



# Appropriate Use Criteria

*Based on the 2011 ASE/ACC AUC Guidelines*

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## -----TRANSTHORACIC ECHOCARDIOGRAPHY AUC-----

- Evaluation of Ischemic Equivalent (Nonacute) With Stress Echocardiography - A (7): Low pretest probability of CAD - ECG interpretable and able to exercise
- Evaluation of Ischemic Equivalent (Nonacute) With Stress Echocardiography - A (7): Low pretest probability of CAD - ECG uninterpretable or unable to exercise
- Evaluation of Ischemic Equivalent (Nonacute) With Stress Echocardiography - A (7): Intermediate pretest probability of CAD - ECG interpretable and able to exercise
- Evaluation of Ischemic Equivalent (Nonacute) With Stress Echocardiography - A (9): Intermediate pretest probability of CAD - ECG uninterpretable or unable to exercise
- Evaluation of Ischemic Equivalent (Nonacute) With Stress Echocardiography - A (7): High pretest probability of CAD - Regardless of ECG interpretability and ability to exercise
- Acute Chest Pain with Stress Echocardiography - A (7): Possible ACS, ECG: no ischemic changes or with LBBB or electronically paced ventricular rhythm, Low-risk TIMI score, Negative troponin levels
- Acute Chest Pain with Stress Echocardiography - A (7): Possible ACS, ECG: no ischemic changes or with LBBB or electronically paced ventricular rhythm, Low-risk TIMI score, Peak troponin: borderline, equivocal, minimally elevated
- Acute Chest Pain with Stress Echocardiography - A (7): Possible ACS, ECG: no ischemic changes or with LBBB or electronically paced ventricular rhythm, High-risk TIMI score, Negative troponin levels
- Acute Chest Pain with Stress Echocardiography - A (7): Possible ACS, ECG: no ischemic changes or with LBBB or electronically paced ventricular rhythm, High-risk TIMI score, Peak troponin: borderline, equivocal, minimally elevated
- Acute Chest Pain with Stress Echocardiography - A (7): Definite ACS
- General Patient Populations with Stress Echocardiography for detection of CAD/Risk assessment: Asymptomatic (without ischemic equivalent) - I (1): Low global CAD risk
- General Patient Populations with Stress Echocardiography for detection of CAD/Risk assessment: Asymptomatic (without ischemic equivalent) - I (2): Intermediate global CAD risk - ECG interpretable
- General Patient Populations with Stress Echocardiography for detection of CAD/Risk assessment: Asymptomatic (without ischemic equivalent) - U (5): Intermediate global CAD risk - ECG uninterpretable
- General Patient Populations with Stress Echocardiography for detection of CAD/Risk assessment: Asymptomatic (without ischemic equivalent) - U (5): High global CAD risk
- New-Onset or Newly Diagnosed HF or LV Systolic Dysfunction with Stress Echocardiography for detection of CAD/Risk assessment: Asymptomatic (without ischemic equivalent) in patient populations with defined comorbidities - A (7): No prior CAD evaluation and no planned coronary angiography
- Arrhythmias with Stress Echocardiography - A (7): Sustained VT



