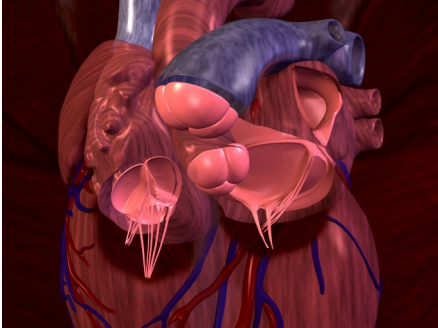


## Heart Block



The heart has four chambers: the top two (upper) are called atria; the bottom two (lower) are called ventricles.

The heart's natural "pacemaker" is called the sinoatrial (SA) or sinus node. It is made up of a mass of specialized cells in the heart's right atrium. It produces electrical impulses that make the heart beat. For the heart to beat as it should,

the signal has to go from the sinus node through a specific conduction pathway until it reaches the ventricles. When the signal goes from the atria to the ventricles, it goes through specialized conductive tissue called atrioventricular node (AV).

In an electrocardiogram, the portion of the graph called P wave shows the impulse in passing through the atria. Another portion of the graph, the QRS wave, shows the impulse in passing through the ventricles. To the extent that the impulse is transmitted normally, the heart pumps and beats at a regular rhythm.

Sometimes the signal from the heart's upper and lower chambers is altered or is not transmitted. This is called heart block. It does not mean that the blood flow or the blood vessels are blocked.

Heart block is classified according to the degree of alteration.

First-degree heart block

Second-degree heart block

Third-degree heart block

First-degree heart block

First-degree heart block happens when the electrical impulse passes through the atrioventricular node more slowly than usual. The time the impulse takes to get from the atria to the ventricles should be less than 0.2 seconds. If it takes longer, it is called first-degree heart block.

The heart rate and rhythm are normal, and there may be no problem with the heart.

Certain heart medications, such as digitalis, can make the conduction of the impulse from the atria to the ventricles slower and cause first-degree AV block.

Generally, no treatment is needed for first-degree heart block.

Second-degree heart block

In this condition, some signals from the atria do not reach the ventricles. This causes beats to be skipped. In an electrocardiogram, the P wave is not followed by the QRS wave, because the ventricles were not activated. There are two types:

- Type I second-degree heart block, also called Mobitz Type I, or Wenckebach's AV block. The electrical impulses are delayed more and more with each beat until a beat is skipped. This condition is not very serious but sometimes causes dizziness and/or other symptoms.
- Type II second-degree heart block also called Mobitz type II. This is less common than Type I, but it is generally more serious. Since the electrical impulses cannot reach the ventricles, an abnormally slow heart rhythm may occur. In some cases, a pacemaker is needed.

#### Third-degree heart block

Complete heart block (complete AV block) means that the heart's electrical signal does not go from the upper chambers to the lower ones. When this happens, an independent pacemaker is activated in the lower chambers. The ventricles can contract and pump blood, but at lower rate than the atrial pacemaker.

These impulses are called ventricular or escape beats. Generally, they are very slow and cannot generate the signals necessary to keep the heart muscle fully functioning. In the electrocardiogram, the relation between the P and QRS waves is not normal.

Complete heart block is caused most of the time in adults by heart disease or is a side effect of drug-induced toxicity. It can also be the result of an injury in the electrical conduction system during heart surgery. Complete heart block can be a medical emergency with possible serious symptoms and serious risk of heart attack (sudden cardiac death). If a pacemaker cannot be implanted immediately, a temporary pacemaker can be used to keep the heart pumping until it can be operated on.