

# Cardiac Procedures



These procedures are used to evaluate and treat heart and blood vessel disease (cardiovascular disease or coronary artery disease). Talk with your healthcare provider or heart care provider for more specific information.

## Procedures for abnormal heart rhythms

- **Catheter ablation.** This procedure uses radio frequency energy or freezing to get rid of problem areas in the heart that cause abnormal heart rhythm. The abnormal area is found during an electrophysiology study. This study maps the electrical activity that controls the heart rhythm. This procedure can diagnose and potentially cure abnormal heart rhythms.
- **Permanent pacemaker.** A permanent pacemaker is inserted into the upper chest and connected to the heart using wires. It provides a reliable heartbeat when the heart's own rhythm is too slow.
- **Implantable cardioverter defibrillator (ICD).** A defibrillator wire is inserted into the heart and connected to an implanted device in the chest. It can send out electricity to either pace or shock the heart back into normal rhythm. This can be lifesaving when life-threatening rhythms are found.

## Procedures for heart disease

- **Cardiac catheterization.** A thin tube (catheter) is placed into the heart through a blood vessel in the leg or arm. The pressures of the heart are measured. A contrast agent can also be injected into the heart arteries or heart chambers while X-ray images are taken. This can identify structural problems of the heart as well as narrowing in the heart arteries.
- **Percutaneous coronary intervention (PCI).** This procedure encompasses several types of procedures that are designed to improve blood flow through the coronary arteries.
  - **Balloon angioplasty.** This is also called PTCA (percutaneous transluminal coronary angioplasty). A small balloon is inflated inside a narrowed or blocked artery to re-establish blood flow. This is often done together with a tiny mesh coil (stent) placement.
  - **Coronary artery stent.** A tiny wire mesh coil is expanded inside the narrowed or blocked artery to open the blocked area. It's left in place to keep the artery open.
  - **Atherectomy.** The narrowed or blocked area inside the artery is shaved away by a tiny device on the end of a catheter.
  - **Laser angioplasty.** A laser is used to help open a blocked artery.
- **Coronary artery bypass graft (CABG).** This is often called bypass surgery. It's often done in people who have chest pain (angina) and plaque buildup in the arteries (coronary artery disease) that can't be treated with PCI. During the surgery, the blocked artery is bypassed. This is done using a piece of another healthy blood vessel from another part of the body. The healthy blood vessel is attached above and below the blocked area of a coronary artery. This lets blood flow around the blockage. Veins are often taken from the leg. Arteries from the chest or arm may also be used to create a bypass graft. Sometimes several bypasses/grafts may be needed to restore blood flow to all areas of the heart.
- **Minimally invasive CABG.** This is an alternative to bypass surgery. For this procedure, the surgical tools and tiny cameras are passed through small holes in the chest wall. The surgeon views the operation on video monitors.
- **Intra-aortic balloon pump (IABP).** This is a device to help your heart pump blood. It is made up of a thin, flexible tube (catheter) with a long balloon at its tip (intra-aortic balloon). At the other end, the catheter attaches to a computer. The balloon is inflated and deflated. An IABP lets blood flow more

easily into your coronary arteries. This helps give oxygen to the heart muscle. It also lets your heart pump more blood with each contraction.

- **Ventricular assist device (VAD).** A VAD is a mechanical device used to help the pumping function for one or both of the heart's pumping chambers (ventricles). It may be needed when heart failure gets to the point that medicines and other treatments no longer work. A VAD can help someone's heart work when they are waiting for a heart transplant. Or when someone is waiting to see if they are a candidate for a transplant. A VAD can also be a permanent treatment. And it can help a person's heart recover after surgery.
- **Heart transplant.** This surgery is for certain people whose hearts are so severely damaged that medicines, procedures, and surgical repair can't help. A donated heart is transplanted into the person to replace the damaged heart.

## Procedures for valve disease

- **Valvuloplasty.** In this procedure, a balloon-tipped catheter is used to open a narrowed heart valve. The catheter is guided from an artery in a leg or arm, through the aorta, to the aortic valve, or to the mitral valve. Once in place within the valve, the balloon is inflated and the valve is opened. The balloon is then deflated and removed from the body.
- **Valve repair.** This is surgery to fix a damaged valve by loosening stiff valve leaflets or tightening loose valve leaflets.
- **Valve replacement.** In this procedure, a mechanical or tissue valve is transplanted into the heart to replace the damaged valve. Often this is done during open heart surgery. For some people with aortic valve stenosis (narrowing), a new valve may be placed within the old valve and opened up to ease the stenosis. This is called TAVR (transcatheter aortic valve replacement). It does not require open heart surgery.

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