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## Cardioversion

### Definition

Cardioversion is a method to restore an abnormal heart rhythm back to normal.

### Information

Cardioversion can be done using an energy shock (electric cardioversion) or medications (pharmacologic cardioversion).

#### ELECTRIC CARDIOVERSION

Electric cardioversion may use a device that can be placed inside (internal) or outside (external) the body.

External electric cardioversion uses a device called a defibrillator.

- Electrode patches are placed on the front and back of the chest and connected to the defibrillator.
- When the defibrillator paddles are placed on your chest, an energy shock is delivered to your heart. This shock briefly stops all electrical activity of the heart and then allows the normal heart rhythm to return.
- Sometimes more than one shock is needed.

Emergency external electric cardioversion is used to treat any abnormal heart rhythm (arrhythmia) that is life threatening, such as ventricular tachycardia or ventricular fibrillation. Such a shock can be life saving.

External electric cardioversion may also be used when there is not an emergency.

- Heart rhythm problems, such as atrial fibrillation or paroxysmal supraventricular tachycardia (PSVT) that began recently or that cannot be controlled with medicines may be treated this way.
- First, tests such as a transesophageal echocardiogram are often done to make sure that there are no blood clots in the heart. Some people may need to take blood thinners before the cardioversion procedure.
- You will usually be given a sedative before the procedure starts.

After the external cardioversion, you may be given medicine to prevent blood clots and to help prevent the arrhythmia from coming back.

An implantable cardioverter-defibrillator (ICD) is a device that is usually placed underneath the skin of your upper chest. This is a semi-permanent implantation (devices may need to be replaced after 6 - 10 years).

- The ICD detects any life-threatening, rapid heartbeat. If such a heartbeat (arrhythmia) occurs, the ICD quickly sends an electrical shock to the heart to change the rhythm back to normal.
- An ICD is placed in people who are at high risk of sudden cardiac death from dangerous arrhythmias, such as ventricular tachycardia or ventricular fibrillation.

See also: Implantable cardiac defibrillator

#### CARDIOVERSION USING DRUGS (PHARMACOLOGIC)

Cardioversion can be done using drugs that are taken by mouth or given through an intravenous line (IV). It can take several minutes to days for a successful cardioversion. If pharmacologic cardioversion is done in a hospital, your heart rate will be regularly checked. Although rare, cardioversion using drugs can be done outside the hospital. However, this requires close follow-up with a cardiologist.

As with electrical cardioversion, you may be given blood thinning medicines to prevent blood clots from forming and leaving the heart (which can cause a stroke).

#### COMPLICATIONS

Possible complications of cardioversion are uncommon, but may include:

- Allergic reactions from medicines used in pharmacologic cardioversion
- Blood clots that can cause a stroke or other organ damage
- Bruising, burning, or pain where the electrodes were used
- Worsening of the arrhythmia

People who perform external cardioversion may be shocked if the procedure is not done correctly. This can cause heart rhythm problems, pain, and even death.

## References

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