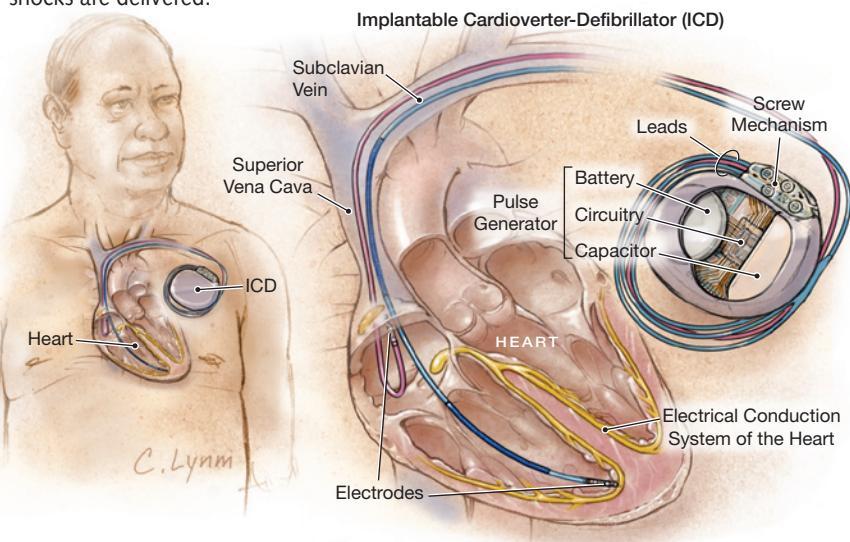


Implantable Cardioverter-Defibrillators

Persons who have **cardiac arrhythmias** (abnormal heart rhythms) may need an electrical shock to 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 shock 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 occurs either by delivery of a high-energy electric shock to the heart muscle (called **defibrillation** or **cardioversion**) or by repeated low-energy signals (**cardiac pacing**) to correct the abnormal rhythm. The May 2, 2007, issue of JAMA includes an article about the decision to implant a cardioverter-defibrillator. This Patient Page is based on one previously published in the April 26, 2006, issue of JAMA.

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 techniques and local anesthetic. After successful electrode placement and testing, a small generator (circuitry, capacitor, and battery) 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, either by delivering a shock to the heart muscle or by cardiac pacing 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 arrhythmias due to underlying heart disease
- Hereditary predisposition to dangerous arrhythmias

FOR MORE INFORMATION

- American Heart Association
www.americanheart.org
- National Heart, Lung, and Blood Institute
www.nhlbi.nih.gov
- American College of Cardiology
www.acc.org

INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page link on JAMA's Web site at www.jama.com. Many are available in English and Spanish. A Patient Page on pacemakers was published in the August 15, 2001, issue; one on cardiomyopathy was published in the December 15, 2004, issue; and one on cardiac arrest was published in the January 4, 2006, issue.

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

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