

## Screening for Asymptomatic Carotid Artery Stenosis: Recommendation Statement

► See related Putting Prevention into Practice on page 717.

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This summary is one in a series excerpted from the Recommendation Statements released by the USPSTF. These statements address preventive health services for use in primary care clinical settings, including screening tests, counseling, and preventive medications.

The complete version of this statement, including supporting scientific evidence, evidence tables, grading system, members of the USPSTF at the time this recommendation was finalized, and references, is available on the USPSTF website at <http://www.uspreventiveservicestaskforce.org/>.

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

A collection of USPSTF recommendation statements published in *AFP* is available at <http://www.aafp.org/afp/uspstf>.

### Summary of Recommendation and Evidence

The USPSTF recommends against screening for asymptomatic carotid artery stenosis in the general adult population (*Table 1*). **D recommendation.**

### Rationale

#### IMPORTANCE

Stroke is a leading cause of death and disability in the United States. Although asymptomatic carotid artery stenosis is a risk factor for stroke, it causes a relatively small proportion of strokes.

#### DETECTION

The most feasible screening test for carotid artery stenosis (defined as 60% to 99% stenosis) is ultrasonography. Although adequate evidence indicates that this test has high sensitivity and specificity, in practice, ultrasonography yields many false-positive results in the general population, which has a low prevalence of carotid artery stenosis (approximately 0.5% to 1%). There are no externally validated, reliable tools that can determine who is at increased risk for carotid artery stenosis or for stroke when carotid artery stenosis is present. Adequate evidence indicates that the accuracy of screening by auscultation of the neck is poor.

#### BENEFITS OF DETECTION AND EARLY INTERVENTION

There is no direct evidence on the benefits of screening for carotid artery stenosis. Adequate evidence indicates that in selected trial participants with asymptomatic carotid artery stenosis, carotid endarterectomy (CEA) performed by selected surgeons reduces the absolute incidence of all strokes or perioperative death by approximately 3.5% compared with (outdated) medical management. However,

this difference is probably smaller with current optimal medical management.<sup>1</sup> The magnitude of these benefits would be smaller in asymptomatic persons in the general population. For the general primary care population, the magnitude of benefit is small to none. There is no evidence that identification of asymptomatic carotid artery stenosis leads to any benefit from adding or increasing medication doses (beyond current standard medical therapy for cardiovascular disease prevention).

#### HARMS OF DETECTION AND EARLY INTERVENTION

Adequate evidence indicates that both the testing strategy for carotid artery stenosis and treatment with CEA can cause harms. Although screening with ultrasonography has few direct harms, all screening strategies, including those with or without confirmatory tests (that is, digital subtraction or magnetic resonance angiography), have imperfect sensitivity and specificity and could lead to unnecessary interventions and result in serious harms. In selected centers similar to those in the trials, CEA is associated with a 30-day stroke or mortality rate of approximately 2.4%; reported rates are as high as approximately 5% in low-volume centers and 6% in certain states.<sup>1</sup> Myocardial infarctions are reported in 0.8% to 2.2% of patients after CEA. The 30-day stroke or mortality rate after carotid angioplasty and stenting (CAAS) is approximately 3.1% to 3.8%. The overall magnitude of harms of screening and subsequent treatment of asymptomatic carotid artery stenosis is small to moderate depending on patient population, surgeon, center volume, and geographic location.

