CME MOC

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# New atrial fibrillation guideline: Modify risk, control rhythm, prevent progression

## ABSTRACT

The latest (2023) guideline on atrial fibrillation from the American College of Cardiology, American Heart Association, American College of Chest Physicians, and Heart Rhythm Society introduces a new staging system for the disease, emphasizes risk-factor modification, prioritizes rhythm control over rate control, and clarifies which patients should be considered for catheter ablation. It also delves deeper than earlier guidelines into calculations of risk of thrombosis when deciding whether to start anticoagulant therapy.

## KEY POINTS

- The new staging system helps to emphasize that atrial fibrillation is a progressive disease that can be prevented or slowed.
- Lifestyle and other risk-factor modifications should be a pillar of therapy. Patients should be encouraged to lose weight if obese, exercise, stop smoking, drink less, and keep their hypertension and diabetes under good control.
- For patients at intermediate risk of thrombosis according to their $CHA_2DS_2$-VASc score, other scoring systems can help with the decision whether to initiate anticoagulant therapy.
- Early in the disease course, rhythm control should be prioritized over rate control, to maintain sinus rhythm and decrease atrial fibrillation burden.
- Catheter ablation is the first-line treatment for rhythm control in select patients with atrial fibrillation.

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The new (2023) guideline for diagnosing and treating atrial fibrillation from the American College of Cardiology (ACC), American Heart Association (AHA), American College of Chest Physicians, and Heart Rhythm Society[1] has reexamined and reprioritized which treatment options take precedence, highlighting an individualized approach to management. Earlier guidelines were released in 2014[2] and 2019.[3]

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Atrial fibrillation affects 37.57 million people worldwide, and its prevalence is increasing.[4] It is characterized by disorganized electrical and mechanical activation of the atria and can lead to serious health complications if left undiagnosed or untreated.[5] Notably, atrial fibrillation can lead to ischemic stroke, which can be debilitating and life-threatening. In addition, people with atrial fibrillation and preexisting heart disease face higher morbidity and mortality rates. In a study of 6,432 people, atrial fibrillation was associated with higher risks of dementia (odds ratio 2.25, 95% confidence interval 1.64–3.10) and mild cognitive impairment (odds ratio 1.28, 95% confidence interval 1.04–1.56).[6]

In view of the severe consequences of atrial fibrillation and its growing prevalence, it is crucial to understand the most recent guideline to ensure that patients receive optimal care.

## WHO WROTE THE GUIDELINE?

The ACC and AHA Joint Committee on Clinical Practice Guidelines continually reviews,

**TABLE 1**
**Stages of atrial fibrillation**

| Stage | Description | Explanation |
|---|---|---|
| 1 | At risk of atrial fibrillation | Modifiable risk factors: obesity, lack of fitness, hypertension, sleep apnea, excessive alcohol consumption, diabetes mellitus<br>Nonmodifiable risk factors: genetic factors (eg, variants in *TTN, MYH7, MYH6, LMNA,* and *KCNQ1*), male sex, old age |
| 2 | Pre–atrial fibrillation | Structural or electrical conditions that can lead to atrial fibrillation (eg, atrial enlargement, frequent atrial ectopy, short bursts of atrial tachycardia, atrial flutter, heart failure, valve disease, coronary artery disease, hypertrophic cardiomyopathy, neuromuscular disorders, thyroid disease) |
| 3A | Paroxysmal atrial fibrillation | Intermittent and terminating within 7 days of onset |
| 3B | Persistent atrial fibrillation | Continuous and lasting longer than 7 days |
| 3C | Long-standing persistent atrial fibrillation | Continuous and lasting longer than 12 months |
| 3D | Successful atrial fibrillation ablation | Freedom from atrial fibrillation after ablation |
| 4 | Permanent atrial fibrillation | Not pursuing further attempts at rhythm control |

Based on information from reference 1.

updates, and modifies guideline methodology as new data emerge. The Joint Committee in turn selects writing committee members who have expertise in the subject under review and who reflect the broader cardiovascular community, representing different geographic regions, sexes, races, ethnicities, intellectual perspectives, and clinical practice settings. The writing committee includes cardiologists, electrophysiologists, pharmacists, surgeons, and patient representatives and lay stakeholders. In addition to the writing committee, evidence review committees focus on systematic reviews and literature searches.

