

Patient Information

For : Educational Material

Arrhythmia Overview

What is an arrhythmia?

An arrhythmia is a change in the rhythm of your heartbeat. Exercise or emotions can make your heart race or skip a beat. This is usually not a cause for concern. Arrhythmias are more serious if you have other heart problems.

How does it occur?

The heart has 4 chambers. The upper chambers are called atria, and the lower chambers are called ventricles. The walls of the heart contract (squeeze) to push blood through the chambers. Every normal heartbeat starts in a group of specialized cells in the right atrium, called the sinus node. These "pacemaker" cells send a regular electrical impulse to start the contraction of the heart. A normal heart rate is between 50 and 100 beats per minute.

Heart rhythm can be affected by too much alcohol or stress. The most common causes of arrhythmias are:

- abnormal heart valve function
- coronary artery disease
- heart failure
- drugs such as cocaine, and some asthma and cold medicines
- herbs such as ephedra, guarana, and licorice.

However, arrhythmias can occur for no known reason.

What types of arrhythmia are there?

In general, arrhythmias that start in the lower chambers of the heart (called the ventricles) are more serious than those that start in the upper chambers (called the atria). Some types of arrhythmias are:

- [Atrial fibrillation:] In atrial fibrillation the muscles in the upper chambers of the heart (atrium) quiver and do not contract in an organized way. They do not coordinate with the lower chambers of the heart (the ventricles). Your pulse will feel very irregular and vary in strength. Atrial fibrillation can affect the ability of the heart to pump blood and may cause an increase in your heart rate.
- [Bradycardia:] In bradycardia, your heart beats very slowly. This happens when the heart's natural pacemaker (the sinus node) sets too low a heart rate or sends no signal at all. Not sending the signal to the heart's

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lower chambers through the proper channels can cause the heart to beat very slowly. Not sending a signal allows other heart cells to send contraction signals and set the heart rate at a very slow rate.

- [Paroxysmal supraventricular tachycardia (PSVT):] Normally there is one electrical pathway between the upper and lower chambers of the heart. People with PSVT almost always have an extra electrical pathway. If the electrical signal goes down the normal pathway and then immediately back up the extra pathway, a "short circuit" occurs. This makes the heart beat very fast.
- [Ventricular tachycardia:] This is a less common, but dangerous kind of tachycardia. The heart beats in a regular rhythm but very fast. The heartbeat starts in your ventricles (lower heart chambers) rather than the sinus node. This abnormality is usually caused by heart disease. In a few cases it can be due to medicine you are taking.
- [Ventricular fibrillation:] This is the most serious type of arrhythmia. Your heart muscle is quivering and uncoordinated, and the ventricles are unable to contract at all, which prevents the heart from pumping. When this happens, blood circulation stops (cardiac arrest). Ventricular fibrillation requires immediate medical treatment to prevent brain damage or death.

What are the symptoms?

Call your doctor or 911 if you have any of these symptoms, especially if you have heart disease or have had a heart attack.

- chest pain
- dizziness and lightheadedness
- fainting
- shortness of breath
- thumping, pounding, or racing sensation in your chest or neck, or a very rapid pulse
- unexplained tiredness.

How is it diagnosed?

Your healthcare provider will ask about your medical history, including your symptoms. He or she will examine your heart and lungs. You will have an electrocardiogram (ECG), which measures the electrical activity of your heart. You may have blood tests to check levels of potassium, calcium, and other minerals, and to check for diseases such as thyroid disease. You may have a chest X-ray.

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Your provider may want you to wear a Holter monitor for 1 to 3 days, or to carry another type of monitor with you for several weeks. The Holter monitor is a portable ECG used to detect heart rhythm disturbances. If your arrhythmia seems related to exercise, you may need to have an ECG while exercising on a treadmill.

How is it treated?

If you have no symptoms, or your symptoms are fairly minor, you may not need treatment. Fast or irregular heartbeats can often be treated with medicine. If another health problem, such as a leaky heart valve or heart failure, is causing the arrhythmia, treating the health problem will also treat the arrhythmia. In more serious cases, other treatments are available:

- An artificial pacemaker. This is an electronic device placed under the skin on the chest. It helps the heart maintain a regular beat. It is commonly used when the problem is that your heart beats too slowly.
- Implantable cardioverter-defibrillator (ICD). If you also have a weak heart muscle or have had a heart attack, your provider may recommend an ICD. ICDs detect abnormal heart rhythms and shock the heart back to a normal rhythm.
- Surgery. Ablation treatment is used to eliminate abnormal electrical pathways in the heart. This helps restore normal heart rhythms. Arrhythmias caused by coronary artery disease may be controlled by bypass surgery.

With proper treatment, your heart will beat in a healthy rhythm, and you may resume a more normal lifestyle.

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