<< Return to Previous Page

American Family Physician
A peer-reviewed journal of the American Academy of Family Physicians
February 1, 2000 Table of Contents

Practice Guidelines

ACC/AHA Guidelines for Ambulatory ECG

SHARON SCOTT MOREY

Am Fam Physician. 2000 Feb 1;61(3):884-888.

The American College of Cardiology (ACC) and the American Heart Association (AHA), in collaboration with the North American Society for Pacing and Electrophysiology, have developed guidelines for the use of ambulatory electrocardiography (ECG). The guidelines include recommendations for the evaluation of symptoms of cardiac arrhythmias; for risk assessment in patients who have sustained a myocardial infarction, have congestive heart failure (CHF) or have hypertrophic cardiomyopathy; for the evaluation of antiarrhythmic therapy, or pacemaker or implantable cardioverter-defibrillator function; and for the evaluation of possible myocardial ischemia. There is also a section on the use of ambulatory ECG for the evaluation of children with cardiac symptoms.

The eight-page executive summary of the guidelines appears in the August 24, 1999 issue of *Circulation*. It is also available on the ACC Web site (http://www.acc.org) and the AHA Web site (http://www.americanheart.org). The guidelines are published in their entirety in the September 1999 issue of the *Journal of the American College of Cardiology*. The complete guidelines are also available on the above-mentioned ACC and AHA Web sites. A single reprint of the executive summary (reprint no. 71-0171) can be obtained by calling 800-242-8721 or writing the American Heart Association, Public Information, 7272 Greenville Ave., Dallas, TX 75231-4596. Reprints of the complete guidelines (reprint no. 71-0172) cost $5 and can be obtained by calling 800-253-4636 or writing the American College of Cardiology, Resource Center, 9111 Old Georgetown Rd., Bethesda, MD 20814-1699.

The recommendations are classified according to the system used by the ACC and AHA. The classification system is as follows:

Class I—Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective.

Class II—Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment. **Class IIa**—The weight of evidence/opinion is in favor of usefulness/efficacy. **Class IIb**—The usefulness/efficacy is less well established by evidence/opinion.

Class III—Conditions for which there is evidence and/or general agreement that the procedure/treatment is not useful/effective, and in some cases may be harmful.

The following is an excerpt from the executive summary, giving the recommendations for the use of ambulatory ECG for assessing symptoms of arrhythmia, the risk of arrhythmias, the efficacy of antiarrhythmic therapy, the function of pacemakers and implantable cardioverter defibrillators and monitoring myocardial ischemia.

Assessment of Symptoms of Cardiac Arrhythmias

The guidelines state that one of the primary and most widely accepted uses of ambulatory ECG is determining the

association of a patient's transient symptoms to cardiac arrhythmias. The crucial information needed is the recording of an ECG during the precise time that the symptom is occurring. The recommendations note that the yield of ambulatory ECG monitoring in syncope is relatively low. However, because of the severity of symptoms, such testing is usually warranted. The yield of ambulatory monitoring that captures an episode of palpitation is higher than the yield in patients with syncope. Ambulatory ECG monitoring may also be indicated in the evaluation of other symptoms that may be related to cardiac abnormalities, such as intermittent shortness of breath, unexplained chest pain, episodic fatigue or diaphoresis.

The indications for ambulatory ECG monitoring for symptoms of arrhythmia are as follows:

Class I—(1) Patients with unexplained syncope, near syncope or episodic dizziness without obvious cause. (2) Patients with unexplained recurrent palpitation.

Class IIb—(1) Patients with episodic shortness of breath, chest pain or fatigue that is not otherwise explained. (2) Patients with neurologic events when transient atrial fibrillation or flutter is suspected. (3) Patients with symptoms such as syncope, near syncope, episodic dizziness or palpitation in whom a probable cause other than an arrhythmia has been identified but in whom symptoms persist despite treatment of this other cause.

Class III—(1) Patients with symptoms such as syncope, near syncope, episodic dizziness or palpitation in whom other causes have been identified by history, physical examination or laboratory tests. (2) Patients with cerebrovascular accidents, without other evidence of arrhythmia.

Assessment of Risk of Arrhythmias

According to the guidelines, ambulatory ECG monitoring is increasingly used to identify asymptomatic patients at risk of arrhythmias, such as after a myocardial infarction, in congestive heart failure and in hypertrophic cardiomyopathy. With myocardial infarction, 24-hour ECG monitoring is frequently performed before the patient is discharged from the hospital. Frequent premature ventricular contractions and high-grade ventricular ectopy are associated with a higher mortality rate among survivors of myocardial infarction.

Patients with CHF often have complex ventricular ectopy and a high mortality rate. Several studies have found that ventricular arrhythmias are sensitive but not specific markers of death and sudden death. There are divergent results with respect to the association between heart rate variability and arrhythmic events. According to the guidelines, there is not sufficient evidence to support the routine use of ambulatory ECG or heart rate variability monitoring in patients with CHF or dilated cardiomyopathy.

