

Putting Prevention into Practice

An Evidence-Based Approach

Screening for Coronary Heart Disease with Electrocardiography

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► See related U.S.
Preventive Services
Task Force Recommen-
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<http://www.aafp.org/afp/2014/0115/od1.html>.

CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 78.

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The case study and answers to the following questions are based on the recommendations of the U.S. Preventive Services Task Force (USPSTF), an independent panel of experts in primary care and prevention that systematically reviews the evidence of effectiveness and develops recommendations for clinical preventive services. More detailed information on this subject is available in the USPSTF Recommendation Statement and the evidence synthesis on the USPSTF website (<http://www.uspreventiveservicestaskforce.org>). The practice recommendations in this activity are available at <http://www.uspreventiveservicestaskforce.org/uspstf/uspsacad.htm>.

A collection of Putting Prevention into Practice quizzes published in *AFP* is available at <http://www.aafp.org/afp/ppip>.

Case Study

A 60-year-old man presents to your office for routine follow-up and medication refills for hyperlipidemia and hypertension. His blood pressure is 130/80 mm Hg, and his fasting lipid panel reveals a total cholesterol level of 220 mg per dL and a high-density lipoprotein cholesterol level of 35 mg per dL. He does not smoke. His brother recently died from a myocardial infarction, and he inquires if he should undergo screening for coronary heart disease (CHD).

Case Study Questions

1. According to the U.S. Preventive Services Task Force (USPSTF), which one of the following statements about screening for CHD with electrocardiography (ECG) is correct?
 - A. Screening for CHD with resting or exercise ECG in asymptomatic, low-risk adults improves risk stratification for CHD and ultimately reduces CHD-related events.
 - B. Screen-detected abnormalities on resting and exercise ECG in asymptomatic, low-risk adults are not associated with an increased risk of a serious CHD event.
 - C. The benefits of screening for CHD with resting or exercise ECG in asymptomatic, low-risk adults outweigh the harms.
 - D. Performing a baseline ECG in asymptomatic, low-risk adults to compare with future ECG findings is considered screening and is not recommended.
2. Which of the following statements about CHD risk assessment are correct?
 - A. Death may be the first manifestation of CHD.
 - B. CHD risk factors include older age, male sex, high blood pressure, and smoking.
 - C. The Framingham Adult Treatment Panel (ATP) III CHD risk calculator performs well for the U.S. population.
 - D. Asymptomatic adults with a 10-year risk of CHD of 20% to 30% are considered intermediate risk.
3. Based on a CHD risk calculator, this patient is determined to be at intermediate risk of a CHD event. Which one of the following does the USPSTF recommend for this patient?
 - A. There is not enough evidence to assess whether screening for CHD with resting or exercise ECG would benefit this patient.
 - B. Screen for CHD with exercise ECG before starting an exercise program. The benefits of screening clearly outweigh the harms in this patient.
 - C. Screen for CHD with resting or exercise ECG. There is no potential for serious harm from further invasive confirmatory testing and treatments.
 - D. Screen for CHD with resting or exercise ECG. Findings will guide management if he is found to be at increased risk of CHD.

Answers appear on the following page.

Answers

1. The correct answer is D. The USPSTF recommends against screening (including performing baseline ECG to compare with future findings) for CHD events with resting or exercise ECG in asymptomatic adults who are considered low risk (D recommendation). The USPSTF found adequate evidence that screening with resting or exercise ECG in a low-risk population (beyond that obtained with conventional CHD risk factors) is highly unlikely to result in changes in risk stratification that would prompt interventions and ultimately reduce CHD-related events. Although resting and exercise ECG abnormalities may be associated with an increased risk of CHD events, such as myocardial infarction and death, the USPSTF found that the potential harms of screening in low-risk adults equal or exceed the potential benefits. ECG screening can lead to invasive confirmatory testing and treatments that have the potential for serious harm. Studies report that up to 3% of asymptomatic persons with an abnormal exercise ECG result undergo angiography, and up to 0.5% undergo revascularization, even though revascularization has not been shown to reduce CHD events in asymptomatic persons.

2. The correct answers are A, B, and C. CHD is the leading cause of death in the United States in men and women, accounting for nearly 16% of all deaths each year. More than 1 million Americans have a nonfatal or fatal myocardial infarction or sudden death from CHD annually. For some persons, these events are the first manifestations of CHD. Accurate identification of persons who are at high risk of CHD events provides the opportunity to intensify risk factor management and reduce the likelihood of one of these events. Factors associated with a higher risk of CHD events include older age, male sex, high blood pressure, smoking, abnormal lipid levels, diabetes, obesity, and sedentary lifestyle. These risk factors can be combined to calculate or quantify a person's 10-year risk of CHD. The ATP III calculator performs well for the U.S. population. CHD risk factors used in this calculator include age, sex, total cholesterol level, high-density lipoprotein cholesterol level, smoking, blood pressure, and use of

antihypertension medications. According to the USPSTF, individuals with a calculated 10-year CHD risk of less than 10% are considered low risk, those with a 10-year risk of 10% to 20% are considered intermediate risk, and those with a 10-year risk greater than 20% are considered high risk.

3. The correct answer is A. There is insufficient evidence to assess the balance of benefits and harms of screening with resting or exercise ECG for the prediction of CHD events in asymptomatic adults who are at intermediate or high risk of CHD (I statement). Although some exercise programs initially screen asymptomatic participants with exercise ECG, the evidence is insufficient to determine the balance of benefits and harms of this practice. In all risk groups, a screening ECG abnormality can lead to invasive confirmatory testing and treatments that have the potential for serious harm. Although the evidence is insufficient to determine whether screening adults who are at increased risk of CHD events is beneficial, those who are at intermediate risk have the greatest potential net benefit from ECG screening. The risk-benefit tradeoff would be most favorable if persons could be accurately reclassified from intermediate to high risk. This might lead to more intensive medical management that could lower the risk of CHD events. Regardless of ECG findings, asymptomatic adults who are at increased risk of CHD are usually treated with a combination of diet and exercise modifications, lipid-lowering medications, aspirin, hypertension management, and tobacco cessation.

The views expressed in this work are those of the authors, and do not reflect the official policy or position of the Department of the Navy, Department of the Army, Department of the Air Force, Department of Veterans Affairs, Department of Defense, or the U.S. government.

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SOURCES

U.S. Preventive Services Task Force. Screening for coronary heart disease with electrocardiography: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2012;157(7):512-518.

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