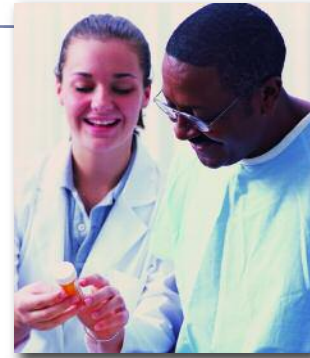


## Patient-Centered Management of Atrial Fibrillation: Applying Evidence-Based Care to the Individual Patient

Eric D. Good, DO  
Felix J. Rogers, DO



Atrial fibrillation is the most common arrhythmia encountered in clinical practice, and it is one of the most common cardiac conditions requiring hospitalization of a patient. Several national organizations have developed guidelines for the management of atrial fibrillation. These guidelines were updated in 2011 to incorporate new advances in antiarrhythmic drug therapy and anticoagulant therapy, as well as progress in the field of catheter ablation. Many decisions about patient care involve consideration of issues related to lifestyle and quality of life rather than survival. These decisions also involve addressing the key topics of heart rate control, heart rhythm control, and stroke prevention. During the past decade, important advances in the management of atrial fibrillation have created a number of treatment options that have roughly equivalent therapeutic efficacies when they are used for several common clinical situations encountered in clinical practice. The range of available treatments for patients with atrial fibrillation provides an important opportunity for the physician to deliver patient-centered care, which uses patient values to determine the best course of treatment.

*J Am Osteopath Assoc.* 2012;112(6):334-342

An important challenge in modern medicine is to blend the goal of providing patient-centered care with the necessity of fulfilling clinical guidelines. In pursuit of this outcome, it is useful to distinguish between a goal and a guideline. A goal defines the focus and aspirations of a treatment, which might not be completely fulfilled, whereas a guideline sets a standard, or expectation, of treatment on the basis of a statement of expert opinion arrived at through a consensus on available scientific and research evidence. All medical practitioners are expected to fulfill these guidelines in the provision of patient care, but the goals of care within this context may vary considerably, reflecting the uniqueness of each patient's circumstance. In the present article, we examine the guidelines for the management of nonvalvular atrial fibrillation (AF) in the context of achieving the goal of delivering patient-centered care.

### Patient-Centered Care

All medical practitioners would like to think that they aspire to practice patient-centered care. Osteopathic physicians are positioned to be leaders in the delivery of patient-centered care because one of the fundamental tenets of osteopathic medicine is to recognize that the patient, not the disease process, is the focus of health care.<sup>1</sup> In essence, patient-centered care may be viewed as a core value implemented through a set of clinical skills. Information and involvement are at the heart of the patient-centered model. Patients are encouraged to express their values and preferences before diagnostic or therapeutic interventions are implemented.<sup>2</sup> The American Osteopathic Association, in collaboration with other professional societies, is calling for a new model of primary care called the patient-centered medical home.<sup>3</sup> One of the guiding principles of this new model is a whole-person orientation.

It should be noted that the goal of providing patient-centered care does not relieve a physician of the obligation to practice evidence-based medicine and adhere to guidelines that are established by professional societies and based on that body of medical evidence. Instead, patient-centered care provides a new perspective from which the physician can determine how a guideline based on clinical

From the Section of Electrophysiology in the Division of Cardiovascular Medicine in the Department of Internal Medicine at the University of Michigan Health System in Ann Arbor, Michigan (Dr Good), and the Section of Cardiology in the Department of Internal Medicine at Oakwood Southshore Medical Center in Trenton, Michigan (Dr Rogers).

**Financial Disclosures:** None reported.

Address correspondence to Felix J. Rogers, DO, 5400 Fort St, Suite 200, Downriver Cardiology Consultants, Trenton, MI 48183-4636.

E-mail: fjrogers@aol.com

Submitted August 29, 2011; final revision received January 7, 2012; accepted April 16, 2012.

## KEY POINTS

**A CORE VALUE OF PATIENT-CENTERED CARE IS THAT PATIENTS** are encouraged to express their values and preferences before diagnostic or therapeutic interventions are implemented.

**THE CLINICAL EVALUATION OF A PATIENT WITH ATRIAL** fibrillation establishes the diagnosis and defines the underlying cardiac status. The evaluation includes obtaining the patient's medical history and performing a physical examination, electrocardiography, and transthoracic echocardiography.

**THE MANAGEMENT OF ATRIAL FIBRILLATION INVOLVES** 3 objectives: controlling heart rate, preventing thromboembolism, and making a decision about restoring sinus rhythm.

**HEART RATE CONTROL OPTIONS ARE BASED ON COMORBID** conditions and patient preference, especially in relation to the side effect profile.

**STROKE PROPHYLAXIS SHOULD BE BASED ON (1) A PATIENT'S** individual risk for stroke (according to the CHADS<sub>2</sub> score) and (2) patient preference for an agent on the basis of cost, convenience, and the side effect profile.

