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STUDIES have shown that the prevalence of cardiac arrhythmia in Indians is different from that seen in their western counterparts. Atrial fibrillation (abnormal heart rhythm) starts a decade earlier in Indians and it is more likely to be present along with a more advanced disease. The risk of stroke associated with atrial fibrillation is therefore higher in Indians.

Cardiac arrhythmias are abnormal heart rhythms that occur when the heartbeat is too fast, too slow, irregular or disorganised. To understand cardiac arrhythmias, it is important to understand the structure of the heart.

The cardiovascular system consists of heart and blood vessels that carry blood throughout our body. The heart is a muscular structure that works as a mechanical pump. The heart performs its task through the collaborative efforts of three components: the heart structure (muscle's chamber and valves), the electrical system (the signal that tells the heart to beat) and the circulatory system (the blood pathway that supplies the heart with energy and oxygen to work).

The electrical system keeps the heart pumping. The electrical signal to start the heart beat is generated in a tiny structure called the sinus node (natural battery of the heart).

Electrical impulse generated by the sinus node runs through a specialised tissue (known as the cardiac conduction system) to the main pumping chambers of the heart called ventricles. This electrical impulse makes the heart muscles contract to pump blood.

The normal heart rate in adults at rest is about 72 times a minute and it normally varies from 60 to 100 times a minute. Any abnormality in the electrical system of the heart leads to cardiac arrhythmias. The common cardiac arrhythmias arising from the upper chambers of the heart (atria) are:

**Atrial Fibrillation:** This happens when the heartbeat is irregular and rapid due to disorganised signals from

## Indians at heart risk

the heart's electrical system. The upper chambers of the heart may beat as often as 300 to 400 times a minute, leading to symptoms of palpitations, fatigue and heart failure.

People with atrial fibrillation are five times more likely to get a stroke than people without this condition. Doctors often prescribe blood thinners (anticoagulants) to patients with atrial fibrillation to reduce the risk of stroke. It is one of the most common cardiac arrhythmias that affects approximately 1.5 per cent of Singapore's adult population.

**Supraventricular Tachycardia (SVT):** This leads to a very fast heart beat that is not controlled by the pacemaker of the heart. SVT can lead to a sudden onset of palpitation, giddiness or fainting. It can be effectively treated by a procedure called an electrophysiology study and radiofrequency ablation.

**Sick Sinus Syndrome (SSS):** A group of signs and symptoms that shows the sinus node is not working properly. The heart beat can alternate between slow and fast. Treatment of SSS usually involves the implantation of a pacemaker, often along with medication.

**Ventricular Tachycardia (VT):** It is a life threatening arrhythmia usually seen along with other serious heart diseases. It rarely occurs in people with normal hearts. Due to its serious nature, VT needs aggressive treatment and follow up. People with VT are often protected by a defibrillator that is implanted in the body.

**Ventricular Fibrillation (VF):** Sudden cardiac arrest caused by ventricular fibrillation is the cause of half of heart-related deaths. In VF, the heartbeat is fast and chaotic, causing the lower heart chambers to go into spasm. Although CPR may help, the only truly effective treatment for VF is defibrillation which uses paddles or electrodes to shock the heart back to normal

rhythm. At the National University Heart Centre, Singapore (NUHCS), we manage all forms of cardiac arrhythmias. Our aim is to understand patient's symptom and its impact on his or her daily life.

The commonly done tests to diagnose heart rhythm disorder are electrocardiogram (ECG), exercise treadmill stress test, 24 or 48-hour ambulatory ECG monitoring (Holter test), implantable loop recorder (ILR), event monitor, tilt table test and cardiac electrophysiology study.

Once the diagnosis has been made, the treatment is individualised.

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