#### USPSTF ASSESSMENT

The USPSTF concludes with moderate certainty that the harms of screening for

**Table 1. Screening for Asymptomatic Carotid Artery Stenosis: Clinical Summary of the USPSTF Recommendation**

Population	Adults without a history of transient ischemic attack, stroke, or other neurologic signs or symptoms
Recommendation	Do not screen for asymptomatic carotid artery stenosis in the general adult population. Grade: D
Risk assessment	The major risk factors for carotid artery stenosis include older age, male sex, hypertension, smoking, hypercholesterolemia, diabetes mellitus, and heart disease.
Screening tests	All screening strategies, including ultrasonography with or without confirmatory tests (digital subtraction or magnetic resonance angiography), have imperfect sensitivity and specificity and could lead to unnecessary surgery and result in serious harms, including death, stroke, and myocardial infarction. There is no evidence that screening by auscultation of the neck to detect carotid bruits is accurate or provides benefit.
Balance of benefits and harms	The harms of screening for asymptomatic carotid artery stenosis outweigh the benefits.
Other relevant USPSTF recommendations	The USPSTF has made recommendations on many factors related to stroke prevention, including screening for hypertension, screening for dyslipidemia, the use of nontraditional coronary heart disease risk factors, counseling on smoking, and counseling on healthful diet and physical activity. In addition, the USPSTF recommends the use of aspirin for persons at increased risk for cardiovascular disease. These recommendations are available on the USPSTF Web site ( <a href="http://www.uspreventiveservicestaskforce.org">http://www.uspreventiveservicestaskforce.org</a> ).

NOTE: For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, go to <http://www.uspreventiveservicestaskforce.org/>.

USPSTF = U.S. Preventive Services Task Force.

asymptomatic carotid artery stenosis outweigh the benefits.

### Clinical Considerations

#### PATIENT POPULATION UNDER CONSIDERATION

This recommendation applies to adults without a history of transient ischemic attack, stroke, or other neurologic signs or symptoms. It was based on evidence of the benefits and harms of screening using ultrasonography to detect narrowing of the carotid arteries. A previous USPSTF review on the assessment of carotid intima-media thickness in 2009 found insufficient evidence to support its use as a screen for coronary heart disease risk. For this recommendation, the USPSTF did not review new evidence on ultrasonography to characterize

carotid plaque structure or intima-media thickness and their association with cardiovascular disease events. However, clinicians considering using ultrasonography to characterize carotid plaque to stratify patient risk for cardiovascular disease should consider the same harms that the USPSTF evaluated for this recommendation (stroke, myocardial infarction, and death from CEA) because surgery may result from this screen.

#### ASSESSMENT OF RISK

The major risk factors for carotid artery stenosis include older age, male sex, hypertension, smoking, hypercholesterolemia, diabetes mellitus, and heart disease. Despite evidence on important risk factors, there are no externally validated, reliable methods to determine who is at increased risk for carotid

artery stenosis or for stroke when carotid artery stenosis is present.

### SCREENING TESTS

Although screening with ultrasonography has few direct harms, all screening strategies, including those with or without confirmatory tests (that is, digital subtraction or magnetic resonance angiography), have imperfect sensitivity and specificity and could lead to unnecessary surgery and result in serious harms, including death, stroke, and myocardial infarction. There is no evidence that screening by auscultation of the neck to detect carotid bruits is accurate or provides benefit.

### USEFUL RESOURCES

The USPSTF has made recommendations on many factors related to stroke prevention, including screening for hypertension, screening for dyslipidemia, the use of nontraditional coronary heart disease risk factors, counseling on smoking, and counseling on healthful diet and physical activity. In addition, the USPSTF recommends the use of

aspirin for persons at increased risk for cardiovascular disease. These recommendations are available on the USPSTF Web site (<http://www.uspreventiveservicestaskforce.org>).

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The "Other Considerations," "Discussion," "Update of Previous USPSTF Recommendation," and "Recommendations of Others" sections of this recommendation statement are available at <http://www.uspreventiveservicestaskforce.org/Page/Topic/recommendation-summary/carotid-artery-stenosis-screening>.

The USPSTF recommendations are independent of the U.S. government. They do not represent the views of the Agency for Healthcare Research and Quality, the U.S. Department of Health and Human Services, or the U.S. Public Health Service.

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### REFERENCE

1. Jonas DE, Feltner C, Amick HR, Sheridan S, Zheng ZJ, Watford DJ, et al. Screening for Asymptomatic Carotid Artery Stenosis: A Systematic Review and Meta-Analysis for the U.S. Preventive Services Task Force. Evidence Synthesis No. 111. AHRQ Publication No. 13-05178-EF-1. Rockville, MD: Agency for Healthcare Research and Quality; 2014. ■