**A DECISION ABOUT HEART RHYTHM CONTROL SHOULD BE** based on patient quality of life and symptoms, underlying cardiac status, and past experience with efforts to restore sinus rhythm.

experience with multitudes of patients can be applied to an encounter with a single patient. Atrial fibrillation provides a good opportunity to describe patient care in this context, because (1) AF is very common, (2) there is an extensive body of scientific evidence describing the evaluation and management of this condition, and (3) advances in interventional electrophysiology and pharmacologic drug development provide an assortment of treatments of similar efficacy that can be used in several common clinical situations. The most recent guidelines for the management of AF were adopted in 2006 by the American College of Cardiology, the American Heart Association, and the European Society of Cardiology.<sup>4</sup> Two subsequent focused amendments to that document largely reflected advances in antiarrhythmic drug therapy and anticoagulation therapy.<sup>5,6</sup>

### Overview of Atrial Fibrillation

Atrial fibrillation is the single most common type of sustained cardiac arrhythmia encountered in clinical practice. In patients with AF, regular sinus rhythm is replaced by chaotic atrial activity caused by multiple small sites of automaticity and reentry rhythm in the left atrium. The incidence

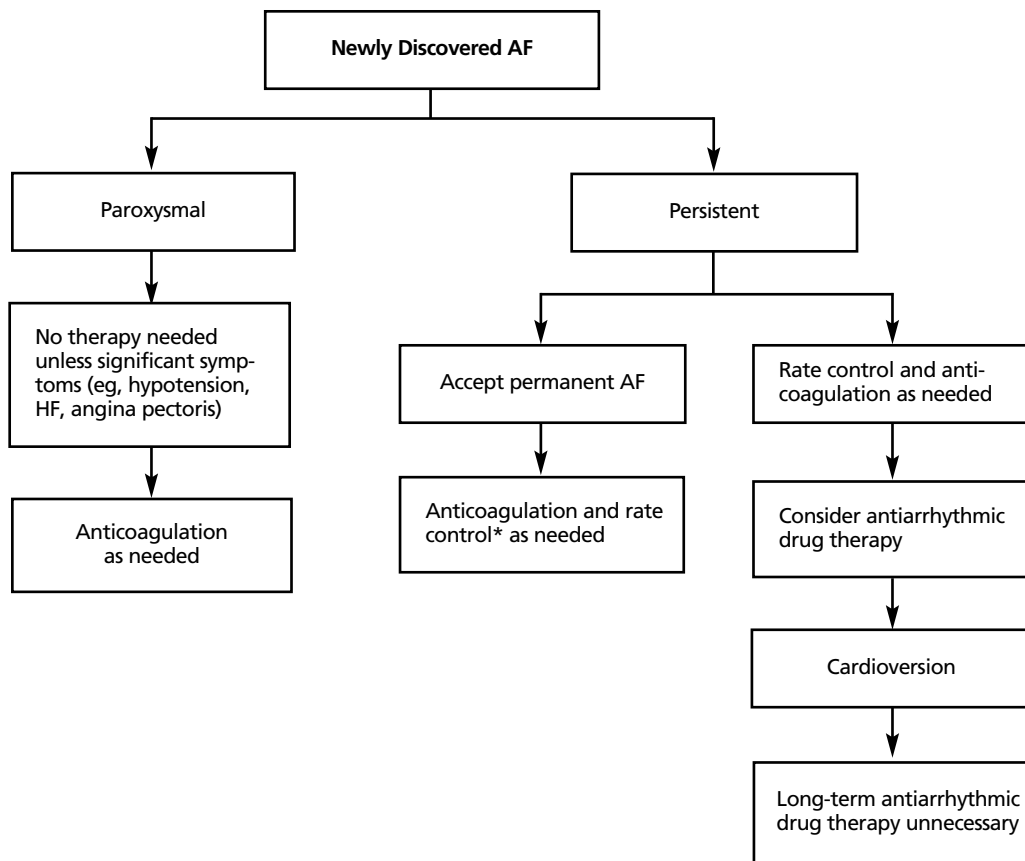
of this arrhythmia increases with advancing age. Most patients with AF have hypertension, coronary artery disease, or both. Atrial fibrillation may be confused with atrial flutter, a related arrhythmia with a well-defined macroreentrant circuit involving the right atrium, as well as with multifocal atrial tachycardia, an arrhythmia in which the heart rhythm is also irregular because of multiple foci of abnormal impulse formation in the atria. Atrial fibrillation may present either as paroxysmal episodes that are recurrent and spontaneously self-terminating or as persistent episodes that can be sustained for more than 7 days. Atrial fibrillation with a duration of more than 1 year is designated as long-standing AF and may lead to permanent AF when no further therapy for converting AF to sinus rhythm is anticipated. Lone AF is a term reserved to describe AF in patients (typically those younger than 60 years) without evidence of cardiac or pulmonary disease and without risk factors for thromboembolism, such as hypertension.<sup>4</sup>

At a minimum, clinical evaluation for AF establishes the diagnosis and defines the underlying cardiac status. The evaluation includes obtaining the patient's history and performing a physical examination, electrocardiography, and transthoracic echocardiography. (Transesophageal echocardiography is performed only when specific information about the possibility of left atrial thrombus is needed to determine whether cardioversion should be performed.)

