

# Putting Prevention into Practice

*An Evidence-Based Approach*

## Screening for Cardiovascular Disease Risk with Electrocardiography

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### Case Study

A 55-year-old man presents for an annual visit. He has no history of hypertension, cardiovascular disease (CVD), or diabetes mellitus; has never smoked; and has no family history of CVD. His lipid panel results from one year ago were normal, and he has no current symptoms of CVD. According to the Pooled Cohort Equations from the American College of Cardiology/American Heart Association, this patient has a low 10-year risk of a CVD event. He has never been screened with electrocardiography (ECG) to identify early evidence of CVD and asks whether he should be screened.

### Case Study Questions

**1.** Based on the U.S. Preventive Services Task Force (USPSTF) recommendation on screening for CVD risk with ECG, which one of the following statements about screening is accurate regarding counseling this patient?

- A. He should be screened because male sex is a risk factor for CVD.
- B. He should be screened because older age is a risk factor for CVD.
- C. He should be considered for screening after a discussion of the benefits and harms.
- D. He should not be screened because he has no family history of CVD.
- E. He should not be screened because the evidence suggests there is no net benefit of screening in asymptomatic, low-risk patients.

**2.** Which of the following statements regarding CVD risk factors, risk stratification, and screening with ECG are correct?

- A. No significant harms are associated with screening for CVD risk with resting or exercise ECG.
- B. Screening for CVD risk with resting or exercise ECG does not help with risk stratification of patients to inform treatment decisions.
- C. Accurate identification of persons at high risk of CVD events provides the opportunity for more intensive risk-factor management to reduce the likelihood of such an event.
- D. Screening for CVD risk with exercise ECG leads to improvements in health outcomes, particularly for higher risk populations with diabetes.

**See related** U.S. Preventive Services Task Force Recommendation Statement at <https://www.aafp.org/afp/2018/0915/od1.html>.

**This PPIP** quiz is based on the recommendations of the USPSTF. More information is available in the USPSTF Recommendation Statement and supporting documents on the USPSTF website (<https://www.uspreventiveservicestaskforce.org>). The practice recommendations in this activity are available at <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/cardiovascular-disease-risk-screening-with-electrocardiography>.

**This series** is coordinated by Kenny Lin, MD, Deputy Editor.

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

**CME** This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz on page 345.

**Author disclosure:** No relevant financial affiliations.

**3.** Which one of the following recommendations does the USPSTF advise for patients with an intermediate or high 10-year risk of a CVD event?

- A. Patients should be screened because the benefits of screening in this population outweigh the harms.
- B. Patients should be screened after careful consideration of the benefits and harms.
- C. Patients should be screened if they also have diabetes or uncontrolled hypertension.
- D. There is insufficient evidence on the balance of benefits and harms of screening for CVD risk with ECG in this population.
- E. Patients should not be screened because there is adequate evidence that the harms of screening are equal to or outweigh the benefits.

## Answers

**1. The correct answer is E.** For asymptomatic adults at low risk of CVD events, it is highly unlikely that the information from resting or exercise ECG (beyond that obtained with conventional CVD risk factors) will change the patient's risk category or lead to a change in treatment and ultimately improve health outcomes. Male sex and older age (as well as hypertension, current smoking, abnormal lipid levels, diabetes, obesity, and physical inactivity) are associated with an increased risk of CVD events, and many of these risk factors are combined to estimate a person's 10-year risk of a CVD event by using various calculators and models (such as the Framingham Risk Score and the Pooled Cohort Equations).<sup>1</sup> However, given the patient's low 10-year risk of CVD, screening with ECG is not recommended. The evidence suggests that the harms of screening for CVD risk with ECG are equal to or outweigh the benefits in asymptomatic adults at low risk of CVD events. Thus, the USPSTF recommends against screening with resting or exercise ECG to prevent CVD events in this patient population.<sup>1</sup>

**2. The correct answers are B and C.** The USPSTF found adequate evidence that screening with resting or exercise ECG in asymptomatic adults leads to harms that are at least small and possibly moderate, including unnecessary invasive procedures, overtreatment, and labeling.<sup>1</sup> The information obtained from screening for CVD with ECG (beyond that obtained from conventional CVD risk factors) has not been found to help with the risk stratification of patients to inform treatment decisions.<sup>1</sup> Accurate identification of persons at high risk of CVD events provides the opportunity for more intensive risk-factor management (e.g., controlling hypertension or abnormal cholesterol levels) to reduce the likelihood of such an event. In addition, identifying persons at low risk may allow for a reduction in interventions among patients not likely to benefit from them.<sup>1</sup> Randomized controlled trials of screening with exercise ECG found no improvement in health outcomes, even among higher risk populations with diabetes.<sup>2</sup>

**3. The correct answer is D.** Based on the results of a systematic evidence review, the USPSTF concluded that the current evidence is insufficient to assess the balance of benefits and harms of screening with resting or exercise ECG to prevent CVD events in asymptomatic adults at intermediate or high risk of CVD events.<sup>1</sup>

**The views** expressed in this work are those of the authors and do not reflect the official policy or position of the Uniformed Services University of the Health Sciences, the Department of Defense, or the U.S. government.

## References

1. US Preventive Services Task Force. Screening for cardiovascular disease risk with electrocardiography: US Preventive Services Task Force recommendation statement. *JAMA*. 2018;319(22):2308-2314.
2. Jonas DE, Reddy S, Middleton JC, et al. Screening for cardiovascular disease risk with resting or exercise electrocardiography: evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2018;319(22):2315-2328. ■