). Comparative Effectiveness Review. Noninvasive testing for coronary artery disease. <http://www.ahrq.gov>. Published March 29, 2016. Accessed February 2, 2021.
3. American Association for Thoracic Surgery (AATS). 2014 AATS guidelines for the prevention and management of perioperative atrial fibrillation and flutter for thoracic surgical procedures. <http://www.aats.org>. Published September 2014. Accessed February 4, 2021.
4. American Association of Clinical Endocrinologists (AACE). American Association of Clinical Endocrinologists and American College of Endocrinology clinical practice guidelines for developing a diabetes mellitus comprehensive care plan. <https://www.aace.com>. Published April 2015. Accessed February 4, 2021.
5. American Association of Clinical Endocrinologists (AACE). Guidelines for management of dyslipidemia and prevention of cardiovascular disease. <http://www.aace.com>. Published April 2017. Accessed February 4, 2021.
6. American College of Cardiology (ACC). 2010 ACCF/AHA guideline for assessment of cardiovascular risk in asymptomatic adults. <http://www.acc.org>. Published November 15, 2010. Accessed February 3, 2021.
7. American College of Cardiology (ACC). 2012 ACCF/AHA/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease. <http://www.acc.org>. Published December 18, 2012. Accessed February 3, 2021.
8. American College of Cardiology (ACC). 2014 ACCF/AHA/AATS/PCNA/SCAI/STS focused update of the guideline for the diagnosis and management of patients with stable ischemic heart disease. <http://www.acc.org>. Published November 2014. Accessed February 3, 2021.

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9. American College of Cardiology (ACC). 2014 AHA/ACC guideline for the management of patients with non-ST elevation acute coronary syndromes. <http://www.acc.org>. Published December 2014. Accessed February 3, 2021.
10. American College of Cardiology (ACC). 2014 AHA/ACC guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery. <http://www.acc.org>. Published December 9, 2014. Accessed February 3, 2021.
11. American College of Cardiology (ACC). 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease. <http://www.acc.org>. Published September 10, 2019. Accessed February 3, 2021.
12. American College of Cardiology (ACC). 2020 ACC/AHA guideline for the management of patients with valvular heart disease. <http://www.acc.org>. Published February 2, 2021. Accessed February 4, 2021.
13. American College of Cardiology (ACC). 2020 AHA/ACC guideline for the diagnosis and treatment of patients with hypertrophic cardiomyopathy. <http://www.acc.org>. Published December 22, 2020. Accessed February 4, 2021.
14. American College of Cardiology (ACC). ACC/AATS/AHA/ASE/ASNC/SCAI/SCCT/STS 2017 appropriate use criteria for coronary revascularization in patients with stable ischemic heart disease. <http://www.acc.org>. Published January 2017. Accessed February 3, 2021.
15. American College of Cardiology (ACC). ACCF/ACR/AHA/MASCI/SAIP/SCAI/SCCT 2010 expert consensus document on coronary computed tomographic angiography. <http://www.acc.org>. Published May 17, 2010. Accessed February 3, 2021.
16. American College of Cardiology (ACC). Practice Guideline. Management of patients with peripheral artery disease (compilation of 2005 and 2011 ACCF/AHA guideline recommendations). <http://www.acc.org>. Published April 2013. Accessed February 3, 2021.

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17. American College of Cardiology (ACC). Scientific Statement. Cardiac disease evaluation and management among kidney and liver transplantation candidates. <http://www.acc.org>. Published July 2012. Accessed February 3, 2021.
18. American College of Preventive Medicine (ACPM). Position Statement. Atherosclerotic cardiovascular disease screening in adults. <http://www.acpm.org>. Published 2011. Accessed February 4, 2021.
19. American College of Radiology (ACR). ACR Appropriateness Criteria. Acute nonspecific chest pain- low probability of coronary artery disease. <http://www.acr.org>. Published 1998. Updated 2020. Accessed February 4, 2021.
20. American College of Radiology (ACR). ACR Appropriateness Criteria. Asymptomatic patient at risk for coronary artery disease. <http://www.acr.org>. Published 2013. Updated 2020. Accessed February 4, 2021.
21. American College of Radiology (ACR). ACR Appropriateness Criteria. Chest pain –possible acute coronary syndrome. <http://www.acr.org>. Published 2019. Accessed February 4, 2021.
22. American College of Radiology (ACR). ACR Appropriateness Criteria. Chronic chest pain – high probability of coronary artery disease. <http://www.acr.org>. Published 2016. Accessed February 4, 2021.
23. American College of Radiology (ACR). ACR Appropriateness Criteria. Chronic chest pain-noncardiac etiology unlikely: low to intermediate probability of coronary artery disease. <http://www.acr.org>. Published 2018. Accessed February 4, 2021.
24. American College of Radiology (ACR). ACR Appropriateness Criteria. Dyspnea-suspected cardiac origin. <http://www.acr.org>. Published 2016. Accessed February 4, 2021.

