ATRIAL FIBRILLATION: More help for the most common arrhythmia

Who should read this?

Any physician assistant who provides medical care to adult patients, particularly to those 50 years and older.

What's new?

New guidelines for the management of atrial fibrillation (AF), developed collectively by the American College of Cardiology (ACC), the American Heart Association (AHA), and the European Society of Cardiology (ESC) in collaboration with the European Heart Rhythm Association and the Heart Rhythm Society, were published in 2006.[1] These have three main objectives: (1) to add new information obtained over the past 5 years (eg, AF ablations); (2) to emphasize that recent studies have shown no advantage of rhythm control over rate control; and (3) to emphasize the importance of anticoagulation for patients with AF.

The new guidelines incorporate several structural and clinical practice changes to guidelines published in 2001 and have been reorganized to assist more readily with patient care. AF is stratified into subclasses, which helps in directing treatment decisions. Patient selection for rate control versus rhythm control is discussed in more detail, and prevention of thromboembolism is emphasized. Catheter ablation technologies and recommendations for their use are incorporated and discussed in expanded sections. Drug selection recommendations are based exclusively on human studies and include formulations approved for use in North America and/or Europe. Lastly, recommendations for recognition and management of AF are supported by higher levels of evidence compared to previous guidelines.

Why is this important?

AF can occur in the normal heart or in the presence of organic heart disease of any cause. As such, it is the most commonly encountered arrhythmia in clinical practice.[1,2]

AF remains the most common serious arrhythmia worldwide, with an estimated 2.5 million affected persons in North America and 4.5 million in Europe.[1] About 0.1% of people younger than 40 years have AF, and the incidence increases two-fold with every increasing decade of age after 55 years, to 2% in persons older than 80 years.[3,4]

TAKE-HOME POINTS

- Atrial fibrillation (AF) can occur in anyone, whether or not the person has organic heart disease.
- Three issues must be addressed in treatment: rate control, rhythm control, and prevention of systemic thromboembolization.
- Rhythm control is not preferable in all patients. When choosing between rate control and rhythm control, consider the individual patient and type of AF.
- Antithrombotic therapy is recommended for all patients unless the patient has lone AF or antithrombotic therapy is contraindicated.
- For patients with AF persisting for 48 hours or longer, anticoagulation with warfarin should be provided for at least 3 weeks before and 4 weeks after cardioversion.
- Pharmacologic cardioversion should be initiated on an inpatient basis with telemetry monitoring.

AF is associated with an increased morbidity and mortality and is an independent risk factor for stroke.[5,6] The symptoms that are often associated with AF include reduced exercise tolerance, palpitations, dizziness, dyspnea, and signs of heart failure and can significantly affect quality of life.[7-9] Furthermore, AF is an expensive US public health problem, costing approximately $3,600 annually per patient for rate, rhythm, and anticoagulation management, with a total estimated annual cost burden of $15.7 billion.[1]

What is important?

Three issues must be addressed in the treatment of AF: (1) rate control (ventricular rate controlled without obligation to restore or maintain sinus rhythm); (2) correction of the rhythm disturbance (restoration and maintenance of sinus rhythm); and (3) prevention of systemic thromboembolization. These items are not mutually exclusive of each other; and when the rhythm is controlled, the rate is controlled as well.

Pharmacologic and nonpharmacologic treatment options, including catheter ablation, are effective for both rate and rhythm control; however, drugs are typically utilized first for treatment. Whether rate control or rhythm control is the objective, antithrombotic therapy must also be considered, based on stroke risk and not on whether sinus rhythm is maintained.

The choice of therapy should be influenced by the classification method incorporated by the 2006 ACC/AHA/

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ESC guidelines and applies to episodes of AF that last longer than 30 seconds and are not related to a reversible cause (see "Table. Therapy for atrial fibrillation" in the online version of this article).

Which approach is preferable: rate control or rhythm control? Traditionally, rhythm control with electrical or pharmacologic cardioversion followed by antiarrhythmic prophylaxis was thought to be preferable, even though evidence supporting this approach has been scarce.[10] Several recent randomized trials have compared outcomes for rate versus rhythm control and have provided much needed data. The four most significant clinical trials demonstrated no differences in mortality, stroke rate, or quality of life when comparing rate control and rhythm control.[11-14] Regardless of the approach selected, if the duration of AF is unknown or the episode has persisted for longer than 48 hours, short-term anticoagulation should be considered prior to cardioversion.

