



Heart Valve Disease

The heart has four valves:

- **Tricuspid valve**, which allows deoxygenated blood coming back into the heart from the body to pass from right atrium into the right ventricle
- **Pulmonary valve**, which permits blood to flow from the right ventricle of the heart into the vessels leading to the lungs
- **Mitral valve**, which allows oxygenated blood flowing back into the heart from the lungs to pass from the left atrium into the left ventricle
- **Aortic valve**, which permits blood to flow from the left ventricle of the heart to the rest of the body.

These valves are an integral part of the proper functioning of your heart, as they maintain oneway blood flow with every heartbeat. Pressure changes on either side of the valves cause the opening and closing of the cusps or leaflets (the flap-like gates) of the valves and stop the blood from flowing backward.

Valves can become diseased over time, and little can be done to avoid it.

Types of valve disease

The 2 types of valve disease are regurgitation and stenosis. In either case, your heart must work harder to combat the effects and get the blood moving. It becomes enlarged as a result, which decreases its work capacity.

- **Regurgitation** – Occurs when a valve no longer closes all the way, which allows some blood to push backward; as a result, not enough blood reaches your body's organs.
- **Stenosis** – Occurs when valve leaflets do not open enough to allow proper blood flow.

What causes valve disease?

Weakened mitral valve tissue that impedes the valve's functioning and causes energy changes in the body (myxomatous degeneration); occurs most commonly in the elderly



Calcium buildup on the aortic or mitral valves causes the valves to thicken (calcific degeneration)

Congenital defects (from birth), such as an irregularly shaped aortic valve or a narrowed mitral valve

Use of certain anti-obesity medicines like fen-phen and Redux, which are no longer available

Infection of the lining of the heart's walls and valves (infective endocarditis)

Plaque buildup and blockage in the coronary arteries (coronary artery disease)

Heart Attack

What are the symptoms of valve disease?

Valve disease can be asymptomatic or can appear as congestive heart failure, heart muscle disease (cardiomyopathy), an irregular heartbeat (arrhythmia), or blood clots.

How is valve disease detected?

Various methods are available for detecting valve disease, including simply listening with a stethoscope. Your doctor has other options, including:

- **Echocardiography** – produces images of your heart, showing the thickness of the walls, the 4 valves (shape, size and movement), volumes in the heart chambers, performance of the heart and abnormalities present.
- **Electrocardiography (EKG or ECG)** – obtains the electrical activity of the heart and records how fast it is beating, the rhythm of the beats (regular or irregular) and the strength and timing of the heart impulses as they move through the heart.
- **Coronary angiography** – is a procedure that uses x-rays and special contrast to see how the blood flow through the arteries of the heart. It identifies a narrowed valve or blood backflow, as the heart can be viewed while pumping; may also be used to determine surgical need and to assess whether or not you have coronary artery disease



Cardiac magnetic resonance imaging (MRI) – produces detailed 3-dimensional images of the structures within and around your heart. It is useful to evaluate anatomy, function and heart disease.

If I have valve disease, what are my treatment options?

Depending on the severity of your condition, no action may be necessary; otherwise, medicine may ease the pain, or surgery may be needed.

Medication: Medicines can help mitigate discomfort, ease the strain on your heart, and better control your heart's rhythm. A few options are:

- **Digitalis** – eases your heart's workload and relieves valve disease symptoms
- **Diuretics** – reduce swelling and heart workload by lowering salt and fluid in your body
- **Antiplatelet therapy** – inhibits blood clot formation
- **Anticoagulants** – prevent blood clots, especially for those who have had heart valve surgery or have a synthetic prosthetic valve
- **Beta-blockers** – lower blood pressure and better regulate your heart rate
- **Calcium-channel blockers** – control your heart's contractions, which can lower blood pressure and heart workload, thus avoiding surgery

Percutaneous valve procedures: minimally invasive procedure done without surgery. They are performed through a tube called catheter that is inserted under the skin into a blood vessel and guided until it reaches the heart.

Balloon valvuloplasty aids in opening narrowed valves. A balloon-tipped catheter is inserted through the arm or groin and guided to the heart and into the narrowed valve. The balloon is inflated and deflated several times to increase the diameter of the valve

Transcatheter Aortic Valve Replacement is a procedure to replace the damaged valve via catheter.

Mitral Clip is used in case of mitral valves that doesn't close properly causing leak (regurgitation). A small clip is implanted via catheter to help the valve seal more tightly.



Surgery: Open surgery is the most invasive option. It allows valves to either be repaired or replaced.

- Valve repair is used to open a narrowed valve by clearing out calcium deposits, to reinforce a valve with structural issues, and to treat congenital defects and mitral valve defects.
- Valve replacement is used when repair is not an option. The doctor will implant either a mechanical (plastic, carbon, or metal) or biological (human or animal tissue) valve. Because mechanical valves do bring a risk for blood clot formation, these patients will be required to take blood-thinning medicines indefinitely. Typically, this type of surgery is an open-heart procedure, and requires the use of a heart-lung machine, as the heart must be stopped briefly during surgery.

Lifestyle changes: Unfortunately, valve disease cannot usually be prevented, but practicing a heart-healthy lifestyle is always a good idea.

You should avoid getting rheumatic fever, which arises from bacterial infections like strep throat. Recommendation: finish all the medicine that your doctor prescribes so the infection will not return. In addition, alert your dentist that you have valve disease, as you may need to premedicate with antibiotics to avoid developing infective endocarditis (an infection in the inner lining of your heart).