

Patient Scenarios



Patient presentation, pretest likelihood of coronary artery disease (CAD), and risk for future cardiac events may influence decisions about which cardiac test is most appropriate for each patient.¹

Meet 4 hypothetical patients, each with different lifestyles, habits, health histories, and estimated 10-year risk for atherosclerotic cardiovascular disease (ASCVD). Learn about which cardiac test, if any, their doctors chose for them and what their outcomes were.

Click on a hypothetical patient below to explore their scenario.



Dave >>
65 years old

Chest symptoms upon exertion



Patrice >>
55 years old

Obese with family history of CAD



Antonio >>
47 years old

Mild, stress-related chest pain



Jill >>
50 years old

Needs surgery for an AAA

These patient profiles represent hypothetical patients. Images do not depict actual patients.

AAA = abdominal aortic aneurysm.



Dave

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Dave experiences chest tightness when he walks up stairs but notices no symptoms at rest. He takes medication for diabetes and hypertension. He has a history of mitral valve prolapse and esophageal stricture. Last year, he had a hip replacement.

Examination

Vital Signs

- Height: 5' 9"
- Weight: 245 lb
- Blood pressure: 146/98 mm Hg
- Heart rate: 60 bpm
- Total cholesterol: 300 mg/dL
- High-density lipoprotein (HDL): 50 mg/dL

Electrocardiogram (ECG)

- Right bundle-branch block (RBBB), ST-T wave abnormalities at rest, and ST changes on stress

Estimated Risk^{2,a}

- 10-year ASCVD risk: 40.9%

^aLifetime risk estimate only provided for individuals aged 20 to 59 years.

Assessment: Symptomatic, High Risk

The appropriate use criteria (AUC) rating of stress radionuclide imaging (RNI) for symptomatic patients with a high pretest probability risk of CAD is: APPROPRIATE.³

PET Test Results: Abnormal

Dave's positron emission tomography (PET) test showed a reversible defect in the anterior and apical walls in the left anterior descending artery. A coronary angiogram showed total occlusion of the left anterior descending artery.

Dave was scheduled for coronary revascularization.

bpm = beats per minute.

Patrice, 55-Year-Old Black Woman



Dave

65 years old

Chest symptoms upon exertion



Patrice

55 years old

Obese with family history of CAD



Antonio

47 years old

Mild, stress-related chest pain



Jill

50 years old

Needs surgery for an AAA



Patrice has a family history of CAD. She is obese and takes medication for hypertension, but says she never experiences chest pain or dyspnea. She used to be a heavy smoker, but says she now smokes just 1 pack a week.

Examination

Vital Signs

- Height: 5' 6"
- Weight: 232 lb
- Blood pressure: 141/95 mm Hg
- Heart rate: 85 bpm
- Total cholesterol: 240 mg/dL
- HDL: 40 mg/dL

ECG

- ST-segment abnormalities

Estimated Risk²

- 10-year ASCVD risk: 20.4%
- Lifetime ASCVD risk: 50%

Assessment: Symptomatic, High Risk

The AUC rating of stress RNI for asymptomatic patients with a high risk of a cardiac event is: MAY BE APPROPRIATE.³

SPECT MPI Test Results: Normal

Because of her family history of CAD, hypertension, and obesity, Patrice was referred for a single-photon emission computed tomography myocardial perfusion imaging (SPECT MPI) test. Results showed no inducible ischemia or perfusion abnormality.

However, due to her elevated CAD risk, Patrice was prescribed statin therapy and lifestyle modifications.

Antonio, 47-Year-Old Hispanic Man



Dave

65 years old



Chest symptoms upon exertion



Patrice

55 years old



Obese with family history of CAD



Antonio

47 years old



Mild, stress-related chest pain



Jill

50 years old



Needs surgery for an AAA

Antonio experiences slight stress-related chest pain. For the past 3 years, he has been taking medication to control his hypertension. He is moderately physically active and says he eats a lot of red meat.

Examination

Vital Signs

- Height: 5' 11"
- Weight: 220 lb
- Blood pressure: 124/82 mm Hg
- Heart rate: 65 bpm
- Total cholesterol: 202 mg/dL
- HDL: 56 mg/dL

ECG

- ST-segment abnormalities

Estimated Risk²

- 10-year ASCVD risk: 2.5%
- Lifetime ASCVD risk: 50%

Assessment: Symptomatic, Low Risk

The AUC rating of stress RNI for symptomatic patients with a low risk of CAD is: RARELY APPROPRIATE.³

No Further Testing

Because Antonio is at low risk for CAD and a nuclear stress test would not have been appropriate for him, he was advised to make lifestyle modifications.



