

# U.S. Preventive Services Task Force

## Screening for Atrial Fibrillation with Electrocardiography: Recommendation Statement

### Summary of Recommendation and Evidence

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for atrial fibrillation with electrocardiography (ECG) (*Table 1*). **I statement.**

### Rationale

#### IMPORTANCE

Atrial fibrillation is the most common type of cardiac arrhythmia (i.e., irregular heartbeat), and its prevalence increases with age, affecting about 3% of men and 2% of women aged 65 to 69 years and about 10% of adults 85 years and older. Atrial fibrillation is a major risk factor for ischemic stroke, increasing risk of stroke by as much as 5-fold. Approximately 20% of patients who have a stroke associated with atrial fibrillation are first diagnosed with atrial fibrillation at the time of stroke or shortly thereafter.

#### DETECTION

The USPSTF found inadequate evidence to assess whether screening with ECG identifies adults 65 years and older with previously undiagnosed atrial fibrillation more effectively than usual care.

#### BENEFITS OF EARLY DETECTION AND INTERVENTION AND TREATMENT

The USPSTF found inadequate evidence directly assessing the benefit of screening for atrial

fibrillation with ECG on clinical outcomes. The USPSTF found adequate evidence that treatment with anticoagulant therapy reduces the incidence of stroke in patients with symptomatic atrial fibrillation. Given the inadequate evidence on screening with ECG for the detection of atrial fibrillation in asymptomatic adults, there is inadequate evidence to determine the magnitude of benefit of screening with ECG followed by treatment.

#### HARMS OF EARLY DETECTION AND INTERVENTION AND TREATMENT

The USPSTF found adequate evidence that screening for atrial fibrillation with ECG is associated with small to moderate harms, such as misdiagnosis, additional testing and invasive procedures, and overtreatment. The USPSTF also found adequate evidence that treatment of atrial fibrillation with anticoagulant therapy is associated with a small to moderate harm of increased risk of major bleeding.

#### U.S. PREVENTIVE SERVICES TASK FORCE ASSESSMENT

The USPSTF concludes that there is insufficient evidence to determine the balance of benefits and harms of screening for atrial fibrillation with ECG in asymptomatic adults. Evidence is lacking, and the balance of benefits and harms cannot be determined.

**See related** Putting Prevention into Practice on page 383 and related editorial on page 354.

**As published** by the USPSTF.

**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 <https://www.uspreventiveservicestaskforce.org/>.

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

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

TABLE 1

**Screening for Atrial Fibrillation with Electrocardiography: Clinical Summary of the USPSTF Recommendation**

<b>Population</b>	Older adults
<b>Recommendation</b>	No recommendation. Grade: I (insufficient evidence)
<b>Risk assessment</b>	Atrial fibrillation is strongly associated with older age and obesity. Other risk factors include high blood pressure, diabetes, heart failure, prior cardiothoracic surgery, current smoking, prior stroke, sleep apnea, alcohol and drug use, and hyperthyroidism.
<b>Screening tests</b>	The USPSTF found inadequate evidence to assess whether screening with electrocardiography identifies older adults with previously undiagnosed atrial fibrillation more effectively than usual care.
<b>Treatment and interventions</b>	Treatment of atrial fibrillation has 2 components: managing arrhythmia and preventing stroke. In general, these treatment goals are independent of each other. Arrhythmia can be managed by controlling the heart rate to minimize symptoms (usually through medication) or by restoring a normal rhythm. Treatment with anticoagulant therapy reduces the incidence of stroke in patients with symptomatic atrial fibrillation and high stroke risk.
<b>Other relevant USPSTF recommendations</b>	The USPSTF has made recommendations on many factors related to stroke prevention, including screening for high blood pressure, use of statins, counseling on smoking cessation, counseling to promote healthful diet and physical activity, and low-dose aspirin use for certain persons at increased risk of cardiovascular disease.

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

USPSTF = U.S. Preventive Services Task Force.

## Clinical Considerations

### PATIENT POPULATION UNDER CONSIDERATION

This recommendation applies to older adults (65 years and older) without symptoms of atrial fibrillation.

### SUGGESTIONS FOR PRACTICE REGARDING THE I STATEMENT

**Potential Preventable Burden.** Atrial fibrillation is the most common type of cardiac arrhythmia, affecting more than 2.7 million individuals in the United States.<sup>1</sup> Atrial fibrillation is strongly associated with older age (e.g., prevalence increases from 0.2% among adults < 55 years to 10% among those ≥ 85 years) and obesity, both of which are increasing in the United States.<sup>2</sup> Other risk factors include high blood pressure, diabetes, heart failure, prior cardiothoracic surgery, current smoking, prior stroke, sleep apnea, alcohol and drug use, and hyperthyroidism.

ECG, the intervention considered for this recommendation, records the electrical activity of

the heart using electrodes (or leads) placed on the skin. It can be measured with 12 leads, fewer than 12 leads, or a single handheld lead. One systematic review reported a 93% sensitivity and 97% specificity for 12-lead ECG; individual studies in the review reported sensitivity ranging from 68% to 100% and specificity ranging from 76% to 100%.<sup>3</sup> In addition, several medical devices (e.g., automatic blood pressure cuffs and pulse oximeters) are being designed to detect an irregular heartbeat, and an increasing number of consumer devices (e.g., wearable monitors and smartphones) have the capability to assess heart rhythm.<sup>4</sup>

Pulse palpation and heart auscultation can also detect atrial fibrillation. In the systematic review discussed above, pulse palpation was reported to have relatively good sensitivity (point estimate, 0.87 to 1.00) but lower specificity than ECG (point estimate, 0.77 to 0.84) for detecting atrial fibrillation.<sup>3</sup> However, to address this lower specificity, confirmatory ECG can be readily performed in practice in response to an irregular pulse.