The ACC and AHA have strict policies to ensure guidelines are developed without inappropriate influence or bias so that patient care is evidence-based. These guidelines apply to both inpatients and outpatients.

## WHAT ARE THE NEW RECOMMENDATIONS?

### Four stages of atrial fibrillation

The new guideline[1] keeps the old categories based on the duration of atrial fibrillation (paroxysmal, persistent, long-standing persistent, and permanent), but introduces 4 stages (**Table 1**):

- **Stage 1:** at risk of atrial fibrillation
- **Stage 2:** pre–atrial fibrillation, in which the patient has structural or electrical conditions that further predispose to atrial fibrillation
- **Stage 3A:** paroxysmal atrial fibrillation
- **Stage 3B:** persistent atrial fibrillation
- **Stage 3C:** long-standing persistent atrial fibrillation
- **Stage 3D:** freedom from atrial fibrillation after successful ablation
- **Stage 4:** permanent atrial fibrillation, at which point the patient and clinician have discussed their options and jointly decided not to pursue rhythm control any longer.

Classifying atrial fibrillation by stages drives home the concept that atrial fibrillation is a progressive disease that exists on a spectrum and requires different interventions at different stages. The guideline highlights the variety of strategies used at different stages and emphasizes a holistic and multidisciplinary approach. The new classification emphasizes the importance of early intervention, including prevention, screening, and risk-factor management.

### Lifestyle and risk-factor modifications are key

The 2023 guideline[1] makes lifestyle and risk-factor modification 1 of the 3 pillars of atrial fibrillation prevention and treatment. (The other 2 are stroke prevention and symptom management.) Risk factors for atrial fibrillation are well established, and risk-factor modification reduces the risk of new-onset atrial fibrillation and the risk of complications in those who already have atrial fibrillation. Patients who have modifiable or

**TABLE 2**
**Primary prevention of atrial fibrillation**

| |
|---|
| Maintain or achieve a healthy weight |
| Engage in physical activity |
| Moderate alcohol consumption or abstain; avoid binge drinking |
| Stop smoking |
| Control hypertension |
| Control hyperglycemia in diabetes |

Based on information from reference 1.

**TABLE 3**
**Secondary prevention of atrial fibrillation**

| |
|---|
| Lose weight if overweight or obese, ie, body mass index > 27 kg/m$^2$ |
| Start a standardized exercise program |
| Stop smoking |
| Minimize alcohol consumption or abstain entirely |
| Optimally control comorbidities including hypertension and diabetes |

Based on information from reference 1.

nonmodifiable risk factors for atrial fibrillation are now classified as having stage 1 atrial fibrillation (**Table 1**).[1] Patients with confirmed atrial fibrillation should be counseled on lifestyle and risk-factor modification to prevent progression and adverse outcomes, and those at risk of developing atrial fibrillation should be counseled to prevent its onset.

Primary prevention (**Table 2**)[1] involves counseling patients at risk of developing atrial fibrillation to lose weight if obese, exercise more if sedentary, limit their alcohol consumption to 1 or fewer standard alcoholic drinks per day, stop smoking if they smoke, and control their diabetes mellitus and hypertension if they have these diseases. Controlling hypertension is especially important—it was the leading risk factor for age-standardized atrial fibrillation death in the Global Burden of Disease Study 2017.[4] Cannabis, cocaine, and methamphetamine use also increases the risk of new atrial fibrillation.[7]

For people who already have atrial fibrillation, effective measures to prevent it from progressing (secondary prevention) include weight loss of at least 10% of body weight in overweight or obese patients, moderate-to-vigorous exercise for at least 210 minutes per week, smoking cessation, minimizing or eliminating alcohol consumption, and optimal blood pressure control (**Table 3**).[1,8–11] Both the primary and secondary prevention measures received a class 1 (strong) recommendation.[1]

Interestingly, caffeine abstinence does not prevent episodes of atrial fibrillation, though it may reduce symptoms in patients who report that caffeine triggers or worsens their symptoms.

