

Special Heart Rhythm Testing

Covered in this section:

Holter Monitor, Event Monitor, Implantable Event Recorder, Transtelephonic Pacemaker/ICD Transmission and Electrophysiology Study

Some patients have primary problems with their heart rhythm and require more testing. These are outlined below, and there is also helpful information on our [Arrhythmias website](#).

Holter Monitor

A Holter monitor is a way to record every beat of your heart for 24 hours. It's usually performed to make sure that you aren't having any dangerous heart rhythms that might need more treatment.

A small recorder is worn and attached to your body by stickers similar to those used to make an electrocardiogram (ECG). A Holter recording doesn't hurt, but sometimes the stickers can irritate the skin during the recording time. You'll be asked to keep a diary of events during the 24-hour period. It's helpful to know when you are active, sleeping or having any symptoms that might be caused by a heart rhythm problem.

Once the recording has been completed, the recorder and stickers are disconnected, and the recorder is taken back to the heart center for review. A technician will process the information from the recorder for your cardiologist to review.

Since a Holter recording is usually only worn for 24 hours, it's particularly helpful when you are having symptoms that are happening at least once a day. If symptoms are happening less often, an event monitor may be recommended instead.

Event Monitor

Event monitoring is a way to record the heart rhythm when your symptoms occur less than once a day. The event monitor is a recorder that's even smaller than a Holter recorder. It's worn for most of each day — typically for 30 days at a time. The monitor is always recording, but not saving. When you have a symptom, you'll be told to push a button on the recorder. When pushed, the recorder will save the rhythm just at that time and sometimes for a brief time *before* the button was pushed. When a recording has been made, you'll be told how to send it through

your telephone to your doctor's office. Newer types of monitors use wireless transmission rhythms and don't require manual activation.

Event monitors are small devices that are used by patients over a longer period (weeks to months, typically one month). Two sticky patches (electrodes) on the chest connect two wires to the event recorder. The monitor is always on but will only store the patient's rhythm when the patient or caregiver pushes the button. Most monitors will save the rhythm for several seconds of rhythm before the button is even pushed. The rhythm is also saved for a period after the button is pushed. A few specialized monitors are used only after the patient has symptoms. The intent is for most event monitors to be worn as much as possible every day to increase the chances of recording the patient's rhythm when he/she has symptoms.

Once a recording (sometimes more than one) has been made, it can be transmitted over the phone back to your heart center.

Implantable Event Recorder

An implantable event recorder (also known as an implantable loop recorder) is a device that can record your heart rhythm for up to 14 months. This device is placed under the skin through a minor operation. This is the best way to record very serious rhythm problems that may be happening only rarely. The recorder can be programmed to record certain heart rhythms automatically or when you or your child places a special activator over the device. The heart rhythms that are recorded can be displayed and printed later by a special instrument used by your cardiologist.

Some patients have serious but very infrequent symptoms that can't be recorded by regular event recorders because they occur so rarely. In these cases, it may become necessary to implant a special event recorder called an ILR under the patient's skin. An ILR is the size of an adult's little finger. It is implanted under the skin by a one-inch incision on the chest. The battery lasts 14 months. It is always watching the patient's rhythm. It will make a recording of the patient's rhythm when either the patient places an activator over the ILR and pushes a button when they are having a symptom or when the patient's rate goes above or below the limits set in the ILR. The recordings cannot be sent over the phone. Instead, a programmer machine reads the information with radio waves. The ILR will store up to 14 events between each reading.

Transtelephonic Pacemaker/ICD Transmission

Patients who have pacemakers and implantable cardioverter/defibrillators (ICDs) are often required to send in a telephone transmission routinely to check pacemaker/ICD function. This consists of a rhythm strip and sometimes a recording with a magnet over the device. A new technology used by ICD and pacemaker patients allows all of the information from the device (including settings and recordings of arrhythmias) to be sent to your doctor not only by fax, but by Internet.

These small devices transmit the patient's rhythm *live* over the phone. These devices *do not* save a recording of rhythm for later playback like an event monitor. The transtelephonic devices are commonly used by pacemaker/ICD patients for routine scheduled checks over the phone. (An ICD is an implantable cardioverter-defibrillator or shock device used for treating life-threatening rhythm problems.)

Electrophysiology Study

An electrophysiology study (EP study) is a specialized cardiac catheterization that looks at the heart's electrical or rhythm function instead of its blood flow. The heart's rhythm function is what controls the start of each heartbeat and controls the heart rate.

EP studies in patients are done mostly to fix an abnormal fast rhythm problem (using ablation). They can also be done to assess the potential for developing abnormal rhythms (arrhythmias) that may need treatment with medication or surgery.