

Putting Prevention into Practice

An Evidence-Based Approach

Statin Use for the Primary Prevention of Cardiovascular Disease in Adults

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► See related U.S. Preventive Services Task Force Recommendation Statement at <http://www.aafp.org/afp/2017/0115/od1.html>.

This PPIP quiz is based on the recommendations of the USPSTF. More information is available in the USPSTF Recommendation Statement and the supporting documents on the USPSTF website (<http://www.uspreventiveservicestaskforce.org>). The practice recommendations in this activity are available at <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/statin-use-in-adults-preventive-medication1>.

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CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz on page 772. Author disclosure: No relevant financial affiliations.

Case Study

L.D., a 66-year-old generally healthy white man, presents for his annual physical. He has no history of cardiovascular disease (CVD); he has had consistent systolic blood pressure measurements of 140 mm Hg; he is not taking any medications; he does not smoke; he exercises three times per week; and his body mass index is 25 kg per m². His total cholesterol level is 200 mg per dL. His low- and high-density lipoprotein cholesterol levels are 155 and 45 mg per dL, respectively. Using the American College of Cardiology/American Heart Association (ACC/AHA) Pooled Cohort Equations, you calculate his 10-year risk of a CVD event to be 16.7%.

Case Study Questions

1. According to the U.S. Preventive Services Task Force (USPSTF) recommendation, should this patient start statin therapy for the primary prevention of CVD?
 - A. No; recommend lifestyle modification, with a structured diet plan and follow-up.
 - B. Yes; recommend starting low- to moderate-dose statin therapy.
 - C. Yes; recommend starting high-dose statin therapy.
 - D. Maybe; the possible benefits of low- to moderate-dose statin therapy are small.
2. If L.D. had a systolic blood pressure of 110 mm Hg, a total cholesterol level of 130 mg per dL, and a high-density lipoprotein cholesterol level of 50 mg per dL, resulting in a 10-year CVD event risk of 8%, which one of the following would be correct?
 - A. Statin therapy is not indicated because he does not have CVD risk factors.
 - B. Statin therapy could be offered in the context of shared decision making because his 10-year CVD event risk is between 7.5% and 10%.
 - C. High-dose statin therapy is indicated because his 10-year CVD event risk is greater than 7.5%.
 - D. Statin therapy is indicated because he is older than 60 years and his 10-year CVD event risk is greater than 7.5%.
3. L.D. asks about statin therapy for his wife. She is 62 years of age, has normal blood pressure and cholesterol levels, is not taking any medications, does not smoke, has no history of CVD, and has diabetes mellitus. Which of the following statements are correct?
 - A. If her 10-year CVD event risk is between 5% and 7.5%, low- to moderate-dose statin therapy should be offered.
 - B. If her 10-year CVD event risk is 10% or greater, statin therapy should be considered.
 - C. Any patient older than 40 years with diabetes should start moderate- to high-dose statin therapy for the primary prevention of CVD.
 - D. If her 10-year CVD event risk is between 7.5% and 10%, statin therapy in the context of shared decision making could be considered.

Answers appear on the following page.

Table 1. USPSTF Recommendations on Statin Use for the Primary Prevention of Cardiovascular Disease in Adults

Population	Adults 40 to 75 years of age, no history of CVD, ≥ 1 CVD risk factors,* and calculated 10-year CVD event risk $\geq 10\%$	Adults 40 to 75 years of age, no history of CVD, ≥ 1 CVD risk factors,* and calculated 10-year CVD event risk of 7.5% to 10%	Adults 76 years and older with no history of CVD
USPSTF recommendation	Initiate use of low- to moderate-dose statin (B recommendation)	Discuss with patient and selectively offer use of low- to moderate-dose statin (C recommendation)	Insufficient evidence (I statement)

CVD = cardiovascular disease; USPSTF = U.S. Preventive Services Task Force.

*—Risk factors include dyslipidemia (i.e., low-density lipoprotein cholesterol > 130 mg per dL or high-density lipoprotein cholesterol < 40 mg per dL), diabetes mellitus, hypertension, and smoking.

Information from reference 1.

Answers

1. The correct answer is B. The USPSTF recommends that adults without a history of CVD use a low- to moderate-dose statin for the prevention of cardiovascular events when all of the following criteria are met: (1) they are 40 to 75 years of age; (2) they have one or more CVD risk factors (i.e., dyslipidemia, diabetes, hypertension, or smoking); and (3) they have a calculated 10-year CVD event risk of 10% or greater (B recommendation).¹ If the patient has risk factors but his or her 10-year CVD event risk is between 7.5% and 10%, clinicians may selectively offer a low- to moderate-dose statin, with the understanding that the likelihood of benefit is smaller because of a lower probability of disease and uncertainty in individual risk prediction (C recommendation). The USPSTF found insufficient evidence to conclude whether initiating statin therapy is beneficial in reducing the incidence of cardiovascular events and mortality in adults 76 years and older who are not already taking a statin (I statement). A summary of these recommendations is provided in *Table 1*.¹ The USPSTF found insufficient evidence on screening for dyslipidemia and treatment with statins in adults 21 to 39 years of age. Because persons with a low-density lipoprotein cholesterol level greater than 190 mg per dL or familial hypercholesterolemia were usually excluded from CVD primary prevention trials, these recommendations do not apply to such individuals.

2. The correct answer is A. In this scenario, L.D. has no known CVD risk factors and a 10-year CVD event risk of 8%. According to the USPSTF, there is insufficient evidence that daily statin medication will significantly decrease future CVD events and mortality for this patient. Several investigators have shown that the ACC/AHA Pooled Cohort Equations used to calculate 10-year CVD event risk overestimate risk when they are applied to more recent U.S. cohorts, especially among persons at the lower end of the spectrum of CVD risk.² The calculator is also heavily influenced by age. Among persons

65 to 75 years of age who have normal cholesterol and blood pressure levels, no history of diabetes, and who do not smoke, the resulting 10-year CVD event risk may be overestimated. The USPSTF notes there are no trial data to evaluate whether statin use in such persons provides more or less benefit than in similarly aged persons with risk factors. Despite the limitations of the Pooled Cohort Equations, it is the only U.S.-based CVD risk prediction tool available that has published external validation studies in other U.S. populations, allows for sex- and race-specific risk prediction, and includes ischemic stroke as an outcome. The USPSTF recommends using the ACC/AHA Pooled Cohort Equations to calculate 10-year CVD event risk despite its limitations.

3. The correct answers are B and D. The USPSTF does not recommend starting statin therapy in persons who have diabetes alone without a calculated 10-year CVD event risk of at least 7.5%. Clinicians should consider recommending statin therapy for persons with diabetes beginning at a calculated 10-year CVD event risk of 7.5% and especially if greater than 10%. The USPSTF recommends individualized shared decision making for patients with risk factors and a calculated 10-year CVD event risk between 7.5% and 10%. In contrast, the ACC and AHA recommend a statin in all patients with diabetes 40 to 75 years of age without CVD regardless of risk factors and risk score.

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. Statin use for the primary prevention of cardiovascular disease in adults: US Preventive Services Task Force recommendation statement. *JAMA*. 2016;316(19):1997-2007.
2. Chou R, Dana T, Blazina I, Daeges M, Jeanne TL. Statins for prevention of cardiovascular disease in adults: evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2016;316(19):2008-2024. ■