

# Heart Defects

BIRTH DEFECT RESEARCH FOR CHILDREN



## What Are Heart Defects?

The heart is a pump made of muscle that is divided into four chambers. Blood is pumped into these chambers through four valves that open and control blood flow. Blood from the body that is low in oxygen is pumped through the heart where it receives a new supply of oxygen from the lungs before going back into circulation in the body. A heart defect is any abnormality of the heart's structure or function that affects this process.



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## How Many Children Are Born With Heart Defects?

Approximately 30,000 to 40,000 (or 1 in 100) children are born each year with heart defects. Recent studies show significant increases in some heart defects like ventricular septal defects.

## What Causes Heart Defects?

Many heart defects are thought to be caused by an interaction between one or more genes and some environmental factors, such as exposure to viruses like rubella, certain drugs and chemicals, radiation or excessive drinking during pregnancy. Some heart defects are part of the multiple birth defect syndromes that may be inherited.

## The Most Common Heart Defects

Patent Ductus Arteriosus (PDA) is a defect of the ductus, a short blood vessel connecting the pulmonary artery and aorta. Usually this vessel closes a few hours after birth. If it does not, it is called patent or open. PDA can be corrected by surgery.

Septal Defects are holes in the septum or wall separating the heart into its right and left sides. A hole in the wall between the upper chambers of the heart is called an atrial septal defect (ASD). A hole between the lower chambers is called a ventricular septal defect (VSD). Some of the septal defects are so small that they will close by themselves while others require surgical repair.

Coarctation of the Aorta is a narrowing of the aorta, the big artery that carries blood from the heart to the body. The severity of the heart defect depends on how narrow the artery is and the location of the defect. Some cases are so severe that immediate surgery is required, but others can be repaired when the child is 7 to 12 years old.

Transposition of the Great Vessels is one of the most serious heart defects. The aorta is attached to the right ventricle so that oxygen-poor blood is carried back to the body. The pulmonary artery is attached to the left

ventricle so that oxygen-rich blood is carried back to the lungs. Several types of surgical procedures have improved the outlook for infants with this heart defect.

Aortic Stenosis is a narrowing in the aortic valve that makes it hard for the heart to pump blood to the body. Surgery to enlarge the valve may improve the symptoms of chest pain, fatigue, dizziness or fainting in early childhood. If symptoms continue or get worse, the valve may need to be replaced with an artificial heart valve.

Tetralogy of Fallot is a combination of four different heart defects: a ventricular septal defect, a misplaced aorta, pulmonary valve stenosis and right ventricle enlargement. Most children with tetralogy of the Fallot have open heart surgery before school age to repair the defects.

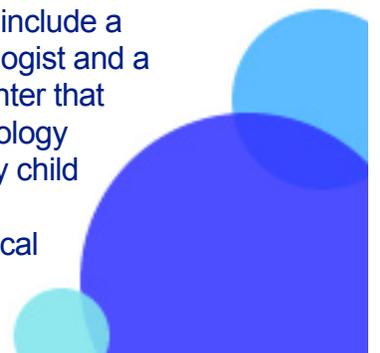
Tricuspid Atresia is a missing tricuspid valve that prevents blood from flowing from the right atrium into the right ventricle. Surgical repair and life long medical management are needed for children with this defect.

Pulmonary Atresia means there is no pulmonary valve so blood cannot flow from the pulmonary artery. Early drug treatment and surgery may result in great improvement in heart function.

Truncus Arteriosus is a complex malformation where only one artery arises from the heart to form both the aorta and the pulmonary artery. Early surgical intervention is required.

## Helping A Child With A Heart Defect

Medical Care: A child with a heart defect needs a team of specialists that may include a pediatrician, pediatric cardiologist and a heart surgeon. A medical center that specializes in pediatric cardiology should be considered for any child who needs complex surgical procedures. Even after surgical repair, most children with heart defects need lifetime



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medical monitoring.

**Diagnosis:** Evaluating a child's heart defect may involve several special tests:

**X-Ray:** These exams may help show abnormal structure or heart enlargement.

**Electrocardiogram (EKG):** The EKG is a measurement of the electrical impulses given off by the beating of the heart. A special machine records these impulses on a strip of paper. Abnormalities in the heart rhythm will show up on the EKG.

**Doppler Echocardiography:** A test that uses high frequency sound waves to show an image of the heart's internal structures and blood flow.

**Heart Catheterization:** A procedure in which a catheter (small flexible tube) is inserted into a vein or artery and then up to the heart as the cardiologist watches on a special X-ray monitor. Dye may be injected through the catheter so that an X-ray video of the working heart can be taken.

**Preventing Bacterial Endocarditis:** Children with heart defects are at greater risk of an infection called bacterial endocarditis (BE). BE is caused by a bacteria in the bloodstream settling in the lining, valves or blood vessels. The risk of BE can be reduced by giving antibiotics to children with heart defects before and after any surgical or dental procedure.

**Exercise:** A child with a heart defect can enjoy most physical activities like swimming, biking, running and tennis, but children with certain heart defects may be restricted from participating in some competitive sports and activities.

**Education:** Since so many heart defects can be surgically corrected, most children with heart problems can attend regular schools. Children who need adapted physical education programs or homebound instruction have these resources available through their public school system.

**Financial Concerns:** Diagnostic testing and surgical care for heart defects can be expensive. Even families with health insurance may need financial assistance with some of these expenses. Every state has an agency that can help qualified families meet their medical expenses. Your physician can help and guide you in applying for this assistance.

## Growing Up With A Heart Defect

Today, 20 to 35 different kinds of heart defects can be corrected or improved by surgery. Most children who are born with heart defects can now expect to live normal productive lives.

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