

CARDIOVASCULAR DISORDER

SYMPTOMS OR BEHAVIORS

- Increased shortness of breath that doesn't get better with rest
- Rapid breathing
- Sweating
- Behavioral changes
- Puffy eyelids
- Hypoxic "blue" attacks
- Cyanosis
- Changes in heart rate (Palpitations)
- Vomiting
- Diarrhea
- Dehydration
- Unexplained fever
- Fainting

ABOUT THE DISORDER

Cardiovascular disorders in children can be divided into two subgroups: **congenital and acquired**. **Congenital heart disease** is any structural or functional heart disease that is present at birth, even if it is discovered much later. **Acquired heart disorders** are disease processes or abnormalities that occur after birth and can be seen in the normal heart or in the presence of congenital heart defects. Both types of heart disorders are typically diagnosed with the use of an electrocardiogram (ECG). This measures the electrical activity of the heart. Other tests that may be used include an echocardiography, where ultrasound is used to determine the structure of the cardiac chamber; a stress test, which is a measure of heart functioning during exercise; and cardiac catheterization, in which dye is injected into the various chambers of the heart so that the structure can be seen in an x-ray film.

Congenital Heart Disorders: Congenital heart disorders can lead to both an **increased and decreased** pulmonary blood flow. Heart defects that result in **increased** pulmonary blood flow are evident when too much blood is flowing to the lungs while not enough travels to the body. Common heart defects that result in this increased pulmonary blood flow includes: Ventricular Septal Defects, Patent Ductus Arteriosus, Atrial Septal Defects, and Atrioventricular Septal Defects.

Other congenital heart defects result in **decreased** pulmonary blood flow. These heart defects result in a blockage which leads to the pressure in the right side of the heart being greater than the left. This allows blood with an insufficient level of oxygen to travel from the right side to the left side and into the systemic circulatory system. The main defect leading to decreased pulmonary blood flow is Tetralogy of Fallot. This abnormality involves four different cardiac abnormalities: a narrowing of the entrance to the pulmonary artery, ventricular septal defect, a malpositioning of the aorta over the defect and an enlargement of the right ventricle muscle.

Vasal Vagal Syncope: Drop in blood pressure which causes less blood flow to brain leading to fainting.

Obstructive Heart Disorders: These heart defect disorders include: Pulmonary Stenosis, Coarctation of the Aorta, and Aortic Stenosis.

Acquired Cardiac Disorders:

- **Kawasaki Disease:** Also known as mucocutaneous lymph node syndrome. Results in both the pulmonary and systemic arteries and veins becoming inflamed. This can result in the heart muscles being damaged from lack of blood supply.
- **Acute Rheumatic Fever:** Is an inflammatory disease that usually develops as a result of a delayed reaction to an inadequately treated strep throat. This can result in permanent valve damage and congestive heart failure.
- **Bacterial Endocarditis:** Is an infection of the endocardium or valves caused by bacteria. Damage occurs to the heart as a result of the microorganisms growing on the affected tissues.

TREATMENT: Treatment approaches vary from individual to individual based on the nature and severity of the condition. Surgical intervention, pharmacologic treatment, diet management, and prescribed exercise programs are common approaches to relieving the symptoms.



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EDUCATIONAL IMPLICATIONS

Most children with altered cardiovascular functioning have few problems in returning to school. Yet some will need structured support and accommodation to ensure that they participate to their maximum ability. A child with a cardiovascular disorder should be treated as normally as possible. Educational staff should set consistent limits that maintain normal standards of discipline. This allows the student to foster independence and maintain as normal an educational routine as possible. The student should be encouraged to take responsibility for their own medical management, recognize the limits on their activity level, and comply with prescribed dietary restrictions and medication regimens.

INSTRUCTIONAL STRATEGIES AND CLASSROOM ACCOMMODATIONS

- Examine the daily physical demands: school attendance, distance between classes, number of stairs, etc.
- Try to schedule classes so that rooms are in close proximity. Some students may need to have classes on upper floors relocated to the ground floor or use an elevator.
- There may be a need for additional time to move from class to class.
- Students who have a lot of materials to carry should try to have a locker near their classrooms and have permission to use it frequently.
- An extra set of books for at home will avoid carrying heavy loads to and from school.
- Some students may require a shortened day or regularly scheduled rest breaks.
- In some cases a student may require a home-based educational program.
- School staff should observe students, particularly adolescent males to prevent them from excessive activity.
- Teachers should be aware of the medications that students are taking and the potential side effects.
- Teachers and others on the school staff should be informed of dietary restrictions and monitor the consumption of "forbidden" foods and fluid intake.
- Inform parents of outbreaks of communicable diseases to avoid unnecessary exposure.
- Students who are taking blood thinner medications should be monitored for injury in the school and playground.
- Be aware of concerns that the student may have regarding physical appearance, body image and sexuality.
- Female adolescents have additional concerns regarding the safety of contraceptive methods, the effects of pregnancy and the genetic risk of inherited cardiac problems.
- Children with cardiovascular disorders are at increased risk for severe implications when experimenting with drugs, smoking and alcohol.
- Special precautions for children with pacemakers:
 - o Avoid activities that may result in a hard blow to the chest.
 - o Avoid movements that involve vigorous up-and-down motion.
 - o Avoid jumping from heights.

RESOURCES

Lucille Packard Children's Hospital
725 Welch Road
Palo Alto, California 94304
(650) 497-8000
<http://www.packardchildrenshospital.org/DiseaseHealthInfo/HealthLibrary/cardiac/index.html>

Excellent information about various cardiovascular diseases and treatments

Center for Pediatric & Congenital Heart Disease
2801 Martin Luther King Jr. Dr.
Cleveland, Ohio 44104
(216) 721-5400
http://www.clevelandclinic.org/pediatrics/departments/heart_center/heart_conditions.htm

A lot of information about Marfan Syndrome and treatments for heart conditions.

The Parent's Guide to Children's Congenital Heart Defects
By Gerri Freid Kramer & Shari Maurer
Three Rivers Press: New York
ISBN: 0-609-80775-7

Parents for Heart Congenial Heart Info
<http://www.parentsforheart.org>

**Rasmussen Heart Center
Fairview University Hospital**
516 Delaware Street S. E.
Minneapolis, MN 55455
(612) 625-3600
<http://www.cardiovascdiseaseprevention.org>

Mayo Clinic
<http://www.mayoclinic.com>

The Children's Heart Institute
<http://www.childrenheartinstitute.org>

American Heart Association
<http://www.americanheart.org>