Management of AF involves the following 3 objectives: (1) controlling heart rate, (2) preventing thromboembolism, and (3) making a decision about restoration of sinus rhythm. *Figure 1* presents these objectives in the context of the pharmacologic management of newly discovered AF.

**Clinical evaluation for AF establishes the diagnosis and defines the underlying cardiac status.**

In the remainder of the present article, we elaborate on the objectives of management of AF in the context of patient-centered care. Clinical vignettes from actual patient presentations are used as an organizing principle to highlight key features for each topic. Some issues are not appropriate for patient involvement in the decision-making process. For these issues, the traditional model of benevolent paternalism, in which the physician is the expert and determines the best treatment choice, is appropriate. For example, apart from asking about medication intolerances,



**Figure 1.** Flow diagram presenting options for the management of newly discovered atrial fibrillation (AF). Note that cardioversion may not be preferred for patients with newly discovered persistent AF and that the condition is “accepted.”<sup>4</sup> **Abbreviation:** HF, heart failure. \*See Figure 2. Reprinted with permission from *Circulation*. 2006;114:e257-e354.<sup>4</sup> ©2006 American Heart Association, Inc.

a hospital-based physician does not ask a patient with AF and a rapid ventricular response whether he or she would rather receive intravenously administered esmolol or diltiazem for heart rate control. Likewise, although a hospital-based physician may inform a patient that it is necessary to determine his or her underlying cardiac status, the physician does not ask a patient for his or her opinion about which imaging modality should be used to determine whether mitral valve disease or clinically significant left ventricular dysfunction is present.

### Heart Rate Control

C.S. is an active 84-year-old woman with heart failure, diabetes mellitus, and chronic obstructive pulmonary disease. She has persistent AF and a resting heart rate that is greater than 120 beats per minute. Of the agents used for heart rate control (Table 1), which would you recommend to the patient?

The physician would individualize the choices on the basis of the patient’s underlying medical conditions and

the possibility that the adverse effects of the medication could interact with these conditions. For example, the physician would need to weigh the concerns associated with  $\beta$ -blocker use against the underlying chronic obstructive pulmonary disease and a possible lack of awareness of hypoglycemia with diabetes, as well as against the negative inotropic effect of diltiazem and verapamil with heart failure.

A physician might say to C.S., “Given your comorbid conditions, your best bet is metoprolol.” When using a patient-centered approach, however, a physician might say, “All of our drug choices have advantages and drawbacks. After I review them, you may have some opinions. No matter what you choose, we will ultimately just have to see how you do with that drug.”

At this point, it is useful to take a pragmatic view. Much time can be spent on issues that are not critical to patient values. Realistically, the physician is often in the best position to advise the patient as to what treatment might be best for him or her. Apart from some obvious

**Table 1.**  
**Medication Options for the Management of Heart Rate Control**  
**in an Ambulatory Patient With Atrial Fibrillation**

Medication	Dosage	Class and LOE <sup>a</sup>
<b>Heart Rate Control</b>		
Metoprolol	25-100 mg twice daily	Class I, LOE C
Propranolol	80-240 mg daily in divided doses	Class I, LOE C
Diltiazem	120-360 mg daily	Class I, LOE B
Verapamil	120-360 mg daily	Class I, LOE B
<b>Heart Rate Control in Patients With Heart Failure and Without Accessory Pathway</b>		
Digoxin	0.125-0.375 mg daily	Class I, LOE C
Amiodarone	Loading dose, then 200 mg daily	Class IIb, LOE C

<sup>a</sup> A class I indication means that the benefits of treatment far outweigh the risks and that treatment should be administered. A class IIb indication means that the associated benefit is equal to or slightly better than the associated risk and that treatment may be considered. Level of evidence (LOE) B is derived from 1 randomized trial or from other scientific studies, and LOE C denotes expert opinion or limited studies.

Source: Adapted from Fuster V et al.<sup>4</sup>

issues, like asking whether the patient has a chronic problem with constipation, which might require the use of a  $\beta$ -blocker over verapamil, these decisions typically are not the main issues that define patient-centered care. Furthermore, patients are not expected to know about the other aspects of drug use—that is, additional benefits or drawbacks to therapy, according to other characteristics of the agent.