Although ambulatory ECG monitoring may provide prognostic information in patients with hypertrophic cardiomyopathy, the guidelines state that treatment of ventricular arrhythmias has not been shown consistently to increase life expectancy. Therefore, the role of ambulatory ECG in the day-to-day treatment of these patients remains unclear.

The guidelines state that three groups may benefit from ambulatory ECG or heart rate variability monitoring: patients with idiopathic hypertrophic cardiomyopathy, patients with CHF and patients who have had a myocardial infarction and have a reduced ejection fraction. However, the tests currently cannot be recommended for routine use in any other population.

The indications for ambulatory ECG monitoring to detect arrhythmias and to assess the risk of cardiac events in patients without symptoms are as follows:

Class I—None.

Class IIb—(1) Postmyocardial infarction patients with left ventricular dysfunction (ejection fraction of 40 percent

or less). (2) Patients with CHF. (3) Patients with idiopathic hypertrophic cardiomyopathy.

Class III—(1) Patients who have sustained a myocardial contusion. (2) Systemic hypertensive patients with left ventricular hypertrophy. (3) Postmyocardial infarction patients with normal left ventricular function. (4) Preoperative arrhythmia evaluation of patients for non-cardiac surgery. (5) Patients with sleep apnea. (6) Patients with valvular heart disease.

Assessment of Efficacy of Antiarrhythmic Therapy

Although ambulatory ECG monitoring is widely used to assess the effects of antiarrhythmic therapy, it has limitations as a guide for therapeutic efficacy. The limitations relate to significant day-to-day variability in the frequency and type of arrhythmias in many patients, a lack of correlation between arrhythmia suppression after intervention and subsequent outcome, uncertain guidelines for the degree of suppression required to demonstrate a statistical or clinical effect and an absence of quantifiable spontaneous asymptomatic arrhythmias between episodes in many patients with a history of life-threatening arrhythmias.

The indications for ambulatory ECG monitoring for the purpose of assessing antiarrhythmic therapy are as follows:

Class I—To assess antiarrhythmic drug response in individuals in whom the baseline frequency of arrhythmia has been characterized as reproducible and of sufficient frequency to permit analysis.

Class IIa —To detect proarrhythmic responses to antiarrhythmic therapy in patients at high risk.

Class IIb—(1) To assess rate control during atrial fibrillation. (2) To document recurrent or asymptomatic nonsustained arrhythmias during therapy in the outpatient setting.

Class III—None.

Assessment of Function of Implanted Cardiac Devices

According to the recommendations, ambulatory ECG monitoring is useful in assessing the function of cardiac pacemakers and implantable cardioverter defibrillators and for guiding appropriate programming of such devices. Monitoring is also useful for correlating intermittent symptoms with the device activity and for establishing the appropriateness of cardioverter-defibrillator shock therapy during follow-up.

The indications for ambulatory ECG monitoring to assess pacemaker and implantable cardioverter-defibrillator function are as follows:

Class I—(1) Evaluation of frequent symptoms of palpitation, syncope or near syncope to assess device function to exclude myopotential inhibition and pacemaker-mediated tachycardia and to assist in the programming of enhanced features such as rate responsivity and automatic mode switching. (2) Evaluation of suspected component failure or malfunction when device interrogation is not definitive in establishing a diagnosis. (3) To assess the response to adjunctive pharmacologic therapy in patients receiving frequent cardioverter-defibrillator therapy.

Class IIb—(1) Evaluation of immediate postoperative function after implantation of the device as an alternative or adjunct to continuous telemetric monitoring. (2) Evaluation of the rate of supraventricular arrhythmias in patients with implanted defibrillators.

Class III—Assessment of device malfunction when device interrogation, ECG or other available data (e.g., chest radiograph) are sufficient to establish an underlying cause/diagnosis. (2) Routine follow-up in asymptomatic patients.

Assessment of Mvocardial Ischemia

According to the guidelines, it is widely accepted that ambulatory ECG monitoring provides accurate and clinically meaningful information about myocardial ischemia in patients with coronary artery disease. However, there is presently no evidence that ambulatory ECG monitoring provides reliable information concerning ischemia in asymptomatic subjects without known coronary artery disease.

Ambulatory ECG has been used for preoperative evaluation of patients with peripheral vascular disease with no clinical evidence of coronary artery disease. However, on the basis of available data, exercise testing alone or with an imaging study remains the preferred test for risk stratification of patients with coronary artery disease or for preoperative evaluation. For patients who cannot perform exercise, ambulatory ECG can be used for further evaluation of the patient.

The indications for ambulatory ECG monitoring for myocardial ischemia are as follows:

Class I—None.

Class IIa—Patients with suspected variant angina.

Class IIb—(1) Evaluation of patients with chest pain who cannot exercise. (2) Preoperative evaluation for vascular surgery of patients who cannot exercise. (3) Patients with known coronary artery disease and atypical chest pain syndrome.

Class III—(1) Initial evaluation of patients with chest pain who are able to exercise. (2) Routine screening of asymptomatic subjects.
