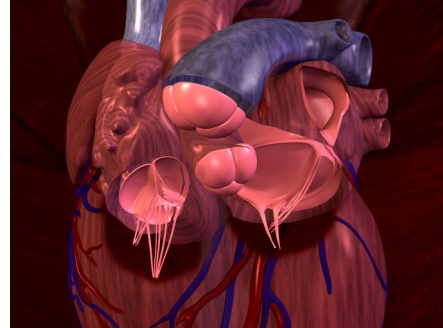


Arrhythmias

An arrhythmia is a condition caused by a problem with the heart's electrical system, which produces abnormal rhythms. These abnormal rhythms may make the heart pump less efficiently. Normally, the heartbeat begins in the right atrium when a special group of cells sends an electrical signal. This group of cells is called sinoatrial node. These cells normally determine the frequency of the beats and the heart's natural rhythm. The signal is disseminated throughout the atrium and the atrioventricular node, which is the union between the atria and the ventricles. Normally, the atria (the heart's upper chambers) and the ventricles (the heart's lower chambers) are separated by an insulating layer of cells that prevents electrical signals from going between them except through the atrioventricular node. The atrioventricular node is connected to a group of fibers that conduct the electrical signal. The impulse travels through these specialized fibers, known as the His-Purkinje system, to the ventricles.



An arrhythmia occurs...

- When the heart's natural pacemaker (the sinoatrial node) adopts an abnormal rate or rhythm.
- When the normal conduction path is interrupted.
- When another part of the heart starts to work as the pacemaker.

The heart's normal rate or pulse

The heart beats when the electrical impulse goes through it. When a person is at rest, the heart beats approximately 60 to 80 times per minute. The atria contract a fraction of a second before the ventricles. This allows the atria to pump blood to the ventricles before they contract.

Causes of arrhythmias

Many arrhythmias do not have a known cause. However, there are various factors that can contribute to arrhythmias. These include heart disease, high blood pressure, diabetes, smoking, excessive alcohol consumption, and stress. It is known that some substances, including certain over-the-counter and prescription medications, nutritional supplements, and herb-based remedies, cause arrhythmias in some people. Prescription medications can also contribute to the appearance of arrhythmias.

Slow heart rhythm symptoms and treatments

A heart rate of less than 60 beats per minute is called bradycardia. When at rest, physically active people tend to have a heart rate below 60 beats per minute. For them, this is not abnormally slow. Bradycardia generally does not require

treatment, unless there are symptoms such as fatigue, dizziness, swooning and fainting or near fainting. These symptoms are generally due to insufficient blood flow to the brain. The elderly are more likely to have slow heart rate problems. These symptoms may sometimes be medication-related. In some cases, it may be necessary to implant a pacemaker under the skin to accelerate the heart rhythm to a more normal rate.

Fast heart rate symptoms and treatments

A heart rate of over 100 beats per minute is called **tachycardia**. It can produce palpitations (a feeling in the chest that the heart is pounding or beating very fast), chest pain, dizziness, swooning and fainting if the heart beats too fast for the blood to circulate well. The heartbeats may have a regular or irregular rhythm.

When the fast heartbeat begins in the ventricles, what is called ventricular tachycardia, it may interfere with the heart's ability to pump enough blood to the brain and other vital organs. This type of arrhythmia can become ventricular fibrillation without any sort of warning. Ventricular fibrillation is one of the most serious heart rhythm alterations. In this rhythm, the ventricles tremble and the heart does not pump any blood. Death occurs quickly unless immediate medical reanimation is performed. If treated in time, ventricular tachycardia and ventricular fibrillation sometimes can become a normal rhythm with an electrical discharge. An effective way to treat these potentially fatal rhythms is through the use of an electronic device called implantable cardiac defibrillator. Fast heart rhythm can be controlled with medications or identifying and destroying the source of the rhythm alterations.

When fast heartbeats begin in the atria, we speak of supraventricular tachycardia.

In atrial fibrillation, the atria tremble instead of beating efficiently. The atria beat at over 300 beats per minute. This reduces the heart's efficiency because less blood flows through the atria toward the ventricles.

Tachycardia also originates in the sinoatrial node. This is called sinus tachycardia. It occurs when the heart's natural pacemaker sends signals to the heart for it to be faster than normal. This may occur naturally during exercise or when a person has stress. It may also occur when certain diseases exist and the demand on the heart is greater than normal.

Reentry tachycardia occurs when there is a short circuit between the atria and the ventricles. Normally, the only way that signals go between the atria and the ventricles is through the atrioventricular node. If there is another path between the atria and the ventricles, a "closed circuit" may occur, in which the electrical current travels quickly over and over again through the short circuit and the atrioventricular node which produces a very fast heart rate.