Suppose that C.S. chooses metoprolol, with the idea that it will be beneficial to her left ventricular dysfunction, will not really represent a problem with her diabetes, and will be unlikely to exacerbate her chronic obstructive pulmonary disease. When she returns 2 weeks after making this decision and initiating metoprolol, an electrocardiogram reveals a resting heart rate of 105 beats per minute. Should you increase the metoprolol dose, conduct a 6-minute walk test to determine whether the patient has good heart rate control with activity, or just continue with the same dose as long as the patient is feeling fine?

This topic was addressed in the 2011 amendment to the 2006 guidelines for the management of AF.<sup>5</sup> Lenient heart rate control (defined as a resting heart rate of less than 110 beats per minute) was as effective as strict heart rate control, as long as the patient has no symptoms associated with the arrhythmia.<sup>7</sup> In this case, it is the status of the patient, not a specific heart rate value, that determines the next step in treatment. Because C.S. was feeling fine, no adjustments were made to her medications.

### Stroke Prophylaxis

J.K. is a 72-year-old man with a history of diabetes and hypertension. He has had AF for 2 years and has taken

warfarin during that time. He says, “Doctor, I want to stop taking warfarin.” What advice do you give him?

Stroke prevention is the fundamental objective of the primary care physician in the management of AF. The first step (and this is a general rule in medicine) is to determine how to align the intensity of the treatment with the level of risk. Although several systems can be used to establish the likelihood of stroke in patients with AF, the CHADS<sub>2</sub> risk score is used most often.<sup>8</sup> The CHADS<sub>2</sub> score awards 1 point each for history of congestive heart failure, hypertension, age older than 75 years, and diabetes mellitus. Two points are awarded if the patient has previously had a stroke or transient ischemic attack. According to this scoring system, it is recommended that a patient with a CHADS<sub>2</sub> score of 0 take 81 to 325 mg of aspirin daily. When 1 moderate risk factor is present, the patient should

take either aspirin or warfarin (target prothrombin time/international normalized ratio, 2.5). When a patient has any high risk factor or more than 1 moderate risk factor, warfarin is the recommended therapy, according to the 2006 guidelines. (For patients with lone AF, no treatment is necessary.)

In 2010, to recognize higher-risk subpopulations, the European Society of Cardiology offered a revision to the CHADS<sub>2</sub> score, commonly known as CHADS<sub>2</sub>-vascular but officially spelled CHA<sub>2</sub>DS<sub>2</sub>-VASc, which assigns an extra point each for vascular disease and female sex.<sup>9</sup> In addition, age 75 years or older is awarded 2 points, compared with 1 point awarded for age 65 to 74 years (Table 2). Several health care centers in the United States are now using this revised scoring system.

**In the management of AF, the fundamental obligation of the primary care physician is to prevent stroke.**

J.K. asked for an alternative to warfarin treatment in 2011. Alternative treatments of this type were addressed in the updated guidelines of March 15, 2011.<sup>6</sup> Dabigatran (Pradaxa) is useful as an alternative to warfarin for the treatment of patients with AF and risk factors for stroke who do not have prosthetic heart valves, significant valve disease, a creatinine clearance rate of less than 15 mg/dL, or advanced liver disease. Because treatment with dabi-

**Table 2.**  
Stroke Risk Stratification with the CHADS<sub>2</sub>  
and CHA<sub>2</sub>DS<sub>2</sub>-VASc Scores<sup>a</sup>

Score Element	Points Assigned <sup>b</sup>
<b>CHADS<sub>2</sub></b>	
Congestive heart failure	1
Hypertension	1
Age ≥75 y	1
Diabetes mellitus	1
Stroke/TIA/TE	2
<b>CHA<sub>2</sub>DS<sub>2</sub>-VASc</b>	
Congestive heart failure/LV dysfunction	1
Hypertension	1
Age ≥75 y	2
Diabetes mellitus	1
Stroke/TIA/TE	2
Vascular disease <sup>c</sup>	1
Age 65-74 y	1
Sex category <sup>d</sup>	1

<sup>a</sup> The standard CHADS<sub>2</sub> score is compared with the proposed revision by the European Society of Cardiology (CHA<sub>2</sub>DS<sub>2</sub>-VASc), which divides age into 2 groups and adds additional points for vascular disease and female sex.

<sup>b</sup> The maximum CHADS<sub>2</sub> score is 6, and the maximum CHA<sub>2</sub>DS<sub>2</sub>-VASc score is 9.

<sup>c</sup> Prior myocardial infarction, peripheral artery disease, or aortic plaque.

<sup>d</sup> Female sex.

**Abbreviations:** CHF, congestive heart failure; LV, left ventricular; MI, myocardial infarction; PAD, peripheral artery disease; TE, thromboembolism; TIA, transient ischemic attack.

**Source:** Adapted from Lip et al.<sup>9</sup> Reproduced with permission from the American College of Chest Physicians.

might represent the best available option for J.K., compared with either aspirin alone or no prophylaxis for thromboembolism.

