

Heart Tests

Because of the complexity of the heart's electrical system, diagnosing heart arrhythmias can be difficult and requires special expertise as well as unique testing equipment. To diagnose the problem, a physician will carry out a thorough physical exam and gather a medical history. Taking into account a number of factors, including symptom patterns, the physician then will order specific tests.

Diagnostic Tests

Electrocardiogram (ECG/EKG)

A special recording machine is attached to legs, arms and chest via 10 electrodes and takes a snapshot of the electric signals creating heart rhythms.

Echocardiogram

A special imaging machine with a microphone-like attachment creates a videotaped image of heart structures that shows the heart's four chambers, valves and movements.

Holter Monitoring

To detect irregular heart rhythms, patients wear a Walkman-size recording box attached to their chest by five adhesive electrode patches for 24-48 hours.

Event Recorder

Patients carry a pager-sized event recording box so they can make a one- to two-minute recording of their heart rhythm when they actually experience symptoms. This is useful for patients with relatively infrequent and brief symptoms.



Tilt Table Test

This test evaluates the potential reasons for fainting, or syncope. Heart rhythm and blood pressure are carefully monitored while a patient rests on a special table. The table tilts the patient upright at a 70-80 degree angle for 30-45 minutes. If the patient faints, it usually means that he or she has a condition called vasovagal or neurocardiogenic fainting, which is not life threatening.

Electrophysiology Study (EPS)

Under sterile conditions, thin tubes called electrode catheters are inserted into veins in the groin or neck area and threaded into the heart. The heart's electrical conduction system **over** ➤

DIAGNOSIS DIFFICULTIES

Many arrhythmias come and go. The fleeting nature of arrhythmias makes it difficult to actually capture an event during any single test. Sometimes it's necessary to monitor the heart over time. Sometimes specialists provoke abnormal rhythms in a safe environment to evaluate and diagnose a problem.

Symptoms can be hard to identify. People with arrhythmias may not feel any symptoms, or they may have symptoms that seem unrelated to the heart, such as lightheadedness, fainting or shortness of breath. Electrophysiologists conduct special tests to determine if non-specific symptoms are related to problems in the heart's electrical conduction system or other types of heart disease.

Some arrhythmias are caused by factors unrelated to the heart. Medications, metabolic diseases, substances in the environment, diet and stress can contribute to abnormal heart rhythms in people who are otherwise healthy. Specialists take all of these factors into account as they select tests best able to uncover the true cause of an arrhythmia.

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Heart Tests *continued*

is measured. Electrical impulses are applied to the heart to provoke and analyze a fast heart rate. This study can diagnose symptomatic and potentially life-threatening slow and fast heart rates.

Radionuclide Ventriculography

Also called the first pass technique, or Multiple-Gated Acquisition Scanning (MUGA), radionuclide ventriculography is a nuclear medicine test that measures the heart's pumping ability.

Cardiac Catheterization

A thin hollow tube called a catheter is inserted through a blood vessel and, under X-ray guidance, threaded to the heart in cardiac catheterization. The catheter can obtain tissue samples of heart muscle that may be damaged, measure the pressure in the heart, or diagnose blood vessel or heart valve disease.