Heart rhythms

BEATING HEART DISEASE TOGETHER

British Heart Foundation
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**About this booklet**

This is a booklet about heart rhythms. It includes information on both normal and abnormal heart rhythms.

An abnormal heart rhythm is called an **arrhythmia** (pronounced ‘ah-rith-me-ah’). Arrhythmias affect more than 700,000 people in England alone.¹

Some people who have an abnormal heart rhythm may feel unwell or anxious, even if their condition is not harmful. Getting appropriate information and support can be very helpful, and can help improve your quality of life.

This booklet explains:

- what a normal heart rhythm is
- what palpitations are
- what ectopic beats are (when you feel like your heart ‘misses’ a beat)
- the different types of arrhythmias – what they are and what causes them
- the tests used to diagnose arrhythmias, and
- the treatments you might need to have if you have an arrhythmia.
This booklet does not replace the advice that the health professionals involved in your care may give you based on their knowledge of your condition, but it should help you to understand what they tell you.

**If you have atrial fibrillation**

Atrial fibrillation is an irregular heart rhythm. It is the most common type of arrhythmia. We mention it in a few places in this booklet but, if you have atrial fibrillation, you will find it more helpful to read our booklet *Atrial fibrillation*. 
What is an arrhythmia?

An arrhythmia is an abnormal heart rhythm. Your heart has an electrical conduction system which makes your heart pump blood. Arrhythmias are caused by an abnormality in that electrical conduction system. An arrhythmia can make your heart beat too slowly, too quickly, or in an irregular way.

Some people are born with a heart condition that can cause an arrhythmia. Some people inherit genes which can cause certain heart conditions – such as a cardiomyopathy – to develop, and these heart conditions can also cause an arrhythmia. Other people may, at some time in their life, get a heart problem such as coronary heart disease. This can also cause an arrhythmia. But people who have no other heart problem can also get arrhythmias, usually because they have an ‘extra’ electrical pathway in their heart.

The symptoms of an arrhythmia include palpitations (being aware of your heartbeat), dizziness, breathlessness, and in some rare cases collapsing or losing consciousness.
How a normal heart works

The heart is a pump that is driven by a series of electrical impulses produced by a bunch of special cells in the right atrium, called the **sinus node**. (The right atrium is one of the four chambers of the heart. See the illustration on the next page.) The sinus node is sometimes called the heart’s ‘natural pacemaker’.

The sinus node produces pulses of electrical activity that spread through the heart’s cells, causing the heart muscle to contract. When the electrical signals travel through your heart, it’s like electricity going down a circuit of wires.

The electrical impulses from the sinus node travel down through the atria to special cells in the **AV node**. These impulses make the **atria** contract. This squeezes blood into the **ventricles** (the two lower chambers of the heart). The impulses then travel from the AV node through the ventricles via an **electrical pathway**. These electrical impulses cause the ventricles to contract and squeeze the blood out of your heart to your body and your lungs.
Normal electrical signals in the heart

What is the difference between heart rate and heart rhythm?

The **heart rate** is the number of times the heart beats in a minute. This is the number of times it pumps to push blood round the body.

The **heart rhythm** is the pattern in which the heart beats. It may be described as regular or irregular, or fast or slow.
How to measure your heart rate by taking your pulse

Every heartbeat creates a wave of pressure, as blood flows along the arteries. Where these arteries lie closest to the surface of your skin, you can feel this pressure wave as a pulse.

To measure your pulse, you’ll need a clock or watch that measures seconds. Measure the pulse on the underside of your wrist, in line with your thumb. (This is known as the radial pulse.) Use the index finger and middle finger of your other hand to check your pulse. Place the pads of these fingers just over your wrist creases at the base of your thumb. Then count how many beats you can feel during 60 seconds.
Normal heart rhythms

The normal heart rhythm is called **sinus rhythm**. Its rate is between 60 and 100 beats per minute (bpm) while you are resting.

If the sinus rhythm is faster than 100 bpm, it is called **sinus tachycardia**. If the sinus rhythm is slower than 60 bpm, it is called **sinus bradycardia**.