No studies have found a correlation between good glycemic control and decreased atrial fibrillation burden. Nonetheless, optimization of glycemic control with improvement of hemoglobin A1c by more than 10% before catheter ablation decreased the likelihood of atrial fibrillation recurrence in a study in 298 patients.[12]

The new staging classifications, combined with the knowledge that risk-factor modification can reduce the incidence and worsening of atrial fibrillation, should inspire clinicians to identify patients who are at risk of developing atrial fibrillation (ie, are in stage 1), and give us yet another reason to encourage patients to lose weight, eat healthy, drink less, control their diabetes and hypertension, and stop smoking.

### Starting anticoagulation and subsequent evaluation

Every year, patients with atrial fibrillation should be assessed for their risk of thromboembolic events using clinical risk scores such as $CHA_2DS_2$-VASc, as well as their risk of bleeding (class 1 recommendation).

**$CHA_2DS_2$-VASc** is a simple point system: 1 point each for congestive heart failure, hypertension, diabetes, vascular disease, age 65 to 74 years, and female sex; 2 points for age 75 or older; and 2 points for a prior stroke, transient ischemic attack, or thromboembolic event. Thus, possible scores range from 0 to 9. Men with a score of 0 and women with a score of 1 are at low risk and do not need anticoagulation, whereas men with a score of 2 or higher and women with a score of 3 or higher have an annual thromboembolic risk greater than 2% and do need anticoagulation (class 1 recommendation).

But what about patients at intermediate risk, ie, men with a score of 1 and women with a score of 2?

**Other risk scores.** For patients at intermediate risk, scores other than $CHA_2DS_2$-VASc can help to stratify their risk further, which can help in shared decision-making regarding anticoagulation. New risk scores such as ATRIA (Anticoagulation and Risk Factors in Atrial Fibrillation)[13,14] and GARFIELD-AF (Global Anticoagulant Registry in the Field–Atrial Fibrillation)[15] may modestly improve risk discrimination by including variables such as renal disease, dementia, proteinuria, or previous bleeding.

Further risk stratification may assist with shared decision-making, especially for patients at low or intermediate risk with characteristics not accounted for in $CHA_2DS_2$-VASc. In the new guideline, discussing with patients factors that modify these individual stroke risks, such as extent of blood pressure control, to help in decision-making about starting anticoagulation receives a class 2a (moderate) recommendation.

### Left atrial appendage occlusion

Some patients at moderate to high risk of stroke can't receive anticoagulation, and for them, percutaneous placement of a left atrial appendage occlusion device[16–18] has a class 2a recommendation.[1] This is an upgrade from the 2019 guideline,[3] in which these devices received a class 2b (weak) recommendation for this group of patients.

### Prioritizing early rhythm control

The guideline recommends trying to achieve sinus rhythm early in the disease course with antiarrhythmic drugs or with catheter ablation to decrease the burden of atrial fibrillation (ie, its frequency and duration).

This is new. For decades, we thought that rate control was as good as rhythm control. Supporting this view, the 2002 Atrial Fibrillation Follow-Up Investigation of Rhythm Management trial[19] found that rhythm control conferred no survival advantage over rate control. The choice between rate and rhythm control, therefore, was based on shared decision-making between patient and clinician, taking into account the patient's age, preference, and symptoms.