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25. American College of Radiology (ACR). ACR Appropriateness Criteria. Infective endocarditis. <http://www.acr.org>. Published 1998. Updated 2020. Accessed February 4, 2021.
26. American College of Radiology (ACR). ACR Appropriateness Criteria. Known or suspected congenital heart disease in the adult. <http://www.acr.org>. Published 2016. Accessed February 4, 2021.
27. American College of Radiology (ACR). ACR Appropriateness Criteria. Nonischemic myocardial disease with clinical manifestations (ischemic cardiomyopathy already excluded). <http://www.acr.org>. Published 2013. Updated 2020. Accessed February 4, 2021.
28. American College of Radiology (ACR). ACR Appropriateness Criteria. Suspected new-onset and known nonacute heart failure. <http://www.acr.org>. Published 2018. Accessed February 4, 2021.
29. American College of Radiology (ACR). ACR-NASCI-SPR practice parameter for the performance and interpretation of cardiac computed tomography (CT). <http://www.acr.org>. Published 2014. Updated 2016. Accessed February 4, 2021.
30. American Diabetes Association (ADA). Cardiovascular disease and risk management: standards of medical care in diabetes – 2021. <http://www.diabetes.org>. Published January 2021. Accessed February 4, 2021.
31. American Heart Association (AHA). 2013 ACC/AHA guideline on the assessment of cardiovascular risk. <http://www.heart.org>. Published November 12, 2013. Accessed February 3, 2021.
32. American Heart Association (AHA). 2016 AHA/ACC guideline on the management of patients with lower extremity peripheral artery disease. <http://www.heart.org>. Published March 21, 2017. Accessed February 3, 2021.
33. American Heart Association (AHA). 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/

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ADA/AGS/APhA/ASPC/NLA/PCNA guideline on the management of blood cholesterol. <http://www.heart.org>. Published November 10, 2018. Accessed February 3, 2021.

34. American Heart Association (AHA). ACCF/AHA clinical expert consensus document on coronary artery calcium scoring by computed tomography in global cardiovascular risk assessment and in evaluation of patients with chest pain. <http://www.heart.org>. Published January 12, 2007. Accessed February 3, 2021.
35. American Heart Association (AHA). ACCF/SCCT/ACR/AHA/ASE/ASNC/NASCI/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography. <http://www.heart.org>. Published October 25, 2010. Accessed February 3, 2021.
36. American Heart Association (AHA). AHA Scientific Statement. Assessment of coronary artery disease by cardiac computed tomography. <http://www.heart.org>. Published October 6, 2006. Accessed February 3, 2021.
37. American Heart Association (AHA). AHA Scientific Statement. Diagnosis, treatment and long-term management of Kawasaki disease. <http://www.heart.org>. Published April 25, 2017. Accessed February 3, 2021.
38. American Heart Association (AHA). AHA Scientific Statement. Noninvasive coronary artery imaging: magnetic resonance angiography and multidetector computed tomography angiography. <http://www.heart.org>. Published June 27, 2008. Accessed February 3, 2021.
39. American Heart Association (AHA). AHA/ADA Scientific Statement. Update on prevention of cardiovascular disease in adults with type 2 diabetes mellitus in light of recent evidence. <http://www.heart.org>. Published August 5, 2015. Accessed February 3, 2021.
40. Centers for Medicare & Medicaid Services (CMS). National coverage determination (NCD) for computed tomography (220.1). <https://www.cms.gov>. Published March 12, 2008. Accessed February 5, 2021.