The normal heart rate varies from minute to minute, depending on the demands on the heart.

Sinus rhythm, sinus tachycardia and sinus bradycardia are all normal heart rhythms where the electrical impulses travel in a normal way through the heart.

**Sinus tachycardia**

The heart may be beating fast because it needs to – for example, if you are doing exercise, or if you are excited. It can also beat faster if you are stressed or anxious, or if you’re heavily pregnant.

Sometimes a sinus tachycardia is a sign of an underlying health condition such as an overactive thyroid gland (thyrotoxicosis) or severe anaemia. Or it may be because you have an infection or have had severe blood loss.
Other causes of sinus tachycardia include:
• stimulants such as caffeine, nicotine and alcohol
• prescribed drugs such as salbutamol (Ventolin) – a medicine for asthma, or
• illegal drugs such as amphetamines (speed), cocaine, ecstasy and cannabis.

**Treatment**
Treatment for sinus tachycardia is rarely needed. However, if an underlying condition is causing the sinus tachycardia, you may need to have treatment for that condition.

**Sinus bradycardia**
A lot of people get sinus bradycardia (a slow heart rate), especially when they are resting or asleep. People who are very physically active are more likely to have slower heart rates.

Other causes of sinus bradycardia include:
• drugs such as beta-blockers, including eye drops which contain beta-blockers
• an underactive thyroid gland
• hypothermia, and
• tachybrady syndrome (see page 42).
Treatment

Sinus bradycardia usually does not need treatment. However, if your sinus bradycardia is due to an underlying medical condition – such as an underactive thyroid gland – you may need to have treatment for that condition.
Palpitations

‘Having palpitations’ is a term people often use to describe the sensation of feeling your own heart beating. You may feel that you are having palpitations when your heart is beating at a normal rate, a fast rate, irregularly or when you get ectopic beats. Ectopic beats are a common reason why people feel they are having palpitations. We explain more about ectopic beats on page 15.

Some people say their palpitations feel like a fluttering in their chest, or their heart pounding. Others describe them as feeling like a thud or movement in their chest. Some say they feel their palpitations in their neck or through their ear when they are lying down. Most people who get palpitations don’t have a serious heart condition, but palpitations can feel unpleasant and may cause distress. Many people have them at some time in their lives.

If you’re concerned about palpitations, go and see your GP. He or she may arrange for you to have an ECG. We describe this test on page 19. If the symptoms continue, if you have underlying heart disease, or if the palpitations are making you feel very unwell, and your doctor thinks that your palpitations may be due to an arrhythmia, you may need a 24-hour ECG recording (see page 20).
Ectopic beats

Also called ectopics, extra systoles or premature contractions.

What are they?
Ectopic beats are ‘extra’ heartbeats that can cause palpitations, and can make you feel like your heart skips or misses a beat. Ectopic means out of place.

An ectopic beat happens when cells away from the sinus node release an electrical discharge, causing an ‘extra’ heartbeat. There is often a tiny pause after the extra beat, giving the sensation of a ‘missed’ beat.

How common are they?
Most people will have ectopic beats at some time in their lives. Many people are unaware of having them, or may have them while asleep. Some people have frequent ectopics and are unaware of all of them, while others may have only a few ectopics and yet are aware of every one.

People of all ages can get ectopic beats. And people with or without heart disease can get them.
Tests
Ectopic beats can be confirmed by an ECG or by a 24-hour ECG recording. If ectopic beats are seen on your ECG and you have an underlying heart condition, you may need to have further tests, such as an echocardiogram. We describe all these tests on pages 19 and 22.

Treatment
If you have no underlying heart disease, and your doctor tells you that the ectopic beats are harmless, you won’t need any more tests or treatment.

Are ectopic beats dangerous?
Most people who get ectopic beats have nothing to worry about. In most cases the ectopic beats are not caused by underlying heart disease, are not dangerous and don’t need treatment. And having ectopic beats doesn’t mean that you are about to develop heart disease.
Abnormal heart rhythms (arrhythmias)

What are the symptoms of an abnormal heart rhythm?