More recent data now indicate that rhythm control improves quality of life by reducing symptoms, whereas patients treated with rate control continue to experience symptoms.[20] Rhythm control also decreases symptom burden and all-cause and cardiovascular mortality, stroke, and heart failure hospitalization.[20] Rhythm-control strategies can also reduce the likelihood of atrial fibrillation progression.

Therefore, the new guideline recommends rhythm control in general to reduce the risk of progression (class 2a recommendation) and the risk of dementia or worsening cardiac structural abnormalities (class 2b recommendation), and in patients with the following specific conditions.

**Reduced left ventricular function and persistent or high burden of atrial fibrillation.** A trial of rhythm control should be recommended to evaluate whether the atrial fibrillation is contributing to reduced left ventricular function. Studies have shown that left ventricular function improves after rhythm control is started in individuals with relatively controlled heart rates.[21]

**Symptomatic atrial fibrillation.** Rhythm control in symptomatic patients can be used to reduce symptoms (class 2a recommendation) or to determine if the symptoms are due to the atrial fibrillation in uncertain cases.

**Recently diagnosed symptomatic atrial fibrillation (< 1 year)** (class 2a recommendation). Achieving rhythm control in early-onset atrial fibrillation was associated with reduced rates of death, stroke, and hospitalizations.[22]

**Atrial fibrillation and heart failure** (class 2a recommendation). In these groups, rhythm control has several benefits, including improved symptoms and lower rates of hospitalizations, stroke, and death.[21,23]

### Which patients are candidates for catheter ablation?

Catheter ablation is now the first-line treatment for atrial fibrillation in specific patient populations, having received a class 1 recommendation as first-line therapy for rhythm control in the following groups[24]:

- Patients with symptomatic atrial fibrillation in whom typical treatment has been ineffective, contraindicated, not tolerated, or not preferred, and who desire rhythm control
- Patients with symptomatic paroxysmal atrial fibrillation who are younger than 70, have few comorbidities, and desire rhythm control
- Patients with symptomatic or clinically significant atrial flutter who desire symptom improvement
- Patients with atrial fibrillation and concomitant heart failure with reduced ejection fraction on guideline-directed medical therapy. In this population, catheter ablation has been shown to improve quality of life, reduce symptoms and cardiovascular mortality, and improve ejection fraction.

## DO OTHER SOCIETIES AGREE OR DISAGREE?

The 2024 European Society of Cardiology guidelines for the diagnosis and management of atrial fibrillation[25] largely agree with the 2023 American guideline,[1] with some minor differences.

**Staging.** The European guidelines classify atrial fibrillation as first diagnosed, paroxysmal, persistent, or permanent. This classification is based more on presentation and duration. The updated American guideline classifies atrial fibrillation as a continuum and emphasizes early intervention and risk-factor modification strategies throughout each stage.

**Early rhythm-control strategy.** Both guidelines agree on the role of an early rhythm-control strategy in symptom management and improving quality of life. The European guidelines recommend early rhythm-control strategies to reduce atrial fibrillation–related

symptoms. Even in cases in which there is uncertainty about whether symptoms are related to atrial fibrillation, a trial of early restoration of sinus rhythm is considered a reasonable step.

The updated American guideline recommends an early trial of rhythm interventions in patients with reduced left ventricular function and persistent or high-burden atrial fibrillation as a class 1 recommendation. Class 2 recommendations state that it may be helpful to implement early rhythm-control strategies in patients with symptomatic atrial fibrillation or in those with a recent diagnosis of atrial fibrillation (within the past year) to reduce hospitalizations, stroke, and mortality. Additionally, rhythm-control strategies may reduce the likelihood of atrial fibrillation progression.

