

# Arrhythmias



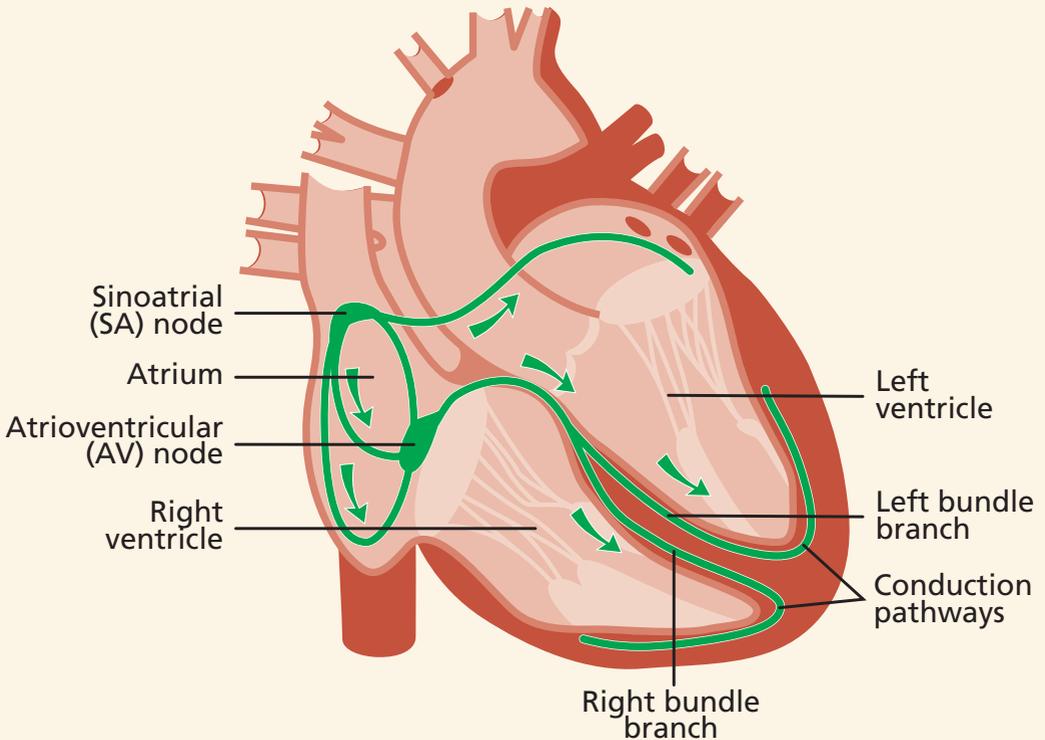
Arrhythmias are abnormal heart rhythms, which can prevent the heart pumping efficiently. This leaflet explains how the heart beats normally, what happens when it starts to beat abnormally and how it can be treated.

Information for children and young people

## How does the heart beat normally?

The heart has an electrical system that makes it pump. An electrical impulse starts in a specialised area of heart tissue in the right atrium called the sinoatrial (SA) Node. It then passes from the right atrium through to the ventricles via the atrioventricular (AV) node. As the impulse passes through the atrium it makes it pump blood into the ventricle. It has the same effect when it passes through the ventricle.

This electrical impulse is something that happens naturally. You can't feel it and the electrical impulses travel through the heart each time it beats. It can go wrong though, which is what causes arrhythmias.



## What is an arrhythmia?

The word 'arrhythmia' just means 'abnormal heart rhythm'. As the electrical impulse is not normal it can make the heart beat irregularly or at the wrong rate and so pump less efficiently. It can make the heart beat too fast, so the ventricles don't have time to fill up with blood before it's pumped out again. If the heartbeat is too slow, not enough blood is pumped out in time for the body's needs. Arrhythmias affect around two in every 100 children of school age.

## What does an arrhythmia feel like?

The most common symptoms include:

- Heart flutters
- Dizziness
- Fainting
- Tiredness
- Weakness

Most types of arrhythmia have these symptoms, but you won't always feel all of them all of the time. Nearly all the symptoms are caused by the heart not pumping enough blood round the body rather than the arrhythmia itself. The only sign from the arrhythmia itself is a 'fluttering heart'. You're unlikely to feel these symptoms all the time. Most young people only feel ill when they are stressed or exercising.



## How is an arrhythmia diagnosed?

The main test used to diagnose arrhythmia is an electrocardiogram (ECG). This records your heartbeat using a machine. There are various different types and your doctor will use the results from all of them to build up a picture of how your heart is working. The different types are:

### Resting ECG

This is an ECG where you are lying down. The technician will put some electrode stickers on your chest, arms and legs and then record your heartbeat for a minute or so.

### Exercise or stress ECG

This is similar to the resting ECG but you will be running on a treadmill or peddling on an exercise bike during the test. This version shows up any heart rhythm problems that don't show up when you're resting.

### Holter monitor

This is a 24 hour ECG recording. You will have three electrode stickers on your chest, which are connected by leads to a recording box about the size of a mobile phone. You carry on with your normal life during the test, including sport and exercise. We will ask you to write down what you do so we can match it with the recording.

## Electrophysiological (EP) study

This is like cardiac catheterisation, where a thin, plastic tube (catheter) is threaded through your veins to your heart. The doctor puts a catheter (thin, plastic tube) into a vein at the top of your leg and threads it up through your blood vessels until it reaches the heart. In children, this is carried out with anaesthesia so you will be asleep. Once it's there, the doctor can measure the electrical signals to see if there are any abnormal ones causing your arrhythmia and if needed, treat the problem during the same procedure. For more information, please ask for a copy of our leaflet about EP studies.