Symptoms can include palpitations (see page 14), dizziness, breathlessness and, in some rare cases, collapsing or becoming unconscious.

The medical term for a collapse, including fainting, is syncope. Fainting is sometimes called vasovagal syncope, but there are other types of syncope. For more information on syncope and what causes it, contact Stars. (Phone: 01789 450 564. Website: www.stars.org.uk)

What types of abnormal heart rhythm are there?

There are many different types of abnormal heart rhythms. We describe these on pages 23 to 42. On the next page we give a list of the main types and tell you where you can find out more about them in this booklet.

The two main types of abnormal heart rhythms are:

- fast heart rhythms – called tachycardias, and
- heart blocks and slow heart rhythms (called bradycardias).
Types of arrhythmias

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On page 19 we describe the different tests that are used to diagnose arrhythmias.

On pages 31 and 43 we explain the treatments you might have if you are diagnosed with an arrhythmia.
Tests to diagnose arrhythmias

Below we describe some of the tests used to diagnose different types of arrhythmias. For more detailed information about these tests, see our booklet Tests for heart conditions.

ECG

Also called an electrocardiogram.

An ECG records the electrical activity of your heart. It can show an arrhythmia, but usually only if it is happening at the time of the ECG. Sometimes an ECG can show features that could suggest you might be at risk of an arrhythmia.

What happens?

An ECG is painless and usually takes about five minutes to do. Small sticky patches, called electrodes, are put on your arms, legs and chest, and are connected to a recording machine. The ECG machine then makes a recording of the electrical activity in your heart.

If your ECG shows an abnormal heart rhythm, it’s a good idea for your doctor to give you a copy of the ECG, as well as keeping a copy in your medical records.
24-hour ECG recording

Also known as Holter monitoring or ambulatory ECG monitoring.

This can be useful if a standard ECG doesn’t pick up an arrhythmia but if you are getting symptoms of an arrhythmia quite often. You have to wear a small recording machine, usually around your waist. It records an ECG over a 24-hour period – through one day and overnight. Sometimes the recorder can record for longer than 24 hours.

Exercise ECG

Sometimes arrhythmias are triggered by physical activity. An exercise ECG can be used to record the heart rhythm while you are exercising, when your heart is working under increased pressure.

What happens?

An ECG recording is taken while you are walking on a treadmill or while cycling on an exercise bike.

Cardiac event recorders

If you don’t get the symptoms of an arrhythmia very often, your doctor may suggest using a small electrical recording device called a cardiac event recorder. This
device records your heart rate and rhythm over a longer period of time. There are several different types. If you need to use one, someone will show you how to use it.

There is also a device called an **implantable loop recorder** which can be implanted under the skin for several months. This is a small, slim device, slightly bigger than a 50p coin. It can record electrical activity in the heart that doesn’t happen very often.

**EP study**

*Also called an *electrophysiological study*, *EPS* or *electrophysiological testing*. *

An EP study can discover if there are extra electrical pathways in the heart which could be causing an abnormal heart rhythm – especially a particular type of fast heart rhythm called an SVT.

If you need an EP study, your doctor will refer you to a cardiac electrophysiologist. This is a cardiologist who specialises in abnormal heart rhythms. He or she will have a specialist team with them when carrying out the test.

**What happens?**

You’ll have a local anaesthetic and will be under heavy sedation, so you may fall asleep during the procedure. The test can take about two to three hours.
The electrophysiologist will insert some special catheters (thin, hollow tubes) into a large vein, usually in the groin. The catheters are then gently moved up through the veins and into the heart. A small electrode at the tip of each catheter tries to detect where any unwanted electrical impulses are coming from.

If the electrophysiologist can pinpoint exactly where the unwanted electrical impulses are coming from, he or she may do a **catheter ablation** treatment at the same time as they do the test. We describe this treatment on page 34.

There are some risks involved in an EP study. For more on this, see *Possible complications* on page 36.