**Catheter ablation.** In the American guideline, catheter ablation gets a class 1 recommendation as first-line therapy in select patients, such as younger patients with few comorbidities with symptomatic paroxysmal atrial fibrillation, to improve symptoms and prevent progression. The most recent European guidelines have also escalated catheter ablation to a class 1 recommendation in select patients.[25] Similar to the American guidelines, catheter ablation is now a class 1 recommendation in patients with atrial fibrillation and heart failure with reduced ejection fraction, patients with symptomatic paroxysmal or persistent atrial flutter, and patients with symptomatic atrial flutter.

## HOW WILL THIS CHANGE DAILY PRACTICE?

Patients who develop atrial fibrillation acutely in the hospital after medical or surgical illness should be treated with rate and rhythm control and anticoagulation after assessing the risks and benefits. Potential triggers of atrial fibrillation, such as electrolyte abnormalities, should also be treated. Before discharge, these patients should be counseled on recurrent atrial fibrillation and lifestyle and risk-factor management. The need for continued anticoagulation and the rate and rhythm control should be reassessed at follow-up.

A multimodal approach with both rhythm and rate control is still appropriate for atrial fibrillation. Nonetheless, recommendations suggest that early rhythm-control strategies should be implemented in patients with symptomatic, recently diagnosed atrial fibrillation (< 1 year of diagnosis) and in patients with heart failure with reduced ejection fraction. Early referral to a cardiac electrophysiologist or heart rhythm specialist is warranted for aggressive rhythm-control measures. Catheter ablation is now first-line therapy in younger patients with few comorbidities and in appropriate patients with atrial fibrillation and heart failure with reduced ejection fraction on guideline-directed medical therapy, and should be pursued appropriately.

Last, the guideline emphasizes an annual assessment of thromboembolic risk by using verified scores beyond $CHA_2DS_2$-VASc in shared decision-making regarding anticoagulation or other treatments, such as left atrial appendage occlusion.

## WHAT IS THE EXPECTED CLINICAL IMPACT?

The new guideline will lead to more efforts to prevent atrial fibrillation through aggressive lifestyle and risk-factor modification. There will be a preference for early rhythm control over rate control and for ablation as the first line of treatment in certain groups. Also, the new guidelines will involve using scoring systems beyond $CHA_2DS_2$-VASc and frequently assessing stroke and bleeding risk to allow better risk stratification for patients beyond just those considered at high risk.

## WHEN WOULD THE GUIDELINES NOT APPLY?

The 2023 guideline[1] recommends aggressive risk-factor modification and early rhythm control. However, some patients cannot undergo risk-factor interventions, receive rhythm-control therapies (including catheter ablation), or use anticoagulants, owing to severe comorbidities or systemic disease (cardiac or otherwise). Additionally, patients who are pregnant may not be able to take antiarrhythmic drugs or certain anticoagulant drugs for stroke risk reduction.

The guideline addresses special patient groups in whom catheter ablation is first-line therapy, but it is unclear whether those who have had prior unsuccessful cardioversions or ablations are candidates for repeat ablation despite having heart failure with reduced ejection fraction on guideline-directed medical therapy.

While the guideline encourages individualized calculations of stroke risk, those at increased bleeding risk present a unique dilemma of deciding whether to use anticoagulants in the setting of increased bleeding risk or not to use anticoagulants to decrease bleeding risk. Shared decision-making between the patient and clinician to determine the best course of action and using bleeding risk scores such as HAS-BLED (hypertension, abnormal renal or hepatic function, stroke, bleeding tendency or predisposition, labile international normalized ratio on warfarin, elderly [age > 65 years], drugs [aspirin or nonsteroidal anti-inflammatories] or alcohol, or both) can be helpful. Additionally, there are no specific changes in therapy addressed in the guidelines

regarding heart failure with preserved ejection fraction as there are with reduced ejection fraction (catheter ablation being first line).

Historically, women have been underrepresented in most atrial fibrillation trials, as have minority populations and patients of lower socioeconomic status. Future research regarding differences in management strategies in these populations is necessary for guideline refinement.

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## DISCLOSURES

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