

ECG, Echocardiography, or MPI for Cardiac Screening: Guidance from the ACP

Key Points for Practice

- Cardiac disease screening using resting or stress ECG, stress echocardiography, or stress MPI should not be performed in low-risk adults without symptoms.
- Emphasis of care should be on reducing the factors that affect a patient's cardiovascular risk and promoting exercise.

From the AFP Editors

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In the United States, one in three deaths is from cardiovascular disease; coronary heart disease is the leading cause of death. Screening for coronary heart disease can be performed with resting or stress electrocardiography (ECG), stress echocardiography, or myocardial perfusion imaging (MPI). This guideline from the American College of Physicians (ACP) provides recommendations on cardiac screening using these modalities.

Recommendations and Practice

Although the benefit of cardiac screening in adults at low-risk of coronary heart disease is questionable, it is often still performed. The American Heart Association, among other organizations, does not recommend performing ECG for cardiac screening in low-risk adults, and the U.S. Preventive Services Task Force specifically recommends against it. With regard to stress echocardiography and MPI, the American College of Cardiology Foundation and the American Heart Association recommend against using either to evaluate cardiovascular risk in adults at low risk without symptoms. Despite this, a study of national data determined that the use of ECG for screening purposes at general physician office visits increased from 6.1% in 1999 to 11.3% in 2009, and a systematic review concluded that the rates of overuse were 9.2% for ECG and 3% to 52% for cardiac stress tests. Additionally, based on data from three studies, approximately 15% of MPI and stress echocardiography fail to meet criteria for appropriate use.

Benefits and Harms

Benefits of screening with imaging include detecting coronary heart disease that has not yet been diagnosed, and determining if a person has a higher risk of a cardiovascular event, such as myocardial infarction or arrhythmia.

Harms associated with stress tests include sudden death or an event in which a patient needs to be hospitalized; however, the risk is minimal, estimated at one per 10,000 exercise ECGs performed. Pharmacologic agents used to induce stress can have adverse effects, such as hypotension or myocardial ischemia, but the rates of serious effects appear to be low.

There are also harms stemming from false-positive results, such as anxiety and unnecessary treatments or follow-up tests, and from true-positive results, such as disease labeling and health insurance issues (e.g., increased cost). Downstream harms are also possible from follow-up tests and treatments.

High-Value Care Recommendations

Cardiac disease screening using resting or stress ECG, stress echocardiography, or stress MPI should not be performed in low-risk adults without symptoms. Instead, the focus should be on decreasing each patient's risk by addressing adjustable factors that increase the patient's risk (e.g., smoking, diabetes mellitus, being overweight) and promoting exercise. Global risk calculators such as the Framingham Risk Score (<http://cvdrisk.nhlbi.nih.gov/calculator.asp>), SCORE (www.heartscore.org/Pages/welcome.aspx), and PROCAM (www.myhealthywaist.org/evaluating-cmr/assessing-cvd-risk-traditional-approaches/procam/page/5/index.html) can be used to help assess risk for heart disease.

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