**Echocardiogram**

*Also called an echo.*

This is an ultrasound scan of the heart. An echocardiogram can detect if you have a problem with your heart muscle or heart valves, which could be the cause of your arrhythmia.

For more detailed information about all the tests described on pages 19 to 22, see our booklet *Tests for heart conditions.*
Fast heart rhythms

Some fast heart rhythms arise from above the ventricles and some come from the ventricles. It’s important to try to find out exactly what type of fast heart rhythm you have, so that your doctors can provide the best possible treatment.

Types of fast heart rhythms

Fast heart rhythms that arise from above the ventricles include:

• supraventricular tachycardias (SVTs)
• atrial flutter
• atrial fibrillation (AF).

We explain more about these on pages 24 to 27.

Fast heart rhythms which arise from the ventricles are called ventricular arrhythmias. They include:

• ventricular tachycardia (VT), and
• ventricular fibrillation (VF).

We describe these on pages 28 to 30.
Supraventricular tachycardias (SVTs)

What are they?
Supraventricular tachycardia – or SVT for short – is an overall term for fast heart rhythms which start from above the ventricles. They are usually ‘paroxysmal’. This means that they come and go. SVTs are quite common, but they are rarely life-threatening.

What causes them?
Most SVTs are due to one or more extra electrical pathways between the atria and the ventricles. In people with SVTs, an extra electrical pathway can make the heart beat very fast. In most cases, there are no other heart problems.

In those people who may be prone to SVTs, the SVT can be triggered by caffeine, alcohol, drugs, hormone changes in adolescence, or pregnancy.

Sometimes an SVT happens for the first time in early adulthood. Some people find that SVTs improve with age, while others find that they get worse as they get older.

One example of an extra pathway is found in people with Wolff-Parkinson-White syndrome (or WPW for short). People who have WPW have an extra electrical pathway that can conduct very fast rhythms because it allows a
very fast route from the top of the heart directly to the bottom (to the ventricles) with very little delay. WPW causes a particular pattern on a routine ECG.

There are different types of SVT, and they may need different treatments.

**Treatment**

People with SVTs may need one or more of the following treatments:

- intravenous medication (through a vein)
- oral medication (as tablets), such as beta-blockers, calcium channel blockers and other anti-arrhythmic drugs
- cardioversion
- catheter ablation.

We explain more about these treatments on pages 31 to 37.

**Atrial flutter**

**What is it?**

Atrial flutter is a type of heart rhythm that arises in the atria. It is usually fast, often beating in a regular rhythm at a rate of 150 beats a minute. It happens when electrical impulses circulate very fast around the atria. The
ventricles can’t pump this fast successfully, so the AV node ‘blocks’ some of these electrical impulses, stopping some of them from reaching the ventricles. However, it does this in an ordered way so that the heartbeat stays regular (unlike the chaotic way that the heart beats in atrial fibrillation – see the next page).

Some people get periods of atrial flutter followed by atrial fibrillation.

What causes it?
People who have atrial flutter usually have an underlying heart problem. Possible causes include coronary heart disease, cardiomyopathy, heart valve disease, holes in the heart, inflammation of the heart (such as myocarditis), high blood pressure or thyroid problems.

Treatment
Treatment for atrial flutter may include one or more of the following:
• cardioversion
• medication, such as beta-blockers, calcium channel blockers and other anti-arrhythmic drugs, or
• catheter ablation.
For more information about these treatments, see pages 31 to 37.
Atrial fibrillation (AF)

What is it?
Atrial fibrillation is an irregular and sometimes fast abnormal heart rhythm that starts in the atria. It is the most common type of arrhythmia.

What causes it?
Atrial fibrillation happens when different places in and around the atria fire off electrical impulses in an unco-ordinated way.

Treatment
People usually need treatment to try and control their atrial fibrillation.

For more information on atrial fibrillation and on all the different types of treatments for it, see our booklet Atrial fibrillation.
Ventricular arrhythmias (VT and VF)

What are they?
Ventricular arrhythmias are fast, abnormal heart rhythms that start from the ventricles. There are two types:

• ventricular tachycardia (VT), and
• ventricular fibrillation (VF).