The topic of anticoagulation is particularly relevant to discussions of patient-centered care, because patient values clearly play a central role in decision making. There are burdens and benefits associated with warfarin therapy: a blood draw with subsequent follow-up by the physician may result in delays in adjusting treatment, which could increase the chance for either bleeding or complications of thrombosis. Although a visit to a warfarin clinic can provide a patient with a test result on the spot, the patient still needs to obtain transportation to the clinic, and there remain unaddressed issues about associated expenses resulting from new reimbursement decisions made by the Centers for Medicare & Medicaid Services. Home monitoring of the prothrombin time/international normalized ratio and allowing patients to make self-directed adjustments to warfarin dosing on the basis of home monitoring are effective options for suitable patients.<sup>12</sup>

**Dabigatran (Pradaxa) is an alternative to warfarin in patients with AF and risk factors for stroke.**

Although the use of dabigatran and aspirin in combination with clopidogrel may eliminate the need for monitoring, the cost of such treatment may be much higher than that of warfarin, depending on the insurance coverage that the patient possesses.

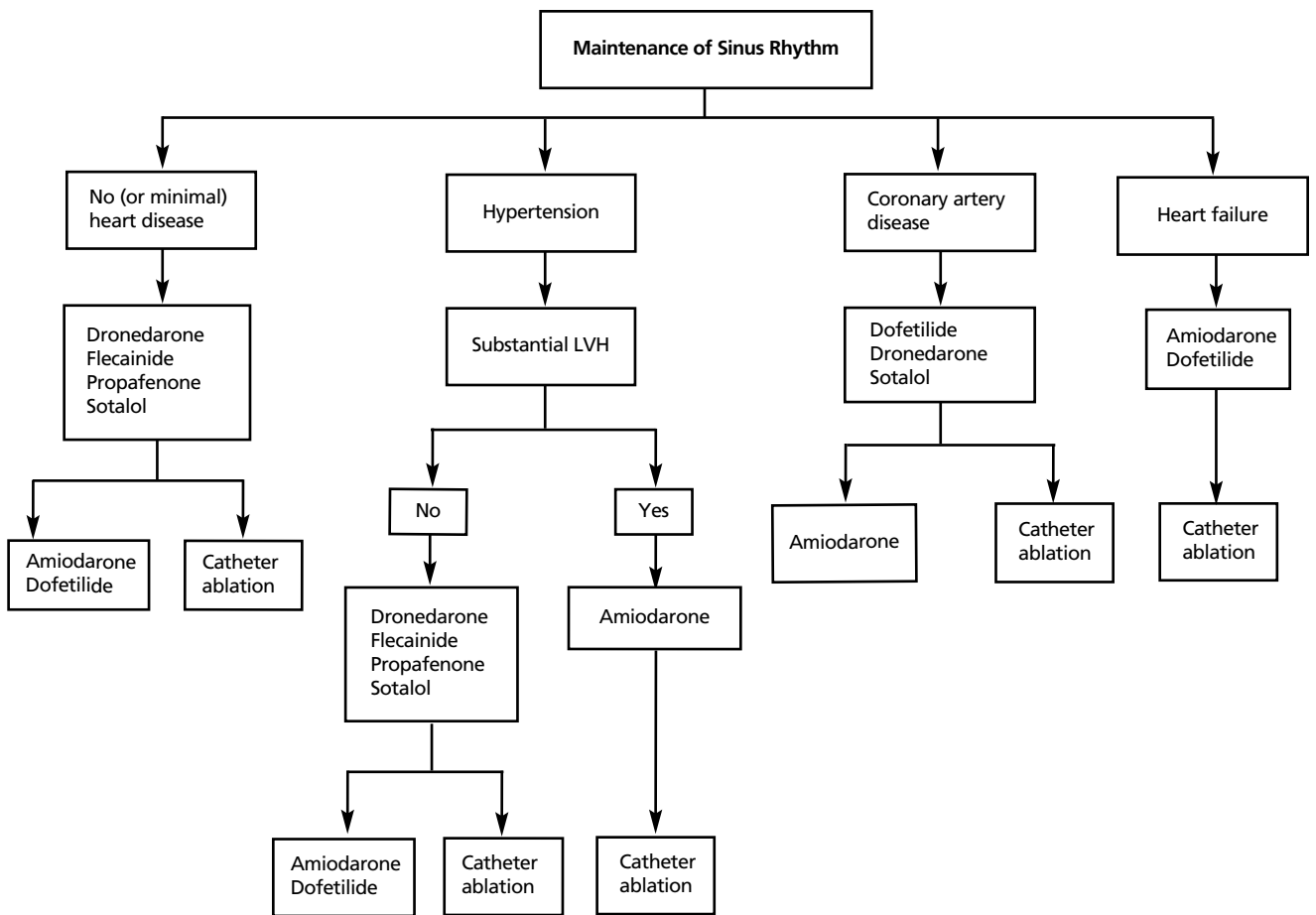
**Heart Rhythm Control**

C.R. is a 53-year-old man with persistent AF and a CHADS<sub>2</sub> score of 2 (denoting the presence of hypertension and diabetes). His echocardiogram reveals mild to moderate left ventricular hypertrophy with a mildly dilated left atrial dimension, no pathologic valvular stenotic or regurgitant lesions, and preserved left ventricular systolic function. He does not want to take warfarin and wants to pursue heart rhythm control. The use of direct-current cardioversion in the absence of antiarrhythmic drug therapy was unsuccessful for him 1 year previously.

