

Putting Prevention into Practice

An Evidence-Based Approach

Screening for Carotid Artery Stenosis

TRACY WOLFF, MD, MPH, *Associate Scientific Director, U.S. Preventive Services Task Force Program, Agency for Healthcare Research and Quality*

TINA FAN, MD, MPH, *Medical Officer, U.S. Preventive Services Task Force Program, Agency for Healthcare Research and Quality*

PAUL LEWIS III, MD, MPH, *Preventive Medicine Resident, Uniformed Services University of the Health Sciences*

► See related U.S. Preventive Services Task Force Recommendation Statement at <http://www.aafp.org/afp/2015/0515/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 <http://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/carotid-artery-stenosis-screening>.

This series is coordinated by Sumi Sexton, MD, Associate Medical Editor.

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

CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 680.

Author disclosure: No relevant financial affiliations.

Case Study

N.C. is a 65-year-old woman who presents for her yearly checkup. She walks one to two miles daily, is in generally good health, has no significant cardiovascular history, and has no health concerns at today's visit.

Case Study Questions

1. According to the U.S. Preventive Services Task Force (USPSTF), which one of the following actions regarding screening for carotid artery stenosis is recommended for this patient?
 - A. Screen using carotid ultrasonography.
 - B. Refer the patient to a cardiologist to screen using magnetic resonance angiography.
 - C. Screen using auscultation of the neck.
 - D. Use a risk calculator to assess whether the patient should be screened.
 - E. Do not screen the patient for carotid artery stenosis.
2. Which of the following statements about the accuracy of screening tests for carotid artery stenosis are correct?
 - A. Screening for carotid artery stenosis with ultrasonography yields many false-positive results.
 - B. There are no externally validated, reliable tools that can determine who is at increased risk of carotid artery stenosis or of stroke when carotid artery stenosis is present.
 - C. The sensitivity and specificity of screening for carotid artery stenosis with ultrasonography are low.
 - D. There is adequate evidence that the sensitivity and specificity of screening for carotid artery stenosis with auscultation of the neck are very high.
3. According to the USPSTF, which one of the following statements about the benefits and harms of screening for carotid artery stenosis is correct?
 - A. Carotid endarterectomy reduces the absolute incidence of all strokes or perioperative death by approximately 35%.
 - B. There is clear evidence that early identification of asymptomatic carotid artery stenosis leads to benefits by adding or increasing medication doses beyond standard medical therapy for cardiovascular disease prevention.
 - C. The harms of carotid endarterectomy include a 30-day stroke or mortality rate of less than 1%.
 - D. The potential harms of screening, which include postoperative myocardial infarction and stroke, outweigh the potential benefits.
 - E. There is insufficient evidence on the benefits and harms of carotid endarterectomy.

Answers appear on the following page.

Answers

1. The correct answer is E. The USPSTF recommends against screening for asymptomatic carotid artery stenosis in the general population. There is no evidence that screening with auscultation of the neck to detect carotid bruits is accurate or provides benefit. All screening strategies, including ultrasonography with or without confirmatory tests (such as digital subtraction or magnetic resonance angiography), could lead to unnecessary surgery and result in serious harms, including death, stroke, and myocardial infarction.

2. The correct answers are A and B. Screening with ultrasonography has high sensitivity and specificity for detecting carotid artery stenosis. However, because of the low prevalence of carotid artery stenosis in the general population (0.5% to 1%), screening with ultrasonography yields many false-positive results. Despite the evidence on important risk factors for carotid artery stenosis, there are no externally validated, reliable methods to determine who is at increased risk of carotid artery stenosis or of stroke when carotid artery stenosis is present. Reported sensitivity of carotid auscultation for detecting carotid artery stenosis ranges from 46% to 77%, and specificity ranges from 71% to 98%. However, none of the studies evaluating carotid auscultation used angiography as the preferred test, and only two studies involved patients from the general population.

3. The correct answer is D. The harms of screening for asymptomatic carotid artery stenosis outweigh the benefits. In selected trial participants with asymptomatic carotid artery stenosis, surgery can reduce the absolute incidence of all strokes or perioperative death by approximately 3.5% compared with (outdated) medical management. However, for the general primary care population, the magnitude of benefit is believed to be smaller. Early identification does not provide any additional benefit from adding or increasing medication doses beyond current standard medical therapy for cardiovascular disease prevention. Carotid endarterectomy has been evaluated in several studies and is associated with a 30-day stroke or mortality rate as high as 5% to 6% in low-volume centers, and myocardial infarctions are reported in 0.8% to 2.2% of patients after carotid endarterectomy.

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.

SOURCES

U.S. Preventive Services Task Force. Screening for asymptomatic carotid artery stenosis: U.S. Preventive Services Task Force recommendation statement [published correction appears in *Ann Intern Med.* 2015;162(4):323]. *Ann Intern Med.* 2014;161(5):356-362.

Jonas DE, Feltner C, Amick HR, et al. Screening for asymptomatic carotid artery stenosis: a systematic review and meta-analysis for the U.S. Preventive Services Task Force. *Ann Intern Med.* 2014;161(5):336-346. ■