Most ventricular arrhythmias are caused by underlying heart disease.

If you have, or if your doctor thinks you may have had, an episode of VT or VF, he or she should refer you urgently to a cardiologist.

Ventricular tachycardia (VT)

What is it?
People with VT usually have symptoms, because VT has a significant effect on how well the heart pumps. This abnormal rhythm may last for just a few seconds or minutes, or it may continue for longer. Some episodes do stop on their own.

VT is a difficult rhythm for most people’s bodies to cope with, so they usually feel very unwell when they get it. Symptoms include having palpitations, breathlessness and sometimes chest pain, sweating, feeling sick, or collapsing.
VT can worsen into ventricular fibrillation (see page 30). VT can sometimes cause a cardiac arrest (see page 30).

**What causes it?**

VT usually happens when someone has a damaged heart muscle. For example, someone may have VT in the hours after a heart attack.

Less commonly, VT can happen in people who haven’t got damage to their heart muscle, but who are at risk of developing ventricular arrhythmias. This is usually because they have inherited certain genes. This is what can happen in people with Long QT syndrome.

**Treatment**

Treatment for VT aims to stop the VT, both to reduce the symptoms and to prevent the VT developing into ventricular fibrillation.

If you are very unwell, immediate treatment includes intravenous (through a vein) anti-arrhythmics drugs, or electrical cardioversion, or both.

In the longer term, treatment can include anti-arrhythmics drugs, or possibly catheter ablation treatment. You may need to have an ICD fitted, depending on what caused the VT and the underlying condition of your heart.
For more information about all these treatments, see pages 31 to 37.

**Ventricular fibrillation (VF)**

**What is it?**

Ventricular fibrillation – or VF for short – is a fast heart rhythm that the body cannot cope with. If you have VF, it means that your heart ‘fibrillates’, or quivers, but it does not pump blood around the body. This is a cardiac arrest.

To find out what to do if someone has a cardiac arrest, see page 45. For information on a course in emergency life-support skills, see page 51.

**What causes it?**

The most common cause of VF is a heart attack. Most people who get VF have it either during or just after a heart attack. Other possible causes of VF are the same as those for VT given on page 29.
Treatments for fast heart rhythms

Some fast heart rhythms don’t need any treatment, but some do. This section gives information about the treatments used for SVTs, atrial flutter, ventricular tachycardia (VT) and ventricular fibrillation (VF). You may need to have one or more of these treatments, depending on the type of arrhythmia you have.

Medicines

Medicines are used in three main ways:

• to **stop an arrhythmia** (this is called rhythm control or chemical cardioversion)
• to **prevent an arrhythmia**, and
• to **control the rate of an arrhythmia** (rate control).

Drugs to prevent arrhythmias and to control the rate of arrhythmias are usually taken as tablets. Drugs to stop arrhythmias are usually given intravenously (through a vein).

Pill in the pocket

Most people who take medicines to prevent arrhythmias have to take their medicine every day. However, if you only very rarely have an arrhythmia, your doctor may give you a prescription for a particular dose of one or more
medicines which you take if you ever get the arrhythmia again. This is to try to stop the abnormal rhythm and convert it back to normal. This is sometimes called the **pill in the pocket**. You should only use this method if your doctor has advised you to and has given you a prescription for it.

**Valsalva manoeuvre**

The Valsalva manoeuvre is a technique that is sometimes taught to people who occasionally get SVTs.

If you know you get SVTs and you have an episode of a fast heart rhythm, you may find it helpful to take a deep breath and push down into your abdomen as if you were constipated.

Or, splash your face with ice-cold water. This can sometimes stop an SVT.
Cardioversion

Also known as electrical cardioversion.

Cardioversion can be a successful treatment for various types of tachycardias, particularly atrial fibrillation and atrial flutter.

What happens?
First, you will be given a short-acting general anaesthetic or heavy sedation. This will make you sleep through the whole procedure.