The AFFIRM (Atrial Fibrillation Follow-Up Investigation of Rhythm Management) trial,<sup>13</sup> a randomized, multicenter comparison trial evaluating the efficacy of heart rate control vs heart rhythm control as a strategy for the treatment of patients with AF is often cited as evidence that establishment of sinus rhythm is no better than rate-controlled AF in the care of patients. However, the AFFIRM trial predominantly enrolled older patients

gatan requires twice-daily dosing and has a greater risk of associated nonhemorrhagic adverse effects than does warfarin, patients who have excellent control with warfarin may have little to gain by switching treatment to dabigatran.<sup>6</sup>

If dabigatran is not appropriate for J.K. because of cost, renal failure, or adverse effects, the 2011 focused update to the guidelines for the management of AF<sup>6</sup> suggests that clopidogrel added to aspirin could be considered for patients for whom warfarin is considered unsuitable because of either patient preference or the physician’s assessment of the ability of the patient to safely sustain anticoagulation. In this situation, it is important to note that the guidelines give this research finding<sup>10</sup> a score of IIb, which indicates a lower level of treatment effect. In the ACTIVE-W trial (Atrial Fibrillation Clopidogrel Trial with Irbesartan for Prevention of Vascular Events), treatment with clopidogrel in combination with aspirin was evaluated in a head-to-head comparison with warfarin and was found to be inferior for the prevention of vascular events in patients with at least 2 risk factors for stroke.<sup>11</sup> Nonetheless, the use of clopidogrel in combination with aspirin



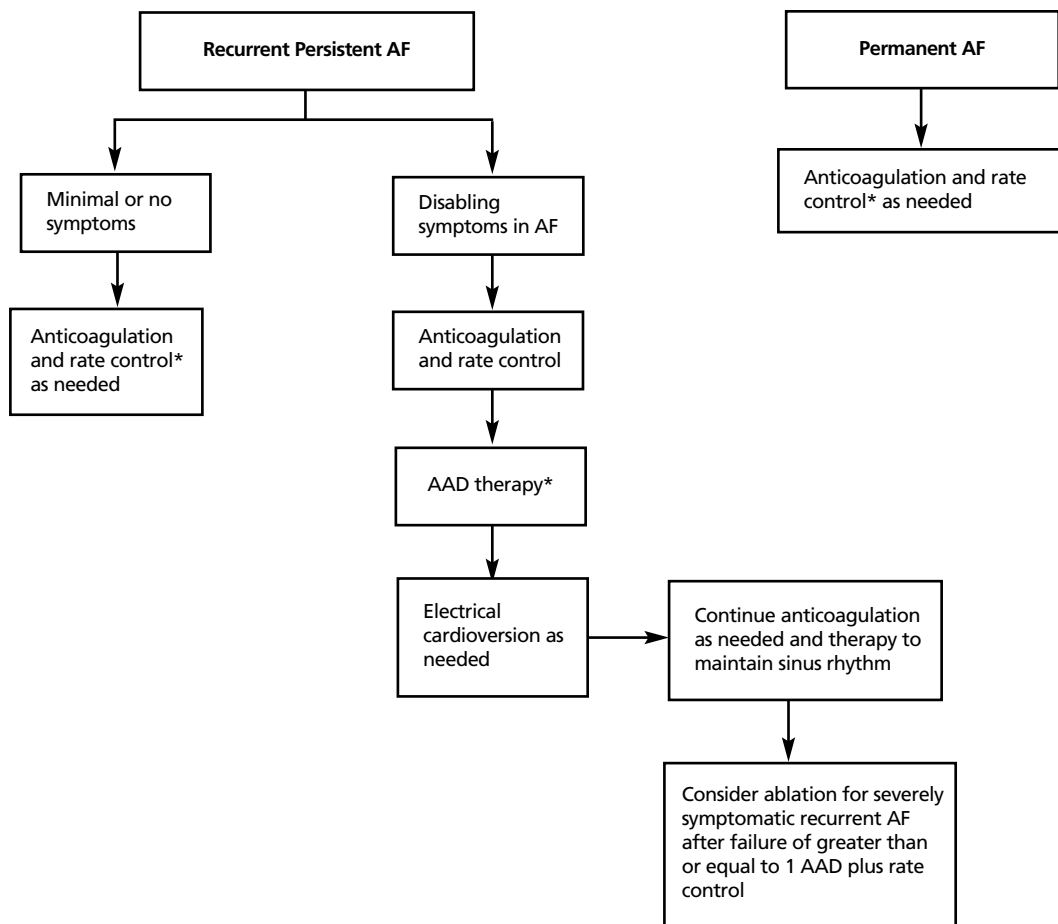
**Figure 2.** Agents used for the maintenance of sinus rhythm in patients with atrial fibrillation, stratified by the status of the underlying cardiac disease. **Abbreviation:** LVH, left ventricular hypertrophy. Reprinted with permission from Wann S, et al.<sup>5</sup> ©2011 Elsevier.