Without treatment with anticoagulant therapy, patients with atrial fibrillation have an approximately 5-fold increased risk of stroke, and strokes associated with atrial fibrillation tend to be more severe than strokes attributed to other causes.<sup>5</sup> Approximately one-third of patients with atrial fibrillation who have a stroke die within the year, and up to 30% of survivors have some type of permanent disability.<sup>6</sup> Atrial fibrillation does not always cause noticeable symptoms, and some persons may not be aware that they have it. For approximately 20% of patients who have a stroke associated with atrial fibrillation, stroke is the first sign that they have the condition.<sup>7</sup> If persons with undiagnosed atrial fibrillation could be detected earlier and start preventive therapy earlier, some of these strokes might be avoided.

**Potential Harms.** The performance of ECG itself is not associated with significant harm, although abnormal results may cause anxiety. Misinterpretation of ECG results may lead to misdiagnosis and unnecessary treatment. Treatment of atrial fibrillation includes anticoagulant therapy for stroke prevention, which is associated with a risk of bleeding, and pharmacologic, surgical, endovascular (e.g., ablation), or combined treatments to control heart rhythm or heart rate. In addition, ECG may detect other abnormalities (either true- or false-positive results) that can lead to invasive confirmatory testing and treatments that have the potential for serious harm. For example, angiography and revascularization are associated with risks, including bleeding, contrast-induced nephropathy, and allergic reactions to the contrast agent.

**Current Practice.** Few data are available on the current prevalence of screening for atrial fibrillation with ECG or the frequency with which pulse palpation or heart auscultation are performed in the United States.

#### TREATMENT AND INTERVENTIONS

Treatment of atrial fibrillation has 2 components—managing arrhythmia and preventing stroke. In general, these treatment goals are independent of each other because even restoring sinus rhythm does not necessarily reduce stroke risk enough to change how anticoagulant therapy is managed, given the potential for subsequent recurrence of atrial fibrillation. Arrhythmia can be managed by controlling the heart rate to minimize symptoms (usually through medication)

or by restoring a normal rhythm. Methods for restoring normal rhythm include electrical or pharmacologic cardioversion and surgical or catheter ablation. Some evidence suggests that selected patients may be able to reverse atrial fibrillation through lifestyle changes that address the underlying causes of atrial fibrillation.<sup>8</sup> Stroke risk for persons with nonvalvular atrial fibrillation can be estimated with tools such as CHADS<sub>2</sub> (congestive heart failure, hypertension, age  $\geq$  75 years, diabetes mellitus, prior stroke or transient ischemic attack or thromboembolism [doubled]) (developed by Gage and colleagues, Washington University School of Medicine) or its updated version, CHA<sub>2</sub>DS<sub>2</sub>-VASc (congestive heart failure, hypertension, age  $\geq$  75 years [doubled], diabetes, stroke/transient ischemic attack/thromboembolism [doubled], vascular disease [prior myocardial infarction, peripheral artery disease, or aortic plaque], age 65 to 74 years, sex category [female]) (Lip and colleagues, University of Birmingham Centre for Cardiovascular Sciences). These tools use somewhat different combinations of patient characteristics and presence or absence of comorbid conditions, as outlined above, to estimate annual risk of stroke and guide decisions about anticoagulation therapy. For patients with atrial fibrillation and high stroke risk (defined as a CHA<sub>2</sub>DS<sub>2</sub>-VASc score of  $\geq$  2), this risk can be reduced with anticoagulant therapy—either vitamin K antagonists (e.g., warfarin) or, more recently, non–vitamin K antagonist oral anticoagulants. A device that blocks off the atrial appendage to prevent blood clots has also been recently approved by the U.S. Food and Drug Administration as a nonpharmacologic alternative to anticoagulant therapy for selected patients.

#### APPROACHES TO PREVENTION

The Million Hearts campaign provides tools and protocols to support the prevention of ischemic heart disease, one of the major causes of atrial fibrillation.<sup>9</sup> The Centers for Disease Control and Prevention also provides information about programs and resources for the prevention of heart disease.<sup>10</sup>

#### USEFUL RESOURCES

The USPSTF has made recommendations on many factors related to stroke prevention, including screening for high blood pressure,<sup>11</sup> use of statins,<sup>12</sup> counseling on smoking cessation,<sup>13</sup> and

counseling to promote healthful diet and physical activity.<sup>14</sup> In addition, the USPSTF recommends use of low-dose aspirin for certain persons at increased risk of cardiovascular disease.<sup>15</sup>

**This recommendation** statement was first published in *JAMA*. 2018;320(5):478-484.

**The "Other Considerations," "Discussion," "Update of Previous USPSTF Recommendation," and "Recommendations of Others" sections of this recommendation statement are available at <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/atrial-fibrillation-screening-with-electrocardiography>.**

**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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