# Heart Rhythm Disorders /Arrhythmia

Your heart pumps nearly 5 quarts of blood through your body every minute. Even while you are sitting still, your heart beats (expands and contracts) 60 to 80 times each minute. These heartbeats are triggered by electrical impulses that begin in your heart's natural pacemaker, called the sinoatrial node (SA node). The SA node is a group of cells located at the top of your heart's upper right chamber (the right atrium).

Any irregularity in your heart's natural rhythm is called an arrhythmia. Almost everyone's heart skips or flutters at one time or another, and these mild, one-time palpitations are harmless. But about 4 million Americans have recurrent arrhythmias, and these people should be under the care of a doctor.

## Categories of Arrhythmia

Arrhythmias can be divided into two categories: ventricular and supraventricular. Ventricular arrhythmias happen in the heart's two lower chambers, the ventricles. Supraventricular arrhythmias happen in the structures above the ventricles, mainly the atria, the heart's two upper chambers.

Arrhythmias are further defined by the speed of the heartbeats. A very slow heart rate, called bradycardia, means the heart rate is less than 60 beats per minute. Tachycardia is a very fast heart rate, meaning the heart beats faster than 100 beats per minute. Fibrillation, the most serious form of arrhythmia, is fast, uncoordinated beats, which are contractions of individual heart-muscle fibers.

## What is heart block?

Heart block happens when the SA node's electrical signal cannot travel to the heart's lower chambers (the ventricles).

## What causes arrhythmia?

Some people are born with arrhythmias, meaning the condition is congenital. Some medical conditions, including certain types of heart disease, high blood pressure, and hemochromatosis (iron build-up in the body), may be factors. Also, stress, caffeine, smoking, alcohol, and some over-the-counter cough and cold medicines can affect the pattern of your heartbeat.

## What are the symptoms?

Whether you have symptoms and what those symptoms feel like depends on the health of your heart and the type of arrhythmia you have. Symptoms also depend on how severe the arrhythmia is, how often it happens, and how long it lasts. Some arrhythmias do not produce any symptoms. Heart palpitations do not always mean that you have an arrhythmia.

## Symptoms of bradycardia

- You may feel tired, short of breath, dizzy, or faint.

## Symptoms of tachycardia

- You may feel a strong pulse in your neck, or a fluttering, racing heartbeat in your chest.
- You may feel chest discomfort, weak, shortness of breath, faintness, sweaty, or dizziness.

## How is an arrhythmia diagnosed?

The following techniques are used to diagnose arrhythmias.

- A standard electrocardiogram (ECG or EKG). This test helps doctors analyze the electrical currents of your heart.
- Holter monitoring gets a non-stop reading of your heart rate and rhythm over a 24-hour period (or longer).
- Event monitoring records problems that may not be found within a 24-hour period. The devices used for this type of test are smaller than a Holter monitor. One such device is the size of a beeper, and another is worn like a wristwatch.
- Electrophysiology studies (EPS) are usually done in a cardiac catheterization laboratory.
- A tilt-table exam is a way to evaluate your heart's rhythm in cases of fainting. The test is noninvasive, which means that doctors will not use needles or catheters.
- Coronary angiography is performed in the cardiac catheterization laboratory and gives doctors an x-ray "movie" of heart action and blood flow.
- An implantable loop recorder helps doctors find out why a person is having heart palpitations or fainting spells and can be used for up to 2 years.

## How is an arrhythmia treated?

Anti-arrhythmic medicines, including digitalis, beta-blockers, and calcium channel blockers, are often the first approach taken for treating arrhythmia. Other treatments include percutaneous (catheter) interventions, implantable devices, and surgery (for severe cases).

- Ventricular tachycardia and ventricular fibrillation can be treated by an implantable cardioverter defibrillator (ICD). This is a device that applies electric impulses or, if needed, a shock to restore a normal heartbeat.
- An implanted electronic pacemaker is used in some cases of slow heart rate. The pacemaker's batteries supply the electrical energy that acts like your heart's natural pacemaker.
- Radiofrequency ablation is a procedure that uses a catheter and a device for mapping the electrical pathways of the heart. Then doctors use high-frequency radio waves to destroy (ablate) the pathways causing the arrhythmia.

In some cases, these treatments may not work or they may not be right for you, and surgery may be needed to destroy the source of the irregular heartbeat.

- Surgical ablation is like radiofrequency ablation. Using computerized mapping techniques, surgeons can find out which cells are "misfiring." A technique called cryoablation can then be used to eliminate tissue with a cold probe and destroy the "misfiring" cells.
- Maze surgery may be recommended if you have atrial fibrillation that has not responded to medicines or electrical shock (cardioversion therapy) or to pulmonary vein ablation (a procedure similar to radiofrequency ablation). Surgeons create a number of incisions in the atrium to block the erratic electrical impulses that cause atrial fibrillation.
- Ventricular resection involves a surgeon removing the area in the heart's muscle where the arrhythmia starts.

In other cases, no treatment is needed. Most people with arrhythmia lead normal, active lifestyles. Often, certain lifestyle changes, such as avoiding caffeine (found in coffee, tea, soft drinks, chocolate, and some over-the-counter pain medicines) or avoiding alcohol, are enough to stop the arrhythmia.