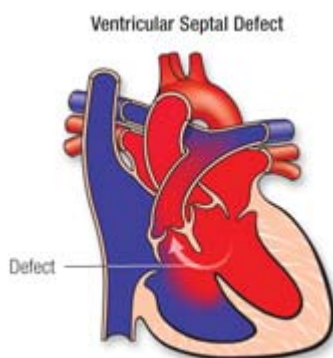




## Ventricular Septal Defect (VSD)

(Note: before reading the specific defect information and the image associated with it, it will be helpful to review [normal heart function](#).)



### What is it?

A ventricular septal defect (VSD) is a defect in the septum between the right and left ventricle. The septum is a wall that separates the heart's left and right sides. Septal defects are sometimes called a "hole" in the heart. It's the most common congenital heart defect in the newborn; it's less common in older children and adults because some VSDs close on their own.

### What causes it?

In most people, the cause isn't known but genetic factors may play a role. It's a very common type of heart defect.

Some people can have other heart defects along with VSD.

### How does it affect the heart?

Normally, the left side of the heart only pumps blood to the body, and the heart's right side only pumps blood to the lungs. When a large opening exists between the ventricles, a large amount of oxygen-rich (red) blood from the heart's left side is forced through the defect into the right side. This blood is pumped back to the lungs, even though it has already been refreshed with oxygen. Unfortunately, this causes the heart to pump more blood. The heart, especially the left atrium and left ventricle, will begin to enlarge from the added work. High blood pressure may occur in the lungs' blood vessels because more blood is there. Over time, this increased pulmonary hypertension may permanently damage the blood vessel walls. When the defect is small, not much blood crosses the defect from the left to the right and there's little effect on the heart and lungs.

### How does the VSD affect me?

In childhood a large opening may have caused breathing difficulties and therefore, most of these children had surgery to close the defect. Therefore, large VSDs in adults are uncommon, but when they are present, can cause shortness of breath.

Most adults have small VSDs that don't usually cause symptoms because the heart and lungs don't have to work harder. On physical examination, small VSDs produce a loud murmur. Even small VSDs may occasionally be a source of infection called endocarditis.

### What if my VSD is very small or closed by itself?

Many children who had a VSD did not need surgery or other treatments, and many of these defects closed on their own. Adults who were told they "had a hole in their heart" that closed on its own usually have no murmur and a normal EKG. If an echocardiogram is performed, it may show an outpouching called a ventricular septal aneurysm in the area where the VSD was located. If the aneurysm isn't recognized as an expected finding after a VSD has closed, it can lead to unnecessary concern and testing.

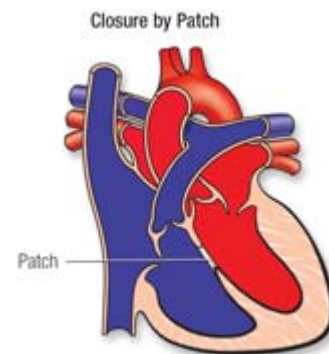


## Ventricular Septal Defect (VSD)

### If my VSD was closed in childhood, what can I expect?

If the opening was large, it's likely that open-heart surgery was performed.

VSD closure is usually performed by sewing a patch of fabric or pericardium (the normal lining around the outside of the heart) over the VSD to close it completely. The normal heart lining tissue eventually grows to cover this patch and it becomes a permanent part of the heart. Some defects can be sewn closed without a patch. It's now possible to close some types of VSDs in the catheterization laboratory using a special device that can "plug" the hole and some younger adults may have had this procedure.



Patients with repaired VSDs and normal pulmonary artery pressures have normal lifespans. Late problems are uncommon, but a small number of patients may have problems with the heart valves (aortic or tricuspid) or extra muscle inside the right side of the heart. Anyone who had surgery for a VSD requires a regular check up with a cardiologist who is experienced with adults with congenital heart defects. Medications are rarely needed. In a patient with a large unrepaired VSD, [pulmonary hypertension](#) can occur.

### What if the defect is still present? Should it be repaired in adulthood?

Usually closure is recommended for small VSDs only if there's been an episode of endocarditis which is a heart infection that may be due to the VSD, or if the location of the VSD affects the function of one of the heart valves. If the VSD is large, the pressure in the lungs determines whether it can be closed in an adult patient. Those with low lung pressures will benefit from surgery; those with high pressures may or may not.

### Problems You May Have

Patients with small VSDs that stay open have a small risk of a heart infection called endocarditis. The aortic valve may develop leakage and should be monitored.

Patients whose VSD has been repaired early in life are unlikely to have any significant long-term problems. If the ventricular septal defect is completely closed without a leak in the patch, the risk of late infection, endocarditis, is minimal. Rarely, abnormal heart rhythms can occur. In some people, the heart muscle may be less able to contract following a VSD repair. If heart failure develops as a result of the heart muscle weakness, diuretics to control fluid accumulation, agents to help the heart pump better and drugs to control blood pressure are often given.

In the uncommon patients with a VSD and [pulmonary hypertension](#), medical therapy may be needed.



## Ventricular Septal Defect (VSD)

### Ongoing Care:

#### Medical Follow-up

A cardiologist should examine you regularly. If your VSD is small or was closed as a child and no other problems are detected, visits every 3–5 years are probably sufficient.

#### What will I need in the future?

Medications may be required only if you have heart failure (which is very uncommon) or if you have pulmonary hypertension. Your cardiologist can monitor you with noninvasive tests if needed. These include electrocardiograms, Holter monitors, exercise stress tests and echocardiograms. They will help show if more procedures, such as a cardiac catheterization, are needed.

#### Activity Restrictions

Most patients won't need to limit their activity. However, if you have pulmonary hypertension or your heart doesn't pump as well as it used to, you may need to limit your activity to your endurance. Your cardiologist will help determine if you need to limit your activity.

#### Endocarditis Prevention

Unrepaired VSDs don't require endocarditis prophylaxis, according to the most recent recommendations of the American Heart Association. After the VSD is successfully closed, preventive treatment is needed only during a six-month healing period. See the section on [endocarditis](#) for more information.

#### Pregnancy

Once the VSD is closed and there's no leftover pulmonary hypertension, the risk from pregnancy is low. If the VSD stays open, it will be necessary to talk to your cardiologist. Unless pulmonary hypertension is present, pregnancy may be well tolerated, but before you decide to get pregnant you need to find out the exact risks to you and your child. See the sections on [Pregnancy](#) and [Genetic Counseling](#) for more information.

#### Will You Need More Surgery?

People whose ventricular septal defects are repaired rarely need more surgery unless the patch leaks or other holes are discovered later. If this occurs, whether you'll need surgery depends on the size of the residual defects.

*This content is reviewed regularly. Last updated 09/14/09.*