(mean age, 70 years), had relatively limited patient follow-up (average duration, 3.5 years), and produced findings that may not be generalizable to a younger population who potentially may require lifelong therapy. In addition, the study was a comparison of management strategies, not a trial that compared the effects of restoration of sinus rhythm in patients with AF. Many patients in the arm of the study assessing heart rate control maintained sinus rhythm. In a post hoc analysis of the AFFIRM trial,<sup>14</sup> sinus rhythm was associated with improved survival, and use of an antiarrhythmic agent was associated with an similar decrement in survival, suggesting that the beneficial effects of restoration of sinus rhythm may have been countered by the negative effects of antiarrhythmic drug therapy. The AFFIRM study did not consider catheter ablation as a factor in restoration of sinus rhythm. In the patient group randomized to follow a heart rhythm control strategy, discontinuation of anticoagulation

therapy was associated with unacceptable stroke rates.

Figure 2 presents a flow diagram for maintenance of sinus rhythm based on clinical guidelines. Note that decision making is stratified based on the clinical characteristics of no (or minimal) heart disease, hypertension, coronary artery disease, or heart failure. C.R. has hypertension, so the next step for him involves determination of the presence of left ventricular hypertrophy. When substantial left ventricular hypertrophy is present, only the drug amiodarone is recommended. It should be noted that Canadian guidelines define left ventricular hypertrophy as being associated with electrocardiographic evidence of secondary ST- and T-wave changes,<sup>15</sup> whereas the American College of Cardiology/American Heart Association guidelines do not make this specific statement.

In the absence of substantial left ventricular hypertrophy, 4 choices of first-line antiarrhythmic agents (ie, dronedarone, flecainide, propafenone, and sotalol) are



**Figure 3.** Flow diagram presenting the steps in the treatment of patients with recurrent persistent atrial fibrillation (AF). **Abbreviation:** AAD, antiarrhythmic drug. \*See Figure 2. Reprinted with permission from *Circulation*. 2006;114:e257-e354.<sup>4</sup> ©2006 American Heart Association, Inc.

available for heart rhythm control. Because of the possibility that proarrhythmic adverse effects will develop, patients should be admitted to the hospital to initiate treatment with sotalol, whereas patients receiving any of the other 3 aforementioned first-line antiarrhythmic agents can start receiving treatment on an outpatient basis. Although treatment with flecainide or propafenone can be initiated on an outpatient basis, use of these agents should be avoided in patients with ischemic heart disease or left ventricular dysfunction.

For patients who have recurrence of AF while receiving treatment with 1 of these agents, alternative clinical options include considering a trial of a different antiarrhythmic drug, such as amiodarone or dofetilide, or attempting left atrial catheter ablation in the hope of curing AF. Given the number of qualifying statements regarding heart rhythm control, many primary care physicians defer decision making and the choice of treatment options to a cardiologist or electrophysiologist.

Although the guidelines for the management of AF were updated in 2011, advancements in the field of catheter ablation for the management of AF have occurred so rapidly that catheter ablation is an increasingly attractive treatment option for many patients. For patients with persistent AF, a randomized controlled trial<sup>16</sup> showed that, after 5 years of follow up, catheter ablation provided acceptable long-term relief notwithstanding a gradual decline in arrhythmia-free status. In addition, studies of patients with recurrent paroxysmal AF have shown that catheter ablation has reasonable efficacy, is associated with a longer time to treatment failure, and also decreases the likelihood of progression from paroxysmal AF to persistent AF, compared with pharmacologic treatment.<sup>17,18</sup> On the basis of findings from these studies and others, the American College of Cardiology/American Heart Association guidelines recommend catheter ablation as a reasonable treatment for patients with symptomatic persistent AF, provided that patients first tried to achieve

sinus rhythm maintenance with the use of at least 1 antiarrhythmic agent (Figure 3). An issue that is not addressed in the guidelines but should be individualized for each patient is whether it is reasonable to ask a 40-year-old patient with paroxysmal or persistent AF to take medication several times a day for the next 40 years to maintain sinus rhythm, or whether the patient should undergo an ablation procedure in the hopes of curing their arrhythmia.