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41. ClinicalKey. Brahmanandam VM, Garcia MJ. Noninvasive evaluation: functional testing, multidetector computed tomography and stress cardiac MRI. In: Topol EJ, Teirstein PS. *Textbook of Interventional Cardiology*. 8th Ed. Elsevier; 2020:70-89.e4. <http://www.clinicalkey.com>. Accessed February 2, 2021.
42. ClinicalKey. Kramer CM, Beller GA, Hagspiel KD. Noninvasive cardiac imaging. In: Goldman L, Schafer AI. *Goldman-Cecil Medicine*. 26th Ed. Saunders; 2020:261-270.e2. <http://www.clinicalkey.com>. Accessed February 2, 2021.
43. ClinicalKey. Min JK. Cardiac computed tomography. In: Zipes DP, Libby P, Bonow RO, Mann DL, Tomaselli GF, Braunwald E. *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine*. 11th Ed. Elsevier; 2019:321-347. <http://www.clinicalkey.com>. Accessed February 2, 2021.
44. ClinicalKey. Riddell N. Coronary artery disease. In: Ferri FF. *Ferri's Clinical Advisor 2021*. Elsevier; 2021:392-400413-421.e1. <http://www.clinicalkey.com>. Accessed February 2, 2021.
45. ClinicalKey. Ridker PM, Libby P, Buring JE. Risk markers and the primary prevention of cardiovascular disease. In: Zipes DP, Libby P, Bonow RO, Mann DL, Tomaselli GF, Braunwald E. *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine*. 11th Ed. Elsevier; 2019:876-909. <http://www.clinicalkey.com>. Accessed February 2, 2021.
46. ClinicalKey. Tobin K, Eagle K. Angina pectoris. In: Kellerman RD, Rakel DP. *Conn's Current Therapy 2021*. Elsevier; 2021:93-99. <http://www.clinicalkey.com>. Accessed February 2, 2021.
47. ECRI Institute. Clinical Evidence Assessment. CAAS virtual fractional flow reserve software (Pie Medical Imaging) for evaluating coronary artery disease. <https://www.ecri.org>. Published November 3, 2020. Accessed February 1, 2021.
48. ECRI Institute. Clinical Evidence Assessment. FFRct software (HeartFlow, Inc.) for evaluating coronary artery disease. <https://www.ecri.org>. Published March 20, 2017. Updated December 22, 2020. Accessed February 1, 2021.

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

49. ECRI Institute. Health Technology Forecast. Coronary artery disease. <https://www.ecri.org>. Published December 2, 2003. Updated June 10, 2014. Accessed February 1, 2021.
50. ECRI Institute. Health Technology Forecast. Radiation-dose-reduction technologies for computed tomography systems. <https://www.ecri.org>. Published January 3, 2014. Accessed February 1, 2021.
51. ECRI Institute. Product Brief (ARCHIVED). Aquilion One Vision (Toshiba Corp.) for performing premium computed tomography. <https://www.ecri.org>. Published January 7, 2015. Accessed February 1, 2021.
52. ECRI Institute. Product Brief (ARCHIVED). Somatom Definition Flash (Siemens AG) for performing premium computed tomography. <https://www.ecri.org>. Published January 12, 2015. Accessed February 1, 2021.
53. Hayes, Inc. Health Technology Assessment. Noninvasive computed fractional flow reserve from computed tomography (FFRCT) for diagnosis of coronary artery disease. <https://evidence.hayesinc.com>. Published December 11, 2020. Accessed February 1, 2021.
54. Hayes, Inc. Medical Technology Directory. Coronary artery calcium scoring for risk assessment and stratification of coronary artery disease in asymptomatic adults. <https://evidence.hayesinc.com>. Published February 9, 2017. Updated May 3, 2020. Accessed February 1, 2021.
55. Hayes, Inc. Medical Technology Directory (ARCHIVED). Multislice computed tomography for detection of coronary artery disease. <https://evidence.hayesinc.com>. Published July 19, 2007. Updated July 15, 2011. Accessed February 1, 2021.
56. Hayes, Inc. Prognosis Overview (ARCHIVED). HeartFlow FFRct. <https://evidence.hayesinc.com>. Published December 2014. Accessed February 1, 2021.

Coronary Artery Calcium Scoring and Coronary Computed Tomography Angiography

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

57. MCG Health. Cardiac CT angiography. 24th edition. <http://www.mcg.com>. Accessed February 1, 2021.
58. MCG Health. Cardiac CT scan. 24th edition. <http://www.mcg.com>. Accessed February 1, 2021.
59. National Heart, Lung and Blood Institute (NHLBI). Assessing cardiovascular risk: systematic evidence review from the Risk Assessment Work Group, 2013. <http://www.nhlbi.nih.gov>. Published November 2013. Updated April 2014. Accessed February 4, 2021.
60. Society of Cardiovascular Computed Tomography (SCCT). 2016 SCCT/STR guidelines for coronary artery calcium scoring of noncontrast noncardiac chest CT scans: a report of the Society of Cardiovascular Computed Tomography and Society of Thoracic Radiology. <http://www.scct.org>. Published November 2016. Accessed February 4, 2021.
61. Society of Cardiovascular Computed Tomography (SCCT). Computed tomography imaging in patients with congenital heart disease part I: rationale and utility. <http://www.scct.org>. Published July 23, 2015. Accessed February 4, 2021.
62. Society of Cardiovascular Computed Tomography (SCCT). Expert Consensus Statement. Clinical indications for coronary artery calcium scoring in asymptomatic patients. <http://www.scct.org>. Published February 2017. Accessed February 4, 2021.
63. Society of Cardiovascular Computed Tomography (SCCT). SCCT guidelines for the performance and acquisition of coronary computed tomographic angiography: a report of the Society of Cardiovascular Computed Tomography Guidelines Committee endorsed by the North American Society for Cardiovascular Imaging (NASCI). <http://www.scct.org>. Published October 12, 2016. Accessed February 4, 2021.
64. Society of Cardiovascular Computed Tomography (SCCT). SCCT guidelines on the use of coronary computed tomography for patients presenting with acute