What about anticoagulation?

Antithrombotic therapy to prevent thromboembolism is recommended for all patients with AF—except for those who have lone AF or where antithrombotic therapy is contraindicated, such as in patients with hemorrhagic stroke, bleeding lesions, thrombocytopenia, coagulation defects, or acute or chronic liver disease.

Several clinical methods have been used to stratify the risk of ischemic stroke in patients with AF; however, these methods only identify patients who benefit most and least from anticoagulation. The 2006 recommendations for antithrombotic therapy incorporate clinical trials as well as expert consensus to classify patients into low-risk, intermediate-risk, or high-risk groups based on a point system.

Factors putting a patient at high risk include previous stroke, transient ischemic attack, or embolism; mitral stenosis; or having a prosthetic heart valve. Factors constituting moderate risk include age older than 75 years, hypertension, heart failure, left ventricular ejection fraction of 35% or less, or diabetes mellitus. Less validated or low risk factors include female sex, age 65 to 74 years, or the presence of coronary artery disease or thyrotoxicosis.

For patients with no risk factors, aspirin, 81 to 325 mg daily, is recommended. For patients with one moderate risk factor, aspirin (81 to 325 mg daily) or warfarin (international normalized ratio [INR], 2.0 to 3.0; target, 2.5) is recommended. For patients with any high risk factor or more than one moderate risk factor, warfarin (INR, 2.0 to 3.0; target, 2.5) is recommended.

What else is important to know?

There is class I evidence and/or general agreement that beta-blockers and nondihydropyridine calcium channel antagonists should be used for rate control in patients with persistent or permanent AF. These agents, along with digoxin and amiodarone, may be administered IV for initial rate control and then converted to oral administration, as long as the patient does not have Wolff-Parkinson-White syndrome.

Class I recommendations for pharmacologic cardioversion of AF include flecainide, dofetilide, propafenone, or ibutilide. Amiodarone is considered a reasonable option, but with a class IIa recommendation (weight of evidence/opinion is in favor of usefulness/efficacy). Because these antiarrhythmic medications have proarrhythmic properties, the initiation of treatment should be performed on an inpatient basis with telemetry monitoring.

ON THE WEB

- Table: Therapy for atrial fibrillation

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For prevention of thromboembolism in patients undergoing cardioversion of AF lasting 48 hours or longer, class I recommendations include anticoagulation with warfarin (INR, 2.0 to 3.0) for at least 3 weeks before and 4 weeks after cardioversion, regardless of whether pharmacologic or electrical cardioversion is used. JAAPA

