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Automatic Implantable Cardioverter Defibrillators (AICD)

Why is the doctor performing this procedure?

To monitor an abnormally beating heart, either one that beats too fast (Tachycardia), too slow (Brachycardia) or irregularly (Atrial Fibrillation). These abnormal heart beats are referred to as arrhythmias.

What is an AICD?

An AICD is a device that monitors a person's heart rate. They are generally implanted into heart failure patients. The device is programmed to perform the following tasks: speed up or slow down your heart, depending upon the heart rate. The AICD gives your heart a shock if you start having life threatening arrhythmias or an abnormally high heart rate. Arrhythmias occur when your heart does not beat normally. Some arrhythmias can cause the heart to completely stop beating. The shock given by the AICD can make the heart start beating normally again. An AICD can also make your heart beat faster if your heart is not beating fast enough.

There are different kinds of AICDs, but they all have 2 parts: **electrodes** (thin flexible wires) and a **generator**. The electrodes or "leads" sense or watch the heart's electrical activity. The generator is the battery power source and the "brains" of the AICD. It is a small metal can about the size of a deck of cards. The generator stores information about any arrhythmias you have. The generator also keeps track of how often it needs to give your heart a shock. Some AICDs also function as pacemakers for heart rates that are too slow or too fast.

When is an AICD indicated?

Your doctor has recommended you for an AICD system for one or more of the following reasons:

- At least one episode of Ventricular Tachycardia (VT) or Ventricular Fibrillation (Vfib)
- Previous cardiac arrest or abnormal heart rhythm that has caused you to pass out
- A fast heart rhythm that keeps returning and could cause death
- A fast heart rhythm that cannot be cured by surgery
- A fast heart rhythm that cannot be controlled with medications
- Severe side effects from medications

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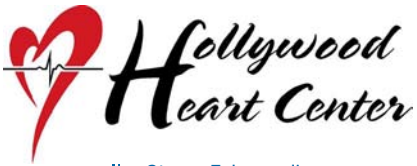
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- Stress Echocardiogram
- Electrophysiology (EPS)
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- Intravascular Ultrasound
- Echocardiography (ECHO)
- Electrocardiogram (EKG/ECG)
- Coronary Balloon Angioplasty
- Peripheral Vascular Angiography
- Transesophageal Echocardiogram (TEE)
- Signal Averaged Electrocardiogram (SAECG)
- Computed Axial Tomography (CAT/CT Scan)

RELATED LINKS

- Stroke
- Surgery
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- Aneurysm
- Heart Failure
- Chest Pain (Angina)
- Non-Invasive Testing
- Blood Clot (Thrombosis)
- Heart Rhythm Disorders
- Coronary Artery Disease
- Heart Attack (Acute Myocardial Infarction)

What happens during implantation of an AICD?

Prior to implantation of an AICD, an Electrophysiological study (EP study) may be performed. An EP study is used to help decide whether to use an AICD or whether to use drugs for treatment.

The newer AICD units can be implanted without major surgery. The procedure is performed under local anesthesia, but sometimes it is done under general anesthesia. You will be hooked up to an intravenous (IV) line and will receive sedation. Before the doctor makes an incision, your upper chest will be cleaned and your torso draped. Your arms may be loosely strapped to prevent movement during the testing of the AICD.

The doctor will make an incision in your upper chest area below the collarbone. A wire will be inserted through a vein into your heart. Sometimes more than one wire is used. The doctor will create a "pocket" in your chest, where the AICD is inserted. The AICD is connected to the wires. The doctor will test the AICD by creating an arrhythmia and then observing whether the AICD delivers the required therapy. Later that day, or the next day, your AICD system will be checked and tested again with a computer called a "programmer." This procedure is called "noninvasive programmed stimulation" or "pre-discharge testing." You will receive sedation. The doctor will provoke an arrhythmia to see if the device works. The AICD will deliver a shock (defibrillation). The staff will fine-tune the equipment.

Recovery time after implantation of newer AICD units is quite short. Hospital stays are rarely longer than 3 or 4 days and there is quick return to prior activity levels. People with AICDs must continue to follow their doctor's recommendations regarding medication, diet, and exercise.

Prior to discharge, you will be shown how to examine your incision site. You should look for signs of infection each day such as increased redness, increased tenderness, swelling around the incision, drainage from the incision. You should also report a fever over 100°F that lasts longer than 24 hours. You will also receive instructions on your AICD.

Do AICD batteries wear out?

The AICD pulse generator runs on a battery. The battery provides the energy needed to monitor your heart rhythm, pace the heart or deliver electrical therapy. Just like a battery you use with your electronic equipment, the battery can wear down over time. How long the AICD pulse generator will last is dependent on what settings are programmed into the system. It is also affected by how much therapy you receive.

Your doctor will open the pocket of skin where the pulse generator is located to replace your AICD pulse generator. The old pulse generator will be unplugged from the leads. The leads are checked to make sure they are still working properly. Then they are connected to the new AICD pulse generator. A test is performed to make sure the new system is working properly.

Once the doctor knows the AICD is working properly, he/she will stitch the pocket of skin closed. The entire procedure takes about an



hour. It is considered a minor operation, and you should be able to return to normal activities soon.

Where is the test performed?

In a cardiac catheterization lab

How long does this test take?

Typically the procedure takes 1-2 hours to perform.
