

IMPLANTABLE CARDIOVERTER DEFIBRILLATOR (ICD)

ICDs are useful in preventing sudden death in patients with known, sustained ventricular tachycardia or fibrillation. Studies have shown ICDs to have a role in preventing cardiac arrest in high-risk patients who haven't had, but are at risk for, life-threatening ventricular arrhythmias.

Newer-generation ICDs may have a dual function which includes the ability to serve as a pacemaker. The pacemaker feature would stimulate the heart to beat if the heart rate is detected to be too slow.

What is an Implantable Cardioverter Defibrillator (ICD)?

An ICD is a battery-powered device placed under the skin that keeps track of your heart rate. Thin wires connect the ICD to your heart. If an abnormal heart rhythm is detected the device will deliver an electric shock to restore a normal heartbeat to stop your heart is beating chaotically and much too fast.

ICDs have been very useful in preventing sudden death in patients with known, sustained ventricular tachycardia or fibrillation (View an animation of an ICD). Studies have shown that they may have a role in preventing cardiac arrest in high-risk patients who haven't had, but are at risk for, life-threatening ventricular arrhythmias.

The American Heart Association recommends that before a patient is considered to be a candidate for an ICD, the arrhythmia in question must be life threatening and doctors have ruled out correctable causes of the arrhythmia, such as:

- Acute myocardial infarction (heart attack)
- Myocardial ischemia (inadequate blood flow to the heart muscle)
- Electrolyte imbalance and drug toxicity

Because many people do not understand their underlying condition – such as heart failure or genetic predisposition for risk of sudden cardiac arrest– and because ICDs are used primarily for prevention, they in turn may not understand the benefits versus the limitations of having an ICD implanted. If you are one of those people, you will find information and guidance here.

Why do I need an ICD?

Your doctor may recommend an ICD if you or your child is at risk of a life-threatening ventricular arrhythmia because of having:

- Had a ventricular arrhythmia
- Had a heart attack
- Survived a sudden cardiac arrest
- Long QT Syndrome
- Brugada syndrome
- A congenital heart disease or other underlying conditions for sudden cardiac arrest

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How is an ICD implanted?

A battery-powered pulse generator is implanted in a pouch under the skin of the chest or abdomen, often just below the collarbone. The generator is about the size of a pocket watch. Wires or leads run from the pulse generator to positions on the surface of or inside the heart and can be installed through blood vessels, eliminating the need for open-chest surgery.

How does an ICD work?

It knows when the heartbeat is not normal and tries to return the heartbeat to normal.

- If your ICD has a pacemaker feature when your heartbeat is too slow, it works as a pacemaker and sends tiny electric signals to your heart.
- When your heartbeat is too fast or chaotic, it gives defibrillation shocks to stop the abnormal rhythm.
- It works 24 hours a day.

New devices also provide “overdrive” pacing to electrically convert a sustained ventricular tachycardia (fast heart rhythm) and “backup” pacing if bradycardia (slow heart rhythm) occurs. They also offer a host of other sophisticated functions such as storage of detected arrhythmic events and the ability to perform electrophysiologic testing. Stored information can help your doctor optimize the ICD for your needs.

What should I ask my doctor or nurse about living with an ICD?

You most likely can resume a near normal lifestyle. But, it is best to ask your doctor what types of machines or equipment you should avoid. Also ask what you can and cannot do when you have an ICD.

Suggested questions for your healthcare providers:

- When can I resume normal activities?
- Can I swim?
- Can I run?
- Can I have sex?
- Can I play video games and use wireless devices?
- What will the ICD feel like day to day?
- When can I expect a shock?
- Does the shock hurt?

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AHA Recommendation

If you have an Implantable Cardioverter Defibrillator, be aware of your surroundings and the devices that may interfere with its operation. Potentially disruptive devices include those with strong magnetic fields. The following devices can disrupt the ICD's signaling and prevent it from working properly, sometimes without your knowledge. The longer you are exposed to the potentially interruptive device and the closer it is in proximity to your ICD, the more likely it will affect your ICD's performance.

Home Appliances and Tools

- You can use most household devices such as microwave ovens and remote control TV changers, as long as you limit prolonged and close contact.
- Stay at least two feet away from electric generators and light-welding equipment. They can interfere with the ICD.
- Do not use industrial welders, magnetic mattress pads and pillows, electronic body fat scales, or ab stimulators.

Cell phones and MP3 Players

- As a precaution, do not put your cell phone or MP3 player (if they are turned on) close to your ICD. For example, don't carry your phone in your breast pocket over your ICD.
- Use your cell phone with the ear opposite the side where your ICD was implanted.
- If you strap an MP3 player to your arm, place it on the arm opposite the side where your ICD was implanted.
- Keep headphones at least 6 inches away from any ICD.

Travelling

- Let airport or other screeners know you have an ICD.
- Walk through security metal detectors at a normal pace.
- Ask the security personnel not to use hand-held metal detectors on you. Ask them for an alternative form of personal search. If scanning with a hand-held metal detector is necessary, ask the screener not to hold it over your ICD area any longer than is absolutely necessary.
- Don't sit or stand close to a security system metal detector any longer than is necessary.
- Don't lean against the system.
- It is rare, but ICDs have caused unnecessary shocks during long, high-altitude flights.

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Medical Equipment

- Carry an **ICD wallet I.D. card** with you. Your doctor can give you one. You may also want to wear a medical I.D. necklace or bracelet that states you have an ICD.
- Equipment used by doctors, medical technicians, and dentists can affect your ICD, so tell them you have one before you schedule a procedure.
- Magnetic Resonance Imaging (MRI) uses a powerful magnet to produce images of internal organs and functions. Metal objects are attracted to the magnet and are normally not allowed near MRI machines. The magnet can interrupt the ICD's normal functioning. MRI scanning is not recommended for those with ICDs. Discuss your situation with your doctor.
- Extracorporeal shock-wave lithotripsy (ESWL) is a noninvasive treatment that uses hydraulic shocks to dissolve kidney stones. This procedure can disrupt your ICD's normal operation. Discuss your specific case with your doctor before and after the treatment.
- Sometimes electrocauterization is used to stop bleeding during surgery. Electrocauterization can interfere with your ICD so be sure to discuss your ICD implantation with your healthcare providers.
- The bottom line is, consult with your healthcare providers before you undergo any tests, procedures or treatments. When in doubt, ask.