REFERENCES

1. Fuster V, Ruden LE, Cannom DS, et al. ACC/AHA/ESC 2006 guidelines for the management of patients with atrial fibrillation—executive summary: a report of the American College of Cardiology/American Heart Association task force on practice guidelines and the European Society of Cardiology Committee for practice guidelines (Writing Committee to Revise the 2001 Guidelines for the Management of Patients With Atrial Fibrillation). *Circulation.* 2006;114(7):700-752.
2. Fuster V, Ryden LE. ACC/AHA/ESC guidelines for the management of patients with atrial fibrillation: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and Policy Conferences (Committee to Develop Guidelines for the Management of Patients With Atrial Fibrillation). *J Am Coll Cardiol.* 2001;38:1266i-1xx.
3. Benjamin EJ, Levy D, Vaziri SM, et al. Independent risk factors for atrial fibrillation in a population-based cohort. The Framingham Heart Study. *JAMA.* 1994;271(11):840-844.
4. Benjamin EJ, Wolf PA, D'Agostino RB, et al. Impact of atrial fibrillation on the risk of death: the Framingham Heart Study. *Circulation.* 1998;98:946-952.
5. Saxena R, Lewis S, Berge E, et al. Risk of early death and recurrent stroke and effect of heparin in 3169 patients with acute ischemic stroke and atrial fibrillation in the international stroke trial. *Stroke.* 2001;32(10):2333-2337.
6. Levy S, Maarek M, Coumel P, et al. Characterization of different subsets of atrial fibrillation in general practice in France: the ALFA study. The College of French Cardiologists. *Circulation.* 1999;99(23):3028-3035.
7. Jung W, Luderitz B. Quality of life of atrial fibrillation. *J Cardiovasc Electrophysiol.* 1998;9:S177-S186.
8. Savelieva I, Paquette M, Dorian P, et al. Quality of life in patients with silent atrial fibrillation. *Heart.* 2001;85(2):216-217.
9. Dorian P, Jung W, Newman D, et al. The impairment of health related quality of life in patients with intermittent atrial fibrillation: implications for the assessment of investigational therapy. *J Am Coll Cardiol.* 2001;36(4):1303-1319.
10. Brodsky MA, Chun JG, Podrid PJ, et al. Regional attitudes of generalists, specialists, and subspecialists about management of atrial fibrillation. *Arch Intern Med.* 1996;156(22):2553-2562.
11. Cooper HA, Bloomfield DA, Bush DE, et al. Relation between achieved heart rate and outcomes in patients with atrial fibrillation (from the Atrial Fibrillation Follow-up Investigation of Rhythm Management [AFFIRM] Study). *Am J Cardiol.* 2004;93(10):1247-1253.
12. Van Gelder IC, Hagens VE, Bosker HA, et al. A comparison of rate control and rhythm control in patients with recurrent persistent atrial fibrillation. *N Engl J Med.* 2002;347(23):1834-1840.
13. Gronefeld GC, Lilienthal J, Kuck KH, et al. Impact of rate versus rhythm control on quality of life in patients with persistent atrial fibrillation. Results from a prospective randomized study. *Eur Heart J.* 2003;24(15):1430-1436.
14. Carlsson J, Miketic S, Windeler J, et al. Randomized trial of rate-control versus rhythm-control in persistent atrial fibrillation: the Strategies of Treatment of Atrial Fibrillation (STAF) study. *J Am Coll Cardiol.* 2003;41(10):1690-1696.

TABLE. Therapy for atrial fibrillation

AF type*	Definition	Rate control		Rhythm control		Anticoagulation
		Symptomatic†	Not symptomatic	Symptomatic†	Not symptomatic	
Paroxysmal	• Self terminating • Defined as ≥2 episodes generally lasting ≤7 d, usually <24 h • May be recurrent	Rate control with beta-blocker or calcium channel blocker	No rate control drug needed	• Rate control • CV if <48 h duration • AAD to maintain SR • Consider ablation if AAD fails	No AAD recommended	• Warfarin (INR 2.0-3.0) for patients with AF ≥48 h • If CV performed, anticoagulate for minimum of 3 wk before and 4 wk after CV, regardless of method used
Persistent	• Fails to self terminate • Lasts for >7 d	• Rate control with beta-blocker or calcium channel blocker • Anticoagulation	• No rate control drug needed • Anticoagulation	• Rate control • AAD • CV once anticoagulated • Consider ablation if failure after AAD and rate control	• Anticoagulation • No AAD recommended	
Permanent	• Duration >1 y • CV has not been attempted or has failed	• Rate control with beta-blocker or calcium channel blocker • Anticoagulation	• No rate control drug needed • Anticoagulation	Anticoagulation	Anticoagulation	Warfarin to keep INR 2.0-3.0, goal 2.5
Lone	• AF without structural cardiac or pulmonary disease • Low risk for thromboembolism • Generally applied to patients ≤60 y	Rate control with beta-blocker or calcium channel blocker	No rate control drug needed	• Rate control with beta-blocker or calcium channel blocker • AAD • Consider ablation if failure after AAD and rate control	Aspirin if duration >48 h	Aspirin, 81-325 mg/d

Key: AAD, antiarrhythmic drug therapy; AF, atrial fibrillation; CV, cardioversion; INR, international normalized ratio; SR, sinus rhythm.
*Newly discovered AF should be differentiated between paroxysmal, persistent, or permanent AF if possible.
†Symptomatic defined as presence of hypotension, heart failure, angina, significant decrease in functional capacity or quality of life.