

# Implantable Cardioverter Defibrillator (ICD)

## What is an ICD?

An ICD (implantable cardioverter defibrillator) is a small device that corrects your heart rhythm. It has a **pulse generator** that is placed in your body and one or more **leads** (wires) that are threaded into your heart.

The ICD leads “listen” to your heartbeat and send information to the pulse generator. If there’s a problem with your heart rhythm, the generator creates an electrical pulse and sends it to your heart.

ICDs are a little bit different from a pacemaker. Pacemakers correct a heartbeat that is too slow, but ICDs can also correct a heartbeat that is too fast.

## Why do I need it?

An ICD is used to treat heart rhythm problems such as:

- **Ventricular** [ven-TRIK-yoo-lahr] **tachycardia** [tak-eh-card-ee-yah]. This is when the ventricles (lower chambers of your heart) send electrical signals too often and your heart beats too fast.
- **Ventricular fibrillation** [fih-bril-LAY-shun]. This is when the ventricles send very fast, irregular signals and your heart starts to quiver. No blood is pumped to the body. If this condition isn’t treated right away, it can kill you.

Ventricular fibrillation is often treated with an **external defibrillator** (paddles or pads that send an electrical shock through the chest to the heart). However, ventricular fibrillation can come without warning. An ICD can sense irregular signals right away and deliver an internal shock to correct it.

## What do I need to do next?

- 1 Arrange for time off work. You can return to work when your doctor says it’s okay, usually after a week or so.
- 2 Tell your doctor about all the medicines you are taking. This includes prescription medicines, over-the-counter drugs (such as allergy pills or cough syrup), patches, vitamins, and herbal remedies.
- 3 Follow your doctor’s directions about medicines. You may be asked to stop taking certain blood thinners before the procedure.
- 4 Arrange for a ride. You will need someone to drive you to and from the hospital.
- 5 Follow all instructions on when to stop eating and drinking before the procedure.

## How does an ICD work?

When the ICD senses that you’re having a heart rhythm problem, the pulse generator sends a signal to correct it.

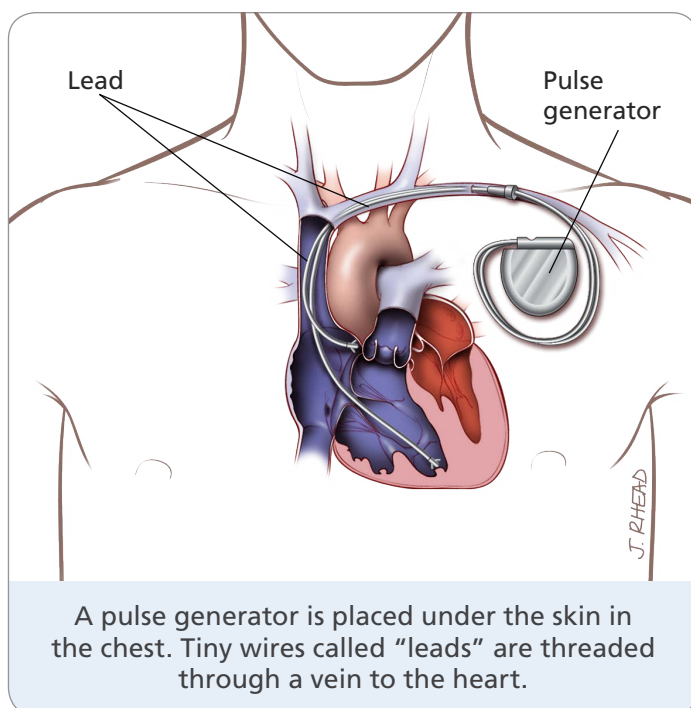
- **Pacing signals** correct a heartbeat that is a bit too fast or too slow. You will probably not notice these signals.
- **Cardioversion** is a mild shock given if ventricular tachycardia continues even after the pacing signals are sent. This can feel like a sudden thump in the chest that lasts for just a moment.
- **Defibrillation** is a strong shock that corrects ventricular fibrillation. This sudden shock can feel like being punched in the chest. The shock may be surprising or briefly painful, but it is intended to save your life.

The ICD can also **record your heart’s electrical activity**, so that the doctor can adjust its settings during follow-up appointments.