Assume that C.R. has evidence of atrial flutter only, not AF. How might this assumption change his treatment recommendations? Recognize that typical atrial flutter is characterized by findings of saw-toothed P waves in the inferior leads on 12-lead electrocardiography. Although atrial flutter is a more organized arrhythmia

### Catheter ablation is reasonable for symptomatic persistent atrial fibrillation.

characterized by electrical reentry within the right atrium, it carries risks for stroke similar to those associated with AF, and it should be treated according to the same standards with respect to anticoagulation therapy. Atrial flutter is unique, however, in that heart rate control is often more difficult to achieve than with AF. Furthermore, evidence has established that catheter ablation is superior to medical therapy rendering it a first-line therapy for most patients.<sup>19</sup> In addition, recent studies have suggested that even when durable elimination of atrial flutter can be achieved by catheter ablation, a significant portion of patients will eventually have AF develop.<sup>20,21</sup> Clinicians should, therefore, be vigilant in monitoring for the subsequent development of AF in patients for whom catheter ablation successfully resolved atrial flutter.

After catheter ablation is performed, it is important to consider when it is safe to discontinue anticoagulation therapy and when AF can be considered cured. The expert consensus statement of the Heart Rhythm Society on the use of catheter ablation for AF recommends follow-up of patients within 3 months after catheter ablation is performed and every 6 months thereafter for a minimum of 2 years.<sup>22</sup> Twelve-lead electrocardiography should be performed at each clinical visit, and event monitoring should be performed for evaluation of palpitations. Auto-triggered ambulatory event monitoring is recommended for the evaluation of asymptomatic recurrences. The guidelines do not address the issue of whether anticoagulation therapy can be discontinued on the basis of these follow-up methods. In clinical practice, discontinuation of anticoagulation therapy generally is considered after 3 to 6 months of follow-up, provided that there are no symptomatic recurrences and that auto-triggered event moni-

#### TAKE HOME POINTS

THE CHOICE OF AGENT FOR HEART RATE CONTROL DEPENDS in part on whether the patient has heart failure, which would make digitalis and, on occasion, treatment with amiodarone more attractive. Otherwise, the mainstay of treatment is a  $\beta$ -blocker or calcium channel blocker.

THE FIRST STEP IN STROKE PROPHYLAXIS IS TO CALCULATE the CHADS<sub>2</sub> score to determine whether the risk of stroke is high enough that treatment involving more than aspirin is needed.

FOR STROKE PREVENTION, PATIENTS HAVE SEVERAL CHOICES other than standard warfarin therapy, including home monitoring of the prothrombin time/international normalized ratio, treatment with dabigatran, and, in some cases, treatment with clopidogrel in combination with aspirin.

THE CHOICE OF AN AGENT FOR HEART RHYTHM CONTROL is based on whether the patient has hypertension, coronary artery disease, or heart failure. A decision regarding heart rhythm control needs to be based on the symptoms and quality of life of the patient, because strategies for heart rhythm control have not been shown to increase the chance of survival.

toring does not identify asymptomatic recurrences. Patients with very high CHADS<sub>2</sub> scores of 5 or 6 and patients who have previously had a stroke may be at risk of stroke independent of AF recurrence and may wish to continue anticoagulation therapy indefinitely.

#### Conclusion

Patient-centered care is especially appropriate for patients with AF because there are so many treatment options with equivalent therapeutic efficacies. The American College of Cardiology, the American Heart Association, the European Society of Cardiology, and the Heart Rhythm Society have all agreed on guidelines for the management of AF and have provided focused updates. It is incumbent upon each physician to know and apply these guidelines in the context of patient-centered care.

Options for heart rate control are based on comorbid conditions and patient preference, especially regarding how they relate to the side effect profiles of medications. Strict heart rate control is not superior to lenient heart rate control. Stroke prophylaxis should be determined by a patient's individual risk for stroke and patient preference for an agent on the basis of cost, convenience, and the potential for deleterious effects. There is ongoing discussion about risk stratification for stroke, with some centers using the CHADS<sub>2</sub> scoring system and others adopting the newer CHA<sub>2</sub>DS<sub>2</sub>-VASc scoring system. A decision about rhythm control should be based on the following patient characteristics and history: age, symptoms, quality of life,



underlying cardiac status (hypertension, coronary artery disease, and heart failure), and past experience with efforts to restore sinus rhythm.

**Authors' Note:** After this article was submitted for publication, rivaroxaban was approved for stroke prophylaxis in patients with nonvalvular atrial fibrillation. In a large, randomized controlled trial,<sup>23</sup> it was shown to be noninferior to warfarin. It has not yet been addressed in the guidelines of the American College of Cardiology/American Heart Association.

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