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- Arrhythmias with Stress Echocardiography - A (7): Frequent PVC's, exercise induced VT, or non-sustained VT
- Arrhythmias with Stress Echocardiography - I (3): Infrequent PVC's
- Arrhythmias with Stress Echocardiography - U (6): New-onset atrial fibrillation
- Syncope with Stress Echocardiography - I (3): Low global CAD risk
- Syncope with Stress Echocardiography - A (7): Intermediate or high global CAD risk
- Elevated Troponin with Stress Echocardiography - A (7): Troponin elevation without symptoms or additional evidence of ACS
- Asymptomatic: Prior Evidence of Subclinical Disease with Stress Echocardiography -I (2): Coronary calcium Agatston score <100
- Asymptomatic: Prior Evidence of Subclinical Disease with Stress Echocardiography - U (5): Low to intermediate global CAD risk - Coronary calcium Agatston score between 100 and 400
- Asymptomatic: Prior Evidence of Subclinical Disease with Stress Echocardiography - U (6): High global CAD risk - Coronary calcium Agatston score between 100 and 400
- Asymptomatic: Prior Evidence of Subclinical Disease With Stress Echocardiography - U(5): Coronary calcium Agatston score >400
- Asymptomatic: Prior Evidence of Subclinical Disease With Stress Echocardiography - U(5): Abnormal carotid intimal medial thickness ( $\geq 0.9$  mm and/or the presence of plaque encroaching into the arterial lumen)
- Coronary Angiography (Invasive or Noninvasive) With Stress Echocardiography - A (8): Coronary artery stenosis of unclear significance
- Asymptomatic or Stable Symptoms with Stress Echocardiography - Normal Prior Stress Imaging Study - I (1): Low global CAD risk - Last stress imaging study <2 y ago
- Asymptomatic or Stable Symptoms with Stress Echocardiography - Normal Prior Stress Imaging Study - I (2): Low global CAD risk - Last stress imaging study  $\geq 2$  y ago
- Asymptomatic or Stable Symptoms with Stress Echocardiography - Normal Prior Stress Imaging Study - I (2): Intermediate to high global CAD risk - Last stress imaging study <2 y ago
- Asymptomatic or Stable Symptoms with Stress Echocardiography - Normal Prior Stress Imaging Study - U (4): Intermediate to high global CAD risk - Last stress imaging study  $\geq 2$  y ago
- Asymptomatic or Stable Symptoms with Stress Echocardiography Abnormal Coronary Angiography or Abnormal Prior Stress Study, No Prior Revascularization - I (3): Known CAD on coronary angiography or prior abnormal stress imaging study - Last stress imaging study <2 y ago



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- Asymptomatic or Stable Symptoms with Stress Echocardiography Abnormal Coronary Angiography or Abnormal Prior Stress Study, No Prior Revascularization - U (5): Known CAD on coronary angiography or prior abnormal stress imaging study - Last stress imaging study  $\geq$  2 y ago
- Treadmill ECG Stress Test with Stress Echocardiography - I (1): Low-risk treadmill score (e.g., Duke)
- Treadmill ECG Stress Test with Stress Echocardiography - A (7): Intermediate-risk treadmill score (e.g., Duke)
- Treadmill ECG Stress Test with Stress Echocardiography - A (7): High-risk treadmill score (e.g., Duke)
- New or Worsening Symptoms with Stress Echocardiography - A (7): Abnormal coronary angiography or abnormal prior stress imaging study
- New or Worsening Symptoms with Stress Echocardiography - U (6): Normal coronary angiography or normal prior stress imaging study
- Prior Noninvasive Evaluation with Stress Echocardiography - A (8): Equivocal, borderline, or discordant stress testing where obstructive CAD remains a concern
- Low-Risk Surgery with Stress Echocardiography for risk assessment: Perioperative evaluation for noncardiac surgery without active cardiac conditions - I (1): Perioperative evaluation for risk assessment
- Intermediate-Risk Surgery with Stress Echocardiography - I (3): Moderate to good functional capacity ( $\geq$  4 METs)
- Intermediate-Risk Surgery with Stress Echocardiography - I (2): No clinical risk factors
- Intermediate-Risk Surgery with Stress Echocardiography - I (6):  $\geq$  1 clinical risk factor, Poor or unknown functional capacity ( $<$ 4 METs)
- Intermediate-Risk Surgery with Stress Echocardiography - I (1): Asymptomatic  $<$ 1 y post normal catheterization, noninvasive test, or previous revascularization
- Vascular Surgery with Stress Echocardiography - I (3): Moderate to good functional capacity ( $\geq$  4 METs)
- Vascular Surgery with Stress Echocardiography - I (2): No clinical risk factors
- Vascular Surgery with Stress Echocardiography - A (7):  $\geq$  1 clinical risk factor, Poor or unknown functional capacity ( $<$ 4 METs)
- Vascular Surgery with Stress Echocardiography - I (2): Asymptomatic  $<$ 1 y post normal catheterization, noninvasive test, or previous revascularization
- STEMI With Stress Echocardiography for risk assessment: Within 3 months of an ACS - I (2): Primary PCI with complete revascularization, No recurrent symptoms
- STEMI With Stress Echocardiography for risk assessment: Within 3 months of an ACS - A (7): Hemodynamically stable, no recurrent chest pain symptoms, or no signs of HF; To evaluate for inducible ischemia; No prior coronary angiography since the index event



