



## Implantable Cardioverter-Defibrillators

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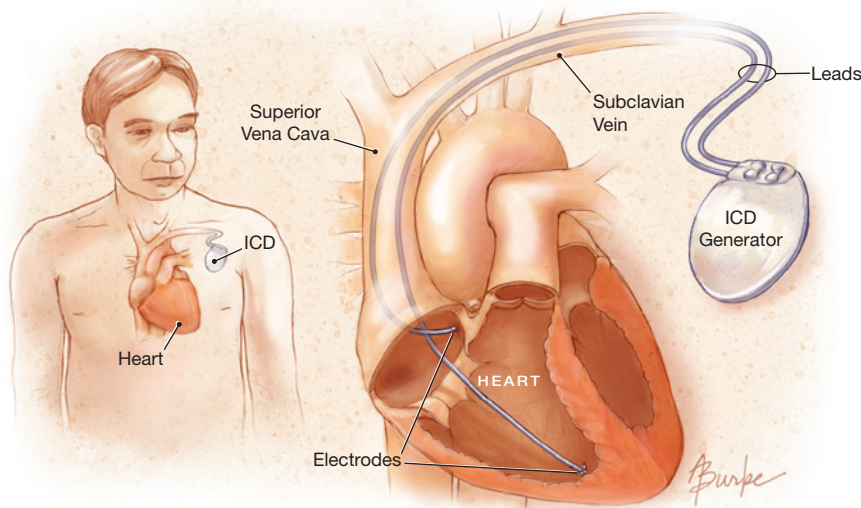
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# Implantable Cardioverter-Defibrillators

Persons who have **cardiac arrhythmias** (abnormal heart rhythms) may need an electrical impulse to help restore a normal heart rhythm, particularly if the abnormal rhythm is **ventricular fibrillation** or **ventricular tachycardia** (rapid but ineffective contractions of the main heart muscle). This can be done from outside the chest (usually in an emergency situation) using defibrillator paddles that deliver an electrical impulse or by an **automated external defibrillator (AED)**, a device now available in many public buildings and airports that can detect and correct dangerous arrhythmias. **Implantable cardioverter-defibrillators (ICDs)** allow for automated detection of arrhythmias. Automated treatment also occurs, either by delivery of a high-energy electric shock to the heart muscle (called **defibrillation** or **cardioversion**) or by a low-energy signal (**cardiac pacing**) to correct the abnormal rhythm. The April 26, 2006, issue of *JAMA* includes several articles about ICDs.

## HOW DO ICDs WORK?

Electrodes are placed into the heart via one of the large veins in the chest. This is done in an operating room or cardiac laboratory, using sterile technique and local anesthetic. After successful electrode placement and testing, a small generator (computer and battery pack) is placed under the skin in the chest. The device monitors heart rhythm, and when an abnormality is sensed, the ICD automatically restores a healthy heart rhythm, usually by delivering a shock to the heart muscle. ICDs also have pacemaker capability, and can pace the heart if the heart rate is too slow or too fast. The device records when abnormal heart rhythms occur and when shocks are delivered.



## CONCERNS FOR PATIENTS WITH AN ICD

- Careful monitoring of the functioning of the ICD is essential.
- Persons with an ICD must take precautions to avoid electrical interference, such as from metal detection devices used at airports or court buildings. Inform security personnel if you have a pacemaker or an ICD.
- Cell phones may be used, but it is prudent to keep the cell phone on the opposite side of the body from the ICD.
- Avoid magnets or strong magnetic fields such as those from MRI machines.

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## REASONS FOR ICD PLACEMENT

- Serious arrhythmias not controlled by medication
- Risk of serious arrhythmias due to underlying heart disease
- Hereditary predisposition to dangerous arrhythmias

## FOR MORE INFORMATION

- American Heart Association  
[www.americanheart.org](http://www.americanheart.org)
- National Heart, Lung, and Blood Institute  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)
- American College of Cardiology  
[www.acc.org](http://www.acc.org)

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Sources: National Heart, Lung, and Blood Institute; American Heart Association; American College of Cardiology

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