Dave

65 years old

Chest symptoms upon exertion



Patrice

55 years old

Obese with family history of CAD



Antonio

47 years old

Mild, stress-related chest pain



Jill

50 years old

Needs surgery for an AAA



Jill is scheduled for AAA surgery. She does not experience any pain, but she is sedentary and gets winded after climbing 2 flights of stairs. She is also a smoker with diabetes.

Examination

Vital Signs

- Height: 5' 8"
- Weight: 175 lb
- Blood pressure: 135/80 mm Hg
- Heart rate: 82 bpm
- Total cholesterol: 205 mg/dL
- HDL: 36 mg/dL

Heart

- Regular rate and rhythm, no murmur

ECG

- Some baseline abnormalities

Estimated Risk²

- 10-year ASCVD risk: 12.8%
- Lifetime ASCVD risk: 50%

Assessment: Poor Functional Capacity Prior to Vascular Surgery

The AUC rating of echocardiogram (echo) for a patient with poor functional capacity prior to vascular surgery is: APPROPRIATE.³

Echo Results: Abnormal

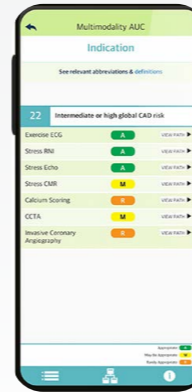
Jill's stress echo test results showed an ejection fraction of 30% and right ventricular systolic pressure of 63 mm Hg. Minor mitral regurgitation was detected, so she was sent for stress RNI prior to her surgery.



ASCVD Risk Estimator Plus

The American College of Cardiology Foundation's (ACCF) [ASCVD Risk Estimator Plus](#) is one of several risk score calculators that estimate a patient's risk for ASCVD. The calculator takes into account several factors including age, sex, race, cholesterol levels, blood pressure, and whether the patient has diabetes, is taking medication for hypertension, or is a smoker to provide estimates of the 10-year or lifetime percentage risk for ASCVD.²

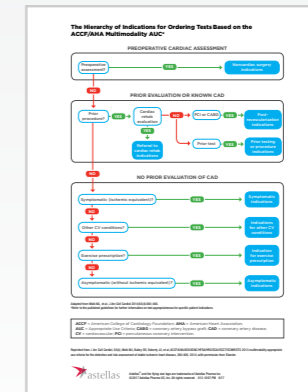
This calculator is meant to help inform decision-making but is not intended to replace clinical judgment.⁴



Multimodality AUC App

Download the Multimodality AUC App. Based on the ACCF/AHA Multimodality AUC, this app allows providers to review the appropriateness of 7 cardiac testing modalities for the detection and risk assessment of stable ischemic heart disease.

The Multimodality AUC App is not intended to diagnose, treat, or prevent any disease or condition. It is also not a qualified Clinical Decision Support Mechanism (CDSM). Thus, the Multimodality AUC App must not be used to try and comply with the Centers for Medicare & Medicaid Services (CMS) AUC program requirements. The Multimodality AUC App is for informational purposes only.



Hierarchy of Indications Flowchart

Use this flowchart for patients who may have multiple clinical indications.

Based on the ACCF/American Heart Association (AHA) Multimodality AUC, this flowchart places indications into a hierarchy to help stratify test appropriateness.³

[Preview and Download »](#)

1. Fihn SD, Gardin JM, Abrams H, et al. 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS guideline for the diagnosis and management of patients with stable ischemic heart disease. J Am Coll Cardiol 2012;60(24):e44-164. Erratum in: J Am Coll Cardiol 2014;63(15):1588-90.
2. American College of Cardiology. Welcome to the ASCVD Risk Estimator Plus. <https://tools.acc.org/ascvd-risk-estimator-plus/#!/calculate/estimate>. Accessed 03-18-2022.
3. Wolk MJ, Bailey SR, Doherty JU, et al. ACCF/AHA/ASE/ASNC/HFSA/HRS/SCAI/SCCT/SCMR/STS 2013 multimodality appropriate use criteria for the detection and risk assessment of stable ischemic heart disease. J Am Coll Cardiol 2014;63(4):380-406.
4. American College of Cardiology. ASCVD risk estimator plus: About the app (10-2021). <https://tools.acc.org/ascvd-risk-estimator-plus/#!/content/about>. Accessed 01-26-2022.

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