Coronary Artery Calcium Scoring and Coronary Computed Tomography Angiography

Effective Date: 02/24/2021

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

chest pain to the emergency department. <http://www.scct.org>. Published June 4, 2014. Accessed February 4, 2021.

65. The Endocrine Society (TES). Lipid management in patients with endocrine disorders: an Endocrine Society Clinical Practice Guideline. <http://www.endocrine.org>. Published September 17, 2020. Accessed February 4, 2021.
66. United States Preventive Services Task Force (USPSTF). Recommendation Statement. Risk assessment for cardiovascular disease with nontraditional risk factors. <http://www.uspreventiveservicestaskforce.org>. Published July 10, 2018. Accessed February 4, 2021.
67. UpToDate, Inc. Cardiac imaging with computed tomography and magnetic resonance in the adult. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
68. UpToDate, Inc. Cardiovascular disease risk assessment for primary prevention in adults: our approach. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
69. UpToDate, Inc. Clinical features and diagnosis of coronary heart disease in women. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
70. UpToDate, Inc. Clinical manifestations and diagnosis of coronary heart disease in end-stage renal disease (dialysis). <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
71. UpToDate, Inc. Clinical use of coronary computed tomographic angiography. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
72. UpToDate, Inc. Congenital and pediatric coronary artery abnormalities. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.

Coronary Artery Calcium Scoring and Coronary Computed Tomography Angiography

Effective Date: 02/24/2021

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

73. UpToDate, Inc. Coronary artery calcium scoring: image acquisition and clinical utilization. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
74. UpToDate, Inc. Coronary heart disease in systemic lupus erythematosus. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
75. UpToDate, Inc. Noninvasive testing and imaging for diagnosis in patients at low to intermediate risk for acute coronary syndrome. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
76. UpToDate, Inc. Principles of computed tomography of the chest. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
77. UpToDate, Inc. Radiation dose and risk of malignancy from cardiovascular imaging. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
78. UpToDate, Inc. Screening for coronary heart disease. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
79. UpToDate, Inc. Screening for coronary heart disease in patients with diabetes mellitus. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
80. UpToDate, Inc. Selecting the optimal cardiac stress test. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.
81. UpToDate, Inc. Vascular calcification in chronic kidney disease. <http://www.uptodate.com>. Updated December 2020. Accessed February 1, 2021.

Coronary Artery Calcium Scoring and Coronary Computed Tomography Angiography

Effective Date: 02/24/2021

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

82. US Department of Veterans Affairs (VA/DoD). VA/DoD clinical practice guideline for the management of dyslipidemia for cardiovascular risk reduction. <http://www.va.gov>. Published June 2020. Accessed February 4, 2021.
83. US Food & Drug Administration (FDA). 510(k) summary: Aquilion One Vision. <http://www.fda.gov>. Published November 7, 2013. Accessed April 14, 2016.
84. US Food & Drug Administration (FDA). 510(k) summary: Heart Flow FFR_{CT}. <http://www.fda.gov>. Published January 13, 2016. Accessed April 14, 2016.
85. US Food & Drug Administration (FDA). 510(k) summary: Somatom Definition Flash. <http://www.fda.gov>. Published November 24, 2015. Accessed April 14, 2016.

Coronary Artery Calcium Scoring and Coronary Computed Tomography Angiography

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Appendix A:

New York Heart Association (NYHA) Functional Classification System – A system developed to help physicians in clinical practice to evaluate the effects of cardiac symptoms on an individual's daily activities. The classifications are:

- Class I (mild) – No limitations on physical activity; ordinary physical activity does not cause undue fatigue, palpitation, dyspnea (shortness of breath) or anginal pain.
- Class II (mild) – Slight limitation of physical activity; comfortable at rest; ordinary physical activity results in fatigue, palpitation, dyspnea or anginal pain.
- Class III (moderate) – Marked limitation of physical activity; comfortable at rest; less than ordinary activity causes fatigue, palpitation, dyspnea or anginal pain.
- Class IV (severe) – Inability to carry on any physical activity without discomfort; symptoms of cardiac insufficiency may be present even at rest. If any physical activity is undertaken, discomfort increases.