## What happens during the procedure?

The procedure usually takes 1 to 2 hours. You'll be relaxed but awake. Here's what you can expect:

- Numbing medicine is injected in the area where the pulse generator will be placed.
- A small incision (cut) is made in the skin below your collarbone. This makes a "pocket" for the pulse generator.
- A needle is inserted into a vein in your upper chest to insert each lead. The doctor uses X-ray guidance to move the lead through the vein into your heart.
- Each lead is tested to make sure it is in the right place. The leads may be moved a bit once or twice, and retested each time, until it is perfectly positioned.
- The pulse generator is connected to the leads and inserted into the "pocket" in the skin beneath your collarbone.
- The pacemaker is set to the rate your heart needs. The medical team might also adjust other settings. You'll probably hear them calling numbers to each other as they do this. They might also ask you to take some deep breaths.
- The surgical cut (if you have one) may be closed with stitches or a skin adhesive / glue, and you will be moved to recovery.



## What happens after the procedure?

You will probably stay in the hospital overnight, so your healthcare team can monitor your heartbeat. The next morning, your pacemaker will be checked to make sure it is working as expected.

You will get a **temporary device ID card** that shows the type of ICD you have, when it was placed, and who performed the procedure. You will get a permanent card in the mail in a few weeks. **Carry the ID card with you at all times.**

## What are the possible benefits, risks, and complications?

The table below lists the most common possible benefits, risks, and alternatives for this procedure. Other benefits and risks may apply in your unique medical situation. Talk with your doctor to learn more about these risks and benefits. Be sure to ask any questions you might have.

Possible benefits	Risks and possible complications	Alternatives
<ul style="list-style-type: none"> <li>• Relief of symptoms such as racing heartbeat, dizziness, or fainting</li> <li>• Prevention of rhythm problems that can cause sudden cardiac arrest</li> </ul>	<ul style="list-style-type: none"> <li>• Bleeding or infection where the pulse generator was inserted</li> <li>• Problems related to the anesthetic</li> <li>• Nerve or blood vessel damage</li> <li>• Problems caused by electronic devices</li> </ul>	<p>Before recommending an ICD, your doctor:</p> <ul style="list-style-type: none"> <li>• Will run tests such as an electrocardiogram, Holter monitor, echocardiogram, electrophysiology study, or stress test.</li> <li>• May use medicine to treat your heart rhythm problems before recommending an ICD.</li> <li>• May recommend a pacemaker instead of an ICD (depending on your heart rhythm problem).</li> </ul>

## Life with an ICD

### Let people know

- **Carry your ID card at all times.** Your ID will give healthcare providers important information in an emergency. It will also be helpful if the ICD sets off an alarm.
- **Tell your healthcare providers.** They need to know you have an ICD before doing any procedures that involve needles or incisions.
- **Tell your dentist.** Your dentist can avoid using devices that produce electromagnetic fields that can interfere with the device.

### Protect the ICD

- **Avoid letting anything hit or rub your ICD.** Be careful about contact sports or other activities that may jar the pulse generator under your skin.
- **Avoid strong electromagnetic fields.** Stay away from:
  - Magnetic resonance imaging (MRI) equipment or other high-powered magnets.
  - Arc welding equipment, industrial equipment, and induction furnaces
  - High-intensity power lines or radio towers
  - Combustion motors. Don't lean over the hood of a running car, or touch the spark plug or distributor on a running car or lawn mower.
- **Don't linger around anti-theft detection devices** at store or building entrances. Walk through them at a normal pace.

- **Be careful with your cell phone or MP3 player.** Keep it 6 to 12 inches away from the pulse generator. Hold the cell phone against the opposite ear, and don't keep the phone or player in your shirt pocket.
- **Computers and small household appliances are safe** as long as they are in good working order and grounded.
- **Airport screening is safe.** Screening devices may set off an alarm, but they won't harm the device. If you set off an alarm, show your device ID. Ask them not to search you with the hand-held screening wand, since it contains a magnet.

### Monitoring and maintenance

- **Follow-up appointments.** Your healthcare provider will set up follow-up appointments. To check the ICD, you might have various kinds of tests, including electrocardiograms and battery checks. Your doctor might adjust the ICD settings based on these tests.
- **Checking the ICD over the phone.** A transmitter might be used at home to send ICD signals to your doctor.
- **Replacing the battery.** The average battery life is around 5 years. Follow-up appointments and other checks will tell your healthcare provider if this is needed.
- **Replacing leads.** In rare cases, the leads can become cracked. Your healthcare provider will check the leads and possibly replace them if needed.

### Questions for my doctor

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