Electrodes, attached to large sticky pads, are put on your chest. A doctor or specialist nurse then applies one or more controlled electrical shocks to the chest wall, using a defibrillator machine. The aim of this is to change your heart rhythm back into a normal rhythm. The procedure does not usually cause any side effects.

Cardioversion doesn’t always stop the abnormal rhythm. Sometimes it is successful to start with, but the fast heart rhythm may come back again within hours, weeks or months after cardioversion.

If or when a tachycardia does come back again, your cardiologist may decide to repeat the cardioversion. Or he or she may consider giving you other treatment.
**Catheter ablation**

This treatment may be used if you get repeated episodes of abnormal fast heart rhythms and your medication has not had much of an effect on them. It may also be used if, for some reason, you can’t take the medicine.

Catheter ablation can only be done if you first have an EP study (see page 21), so the ablation is often done in the same session as the EP study.

Catheter ablation is widely used in the UK now, but it can only be done in specialist units, and for certain types of fast heart rhythms.

**What happens?**

You will be asked not to eat or drink anything for a few hours before the procedure.

Most people need only a local anaesthetic and sedation when they have this treatment. The procedure for inserting the catheters is the same as for an EP study, as described on page 21.

At the end of the catheters there are small electrodes that detect which parts of the heart tissue are causing unwanted electrical impulses. Radio-frequency energy can be used to destroy particular areas of heart tissue to prevent the abnormal heart rhythms from happening and restore a normal rhythm.
While you are having the catheter ablation you may feel like you are having palpitations, and the procedure can make some people feel a bit dizzy. When the catheters are inserted, you may feel a sensation in your chest, but this should not be painful. The team of staff will be monitoring you and reassuring you.

A catheter ablation treatment can take between one and four hours. But it can take longer to do some types of catheter ablation.

Afterwards, the catheters are taken out. You will need to rest for a few hours. How long you need to rest for will depend on how your puncture wound (where the catheters were inserted) is, and how much sedation you have had. The nursing staff will let you know about this.

How successful is it?

Catheter ablation is a very successful treatment for certain types of fast heart rhythms, and has a relatively low risk of complications. The success rate depends on which type of abnormal heart rhythm you have, where the extra electrical pathways are, and how many you have. (Some people need more than one ablation.) For example, ablations for certain SVTs, such those due to Wolff-Parkinson-White syndrome, have proved very successful.
Some people who have catheter ablation treatment may not be completely cured, but may have fewer and shorter episodes of abnormal heart rhythms after the treatment.

**Possible complications**

Having a catheter ablation does involve some risks. Major complications are rare but the risks should all be explained to you before you agree to have the treatment. The risks are higher when catheter ablation is used to treat certain types of supraventricular tachycardias, because the treatment involves destroying some of the electrical pathways very near or within the AV node (see the illustration on page 9). In some cases like this, a pacemaker may need to be fitted. Your cardiologist will be able to discuss how high this risk is in your particular case. (See page 43 for more on pacemakers.)

Another possible complication is that there can be bleeding from the vein in the groin where the catheters were put in, leaving a haematoma (where blood collects under the skin). This can feel uncomfortable and can cause quite a lot of bruising.

Abnormal heart rhythms often happen during the treatment. These can help to detect the areas of the heart that need ablation, but sometimes the person needs to have treatment to stop an abnormal heart rhythm during
the procedure.

Also, having a catheter ablation does mean that you are exposed to some radiation. For more on this, see our booklet *Tests for heart conditions*.

**ICD (implantable cardioverter defibrillator)**
An ICD may be used for people who have had, or are at risk of having, **ventricular tachycardia (VT)** or **ventricular fibrillation (VF)**.

**What is it?**
An ICD is a device – slightly bigger than a pacemaker – that is put under the skin in your chest, and has leads into your heart.

If you have an episode of VT or VF, the ICD can deliver a small electrical shock direct to the heart, to get it back into a normal rhythm. An ICD can also be combined into one device with a pacemaker, if a pacemaker is also needed (see page 43).

For more information about ICDs