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- STEMI With Stress Echocardiography for risk assessment: Within 3 months of an ACS - I (1): Hemodynamically unstable, signs of cardiogenic shock, or mechanical complications
- UA/NSTEMI With Stress Echocardiography - A (8): Hemodynamically stable, no recurrent chest pain symptoms, or no signs of HF; To evaluate for inducible ischemia; No prior coronary angiography since the index event
- ACS—Asymptomatic Postrevascularization (PCI or CABG) With Stress Echocardiography - I (1): Prior to hospital discharge in a patient who has been adequately revascularized
- Cardiac Rehabilitation with Stress Echocardiography - I (3): Prior to initiation of cardiac rehabilitation (as a stand-alone indication)
- Symptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG) - A (8): Ischemic equivalent
- Asymptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG) - A (7): Incomplete revascularization; Additional revascularization feasible
- Asymptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG) - I (2): <5 y after CABG
- Asymptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG) - U (6):  $\geq$  5 y after CABG
- Asymptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG) - I (2): <2 y after PCI
- Asymptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG) - U (5):  $\geq$  2 y after PCI
- Cardiac Rehabilitation with Stress Echocardiography -I (3): Prior to initiation of cardiac rehabilitation (as a stand-alone indication)
- Ischemic Cardiomyopathy/Assessment of Viability with Stress Echocardiography - A (8): Known moderate or severe LV dysfunction; Patient eligible for revascularization; Use of dobutamine stress only
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - I (2): Mild mitral stenosis
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - U (5): Moderate mitral stenosis
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - A (7): Severe mitral stenosis
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - I (3): Mild aortic stenosis



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- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - U (6): Moderate aortic stenosis
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - U (5): Severe aortic stenosis
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - I (2): Mild mitral regurgitation
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - U (5): Moderate mitral regurgitation
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - A (7): Severe mitral regurgitation; LV size and function not meeting surgical criteria
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - I (2): Mild aortic regurgitation
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - U (5): Moderate aortic regurgitation
- Chronic Valvular Disease—Asymptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) - A (7): Severe aortic regurgitation; LV size and function not meeting surgical criteria
- Chronic Valvular Disease—Symptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) -U (5): Mild mitral stenosis
- Chronic Valvular Disease—Symptomatic with Stress Echocardiography for hemodynamics (includes Doppler during stress) -A (7): Moderate mitral stenosis
- Symptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG)- I (3): Severe mitral stenosis
- Symptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG) - I (1): Severe aortic stenosis
- Symptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG)- A (8): Evaluation of equivocal aortic stenosis; Evidence of low cardiac output or LV systolic dysfunction (“low gradient aortic stenosis”); Use of dobutamine only
- Symptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG)- U (4): Mild mitral regurgitation
- Symptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG)- A (7): Moderate mitral regurgitation



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- Symptomatic with Stress Echocardiography for risk assessment: Postrevascularization (PCI or CABG)- I (3): Severe mitral regurgitation; Severe LV enlargement or LV systolic dysfunction
- Acute Valvular Disease with Stress Echocardiography for hemodynamics (includes Doppler during stress)- I (3): Acute moderate or severe mitral or aortic regurgitation
- Pulmonary Hypertension with Stress Echocardiography for hemodynamics (includes Doppler during stress) - U (5): Suspected pulmonary artery hypertension; Normal or borderline elevated estimated right ventricular systolic pressure on resting echocardiographic
- Pulmonary Hypertension with Stress Echocardiography for hemodynamics (includes Doppler during stress) -I (3): Routine evaluation of patients with known resting pulmonary hypertension
- Pulmonary Hypertension with Stress Echocardiography for hemodynamics (includes Doppler during stress)-U (5): Re-evaluation of patient with exercise-induced pulmonary hypertension to evaluate response to therapy