Once your doctor has the results of all of these tests, he or she will be able to build up a picture of how your heart is working, and whether the electrical impulses are behaving normally. It also helps to plan your treatment for now and in the future, and lets us compare results later on to see how well treatment is working.

## Types of arrhythmia

There are various types of arrhythmia, called different things depending on the area of the heart affected. Generally, arrhythmias are called either 'bradycardia' (slow) or 'tachycardia' (fast). The most common arrhythmias that affect children and young people are supraventricular tachycardias (SVT) including Wolff-Parkinson-White (WPW) syndrome. In these conditions, there is an extra (accessory) pathway between the atria and the ventricles. This allows the electrical signal to re-enter the atria so that the signal travels round the heart in a circuit, which causes the heart to beat faster than usual. Symptoms include palpitations, shortness of breath, chest pain, dizziness and sometimes fainting. An episode can last for a few seconds to several hours.

Other types of arrhythmia include:

- Sinus tachycardia – the SA node is sending out signals faster than normal
- Premature ventricular beats – the ventricles send out extra beats causing the ventricles to pump out of time with the atria
- Sick sinus syndrome – the SA node sends out signals irregularly some may be too fast or too slow
- Ventricular fibrillation – the ventricle sends out electrical impulses too fast and irregularly so the ventricles cannot fill up between each beat or pump effectively



## How will it be treated?

There are various options for treatment, which the doctors and nurses will discuss with you and your parents. Some of them might not be suitable everyone, but here are a few details about each option:

### Regular monitoring

In some people, arrhythmia is discovered during a physical examination when there have not been any symptoms previously. Other people may develop symptoms but only very rarely. Where symptoms do not happen very often, do not last long when they happen and are generally causing few problems, the doctor may suggest monitoring rather than active treatment. This would involve regular tests or investigations to ensure that the arrhythmia is not getting any worse.

### Medicines

There are various medicines to help arrhythmias. The ones most commonly used at GOSH include Amiodarone, Flecainide and medicines from a group called beta blockers. These work by treating the individual cells in the heart muscle so that they are less likely to cause arrhythmia. Most of the medicines only need to be taken once or twice a day, and shouldn't cause any side effects once you're used to them.

### Ablation

The doctor puts a catheter (thin, plastic tube) into a vein at the top of your leg and threads it up through your blood vessels until it reaches the heart. The doctor can then find the site causing the abnormal electrical impulse and destroy it by burning (radiofrequency) or freezing (cryotherapy). For more information about EP studies, please ask for our information sheet.

### Will I get better?

The treatments are usually very successful, but it may take some time to find the right one for you. If you are taking medicines, it can take a while to get the dose right, so that the medicines work well but give you very few side effects. Some types of arrhythmia may be life-threatening so as well as medicines and/or ablation, the doctor may suggest having an implantable loop recorder, pacemaker or implantable cardioverter defibrillator (ICD).

You may need to come back to GOSH for check ups. In between clinics, you can always call us for advice or if you have any questions. Having arrhythmia should not have too great effect on your day to day life, but but it may make some activities less advisable. If you have any questions about specific sports or activities which should be avoided, please ask your doctor or contact the nurse specialist.

## Places to go for further information

### **Arrhythmia Alliance**

Tel: 01789 867 501 (24 hour helpline)  
Website: [www.heartrhythmcharity.org.uk](http://www.heartrhythmcharity.org.uk)

### **British Heart Foundation**

Heart Helpline: 0300 330 3311  
Website: [www.bhf.org.uk](http://www.bhf.org.uk)

### **Cardiomyopathy Association**

Tel: 0800 018 1024  
Web: [www.cardiomyopathy.org](http://www.cardiomyopathy.org)

### **CRY (Cardiac Risk in the Young)**

Tel: 01737 363 222  
Web: [www.c-r-y.org.uk](http://www.c-r-y.org.uk)

### **Driving Vehicle Licensing Authority (DVLA)**

Tel: 0300 790 6806  
Website: [www.gov.uk/contact-the-dvla](http://www.gov.uk/contact-the-dvla)

## Word list

We try not to use medical words when we talk about your arrhythmia but some creep into our conversations. These are the medical words linked to arrhythmias.

**Arrhythmia** = abnormal heart rhythm.

**AV node** = the area in the heart through which the electrical signals pass.

**Cryoablation** = a method of treating arrhythmias that freezes the area of the heart causing the abnormal heart rhythm. It is usually carried out during an EP study.

**Electrocardiogram (ECG)** = a test to measure the heart rhythm.

**Electrophysiology (EP) study** = a diagnostic test to get a more accurate picture of the heart rhythm than an ECG.

**Holter** = a 24 hour ECG.

**Radio frequency ablation** = a method of treating arrhythmias that burns the area of the heart causing the abnormal heart rhythm. It is usually carried out during an EP study.

**SA node** = the area in the right atrium where the electrical impulse generally starts.

## Notes

**If you have any questions,  
please contact the Inherited Cardiovascular Disease  
Clinical Nurse Specialists on 020 7405 9200  
extensions 5646, 5305 or 5139 or the Cardiac  
Nurse Specialists on extension 5774.**

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