

Arrhythmias and Palpitations

Arrhythmias are abnormal heart rates or rhythms. The heart rate may be too fast, too slow, or irregular. Arrhythmias requiring treatment are not common in children. When present, they can usually be treated with medications. Palpitations simply mean that a person feels or is aware of the heart-beat. Although palpitations are occasionally a symptom of arrhythmias, most of the time they are harmless.

What are arrhythmias?

Arrhythmias are abnormal heart rates or rhythms. The heart rhythm is the pattern of the heart rate—usually a consistent, regularly timed beat. When the rhythm is variable—not in a regular pattern—an arrhythmia may be present. *Tachycardia* means fast heartbeat, while *bradycardia* means slow heartbeat.

Medically important arrhythmias are relatively common in adults but uncommon in children. Some arrhythmias are normal and of no concern. For example, “sinus arrhythmia” is normal in children. This arrhythmia consists of normal changes in heart rate that occur with each breath. Athletes may have “sinus bradycardia,” which means that their heart rate is slow because of their good physical condition. Occasional extra beats are also usually harmless but may occur in certain diseases. Arrhythmias are important to diagnose because the abnormal heart rate or rhythm may affect how well the heart is able to pump blood and oxygen to the brain and other organs.

Palpitations refer to the person’s awareness of their heartbeat. Although they can be a symptom of an abnormal arrhythmia, most palpitations are not a sign of disease. They may be caused by exercise, stress, certain drugs (like caffeine or cold medications), anxiety, or many other causes. A doctor needs to determine whether palpitations are a medical problem.

What do they look like?

Palpitations. Your child is aware of his or her heartbeat, whether it is slow, fast, or irregular. Sometimes it seems like the heart skips a beat, or a few beats occur quickly together. Beats may be “pounding” or “fluttering.” These descriptions may help the doctor to determine whether palpitations are a medical problem.

Arrhythmias. Some possible symptoms include:

- Light-headedness or tiredness may occur.
- Palpitations.
- Fainting can occur. Get medical attention.
- Chest pain can occur but is uncommon.

- Occasionally, heart failure may be present. Symptoms include difficulty breathing and swelling of the feet and other areas.

What causes arrhythmias?

A number of causes are possible:

- For some arrhythmias, the cause is unknown.
- Some are caused by drugs, such as caffeine, cold medicines, or asthma medications. Arrhythmias may also be caused by drugs of abuse, like cocaine.
- Some arrhythmias are related to heart problems. They may occur after surgery for congenital heart defects, infection or inflammation of the heart (such as myocarditis or rheumatic fever), or abnormal electrical pathways in the heart.
- Some result from medical conditions that don’t affect the heart directly but cause a fast heart rate (for example, anemia or hyperthyroidism).

Other causes are possible.

What puts your child at risk of arrhythmias?

- Various congenital heart defects or heart surgery.
- Rare genetic conditions such as long QT syndrome.
- Certain drugs and medications.

How are arrhythmias diagnosed?

Some arrhythmias are detected when the doctor hears an abnormal heart rate or rhythm through the stethoscope (an instrument used to amplify the heart sounds). Others will require further testing and evaluation.

We may recommend a visit to a doctor specializing in treatment of heart diseases (a cardiologist). The cardiologist may perform additional tests, including:

- An electrocardiogram (ECG) to measure the electrical activity during your child’s heartbeat. This provides a lot of information about your child’s heart rate, including whether it is irregular, too fast, or too slow, and other information about how the heart is working.
- In some situations, the doctor may recommend 24-hour (ambulatory) ECG monitoring. This provides a full day’s worth of information about your child’s heart rate and rhythm. The cardiologist may also recommend a stress ECG, which monitors heart activity during exercise.
- An echocardiogram (“echo”) uses sound waves to take pictures of your child’s heart while it is beating. This is especially important for determining whether your child was born with any congenital heart defects.

For some patients, the cardiologist may perform special electrical conduction studies. These are done to map abnormal electrical pathways that may be causing an arrhythmia.

How are arrhythmias treated?

Most palpitations don't indicate a medical problem, but they do need to be checked by a doctor. The doctor will evaluate your child to look for any other signs of heart disease or other conditions that can cause palpitations. If none are found, then occasional episodes of palpitations are nothing to worry about. Simply knowing this may help to reduce anxiety for both the child and parents. In some situations, evaluation and treatment for anxiety may be helpful.

Most arrhythmias are not medically significant. The doctor will determine whether there is any heart-related or other medical cause that can be treated. If no specific heart-related problem is found, different treatments may be required, depending on the type of arrhythmia. This will be determined by the cardiologist.

Treatment depends on your child's diagnosis and the specific abnormality causing the arrhythmia but may include:

- **Medications.** Most arrhythmias can be controlled using medications. Different types of arrhythmias may require different medications.
- **Ablation.** After thorough testing to identify the source of abnormal electrical signals, the cardiologist can do a procedure to destroy (ablate) that small area of heart tissue. This procedure is done through a catheter placed through the blood vessels into your child's heart. It may be needed if medications aren't enough to control your child's arrhythmia or if the problem is severe or possibly life-threatening.
- **Pacemaker.** In more severe arrhythmias, a pacemaker may be placed. This is an electronic device that helps control your child's heartbeat. Pacemakers are only used when there is a risk of potentially serious or fatal episodes of arrhythmias, such as ventricular fibrillation.
- Another option may be an implantable cardioverter/defibrillator. This is a device that detects arrhythmias, especially ventricular fibrillation, a life-threatening arrhythmia. The device delivers an electrical shock to return the heartbeat to normal.
- In emergency situations, a treatment called *electrical cardioversion* may be needed. In this procedure, an electrical charge is delivered to the body. The "shock" ends the abnormal heartbeat, returning the rhythm to normal.

Obviously, these more serious arrhythmias require expert medical care and follow-up. Some of these conditions require lifelong medical care. With modern medical treatment, including use of a pacemaker if necessary, most arrhythmias in children can be successfully managed.

When should I call your office?

During your child's treatment for arrhythmias, call your cardiologist (or our office if necessary) if medications or other treatments don't seem to be effective in controlling episodes of abnormal heartbeat.

During episodes of arrhythmia, the following symptoms may signal an emergency! Get medical help immediately (call 911 or go to the emergency room):

- Fainting/unconsciousness.
- Chest pain.
- Rapid or difficult breathing.