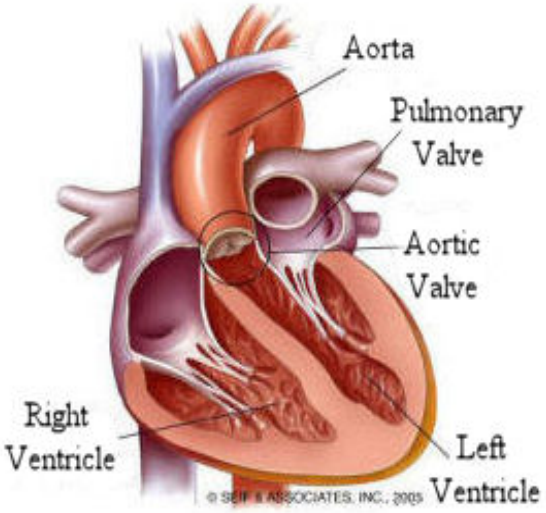
Aortic Valve Replacement

You have a disease of one of the valves of your heart. In you or your child's case, it is the aortic valve which needs replacing. Aortic valve replacement is open heart surgery done by a heart surgeon. This operation treats problems with the aortic valve. The aortic valve is the "outflow valve" for the left side of the heart. The left side of your heart (left ventricle) is the large muscular part of the heart that pumps blood to the rest of the body. It separates the left ventricle from the aorta. When the heart squeezes down (*contracts*), the aortic valve is what keeps the blood from flowing back into the ventricle from the aorta. This allows the blood to keep moving through the body.



Surgery may be necessary when the valve does not open or close completely. A *stenotic* (narrow) valve does not let the blood leave the heart normally. This causes blood to back up in the left ventricle. This makes it hard for the heart to increase the amount of blood that it pumps. The heart has to work harder. This may produce shortness of breath and fatigue. Problems are worse with activity.

If the valve leaflets do not meet correctly when closing, blood may leak backward into the ventricle each time the heart pumps. This is called aortic insufficiency. When some of the blood leaks backwards, the heart has to work even harder. The heart can allow for this over-work for a long time if the leakage came on slowly. Eventually, the heart fails.

Aortic valve problems may be caused by a birth defect. This is called congenital. Wear and tear can cause valves to fail. More commonly, rheumatic fever may damage the aortic valve. Occasionally, the valve may be damaged by infection. This also causes the aortic valve to leak.

DESCRIPTION OF SURGERY

Aortic valves can be repaired. When the valve is too damaged to repair, the valve must be replaced. A *prosthetic* (artificial) valve is used to do this. Valves damaged by rheumatic disease often must be replaced.
Two types of artificial valves are available:

- Mechanical valves made entirely from man-made materials.
- Biological valves which are made from animal tissues or taken from a cadaver.

Each has advantages and disadvantages. The choice of which type to use should be made by you and your surgeon. Your risks, age, lifestyle, other medical problems including the decision on whether to be on blood thinners the rest of your life all will help you decide on which type of valve to use.

There are a number of good MECHANICAL PROSTHESES available. All work well. **The main advantage** of mechanical valves is that they do not wear out. **Their main disadvantage** is that blood clots easier on mechanical valves. If this happens the valve will not work normally. Because of this, patients with mechanical valves must take *anticoagulants* (blood thinners) for life. There is also a small but definite risk of blood clots causing stroke, even when taking anticoagulants.

There are a number of BIOLOGICAL CHOICES for aortic valve replacement. Most are made from pig aortic valves. Some are taken from cadavers. **The main advantage** is that they have a reduced risk of blood clots forming on the valve. This lessens the chance of the valve not working or causing a stroke. **A large disadvantage** of biological or tissue valves is that they wear out sooner than mechanical valves. The rate at which they wear out depends on the patient's age. A young boy might wear out such a valve in only a few years. The same valve might last 10 years in a middle aged person, and even longer in a patient over the age of 70. A

tissue valve used in a person over 70 years old may never need replacement.

PROCEDURE

Valve repair or replacement is open-heart surgery. You are given general *anesthesia* (medications to help you sleep). You are then placed on a heart-lung machine. This machine provides oxygen to your blood while the heart is not working. The surgery generally lasts from 3 to 5 hours. During surgery, the surgeon makes a large *incision* (cut) in the chest. Sometimes the heart is cooled to slow or stop the heartbeat. The damaged aortic valve is either repaired or removed and replaced with an artificial heart valve.

RISKS

Your cardiologist and cardiothoracic surgeon can best determine your individual risk. It will depend on your age, general condition, medical conditions, and your heart function. In general, the risks include:

- Problems from the operation itself are a low risk Some common risks are:
  - Risks from the anesthesia
  - Bleeding and infection
- Lifelong treatment with medications to prevent blood clots is needed for mechanical valve replacements.
- Infection is more common with valve replacement than with valve repair.
- Valve failure is more common with valve replacement than with valve repair. Pig valves tend to fail after about 8 to 10 years.

FOLLOWING SURGERY

- Recovery from heart valve surgery usually involves a few days in an intensive care unit (ICU) of a hospital. Full recovery from heart valve surgery can take several months.
- *Anticoagulation* (blood thinning) treatment with Coumadin is often prescribed for 6 weeks to 3 months after surgery for those with biological valves. It is prescribed for life for those with mechanical valves.
- Recovery includes healing of the surgical incision. There is a gradual building of stamina and exercise abilities. An exercise program under the direction of a physical therapist may be recommended.
- Once you have an artificial valve, your heart function and your life will return to normal. You usually feel better after surgery. Shortness of breath and fatigue should lessen. If your heart was already severely damaged before your surgery, you may continue to have problems.
- You can usually resume most of your normal activities. You will have to continue to monitor your condition. You need to watch out for blood clots and infections.
- Artificial valves need to be replaced after a period of time. It is important that you see your caregiver regularly.
- You will require *prophylactic* (protective) antibiotics as a preventive measure against infection whenever you have dental work done. Always tell your medical caregiver or dentist that you have had valve surgery before any mouth surgery.

HOME CARE INSTRUCTIONS

- Use all medications as prescribed.
- Take your temperature every morning for the first week after surgery. Record these.
- Weigh yourself every morning for at least the first week after surgery and record.
- Do not lift more than ten pounds until your *sternum* (breastbone) has healed. Avoid all activities which would place strain on your incision.
- You may shower but do not take baths until instructed by your caregivers.
- Avoid driving for 4 to 6 weeks following surgery or as instructed.
- Use your elastic stockings during the day. You should wear the stockings for at least 2 weeks after discharge or longer if your ankles are swollen. The stockings help blood flow and help reduce swelling in the legs. It is easiest to put the stockings on before you get out of bed in the morning. They should fit snugly.

SEEK IMMEDIATE MEDICAL ATTENTION IF:

- You develop chest pain which is not coming from your *incision* (surgical cut)

- You develop shortness of breath.
- You develop a temperature over 101º F (38.3º C).
- You have a sudden weight gain. Let your caregiver know what the weight gain is.

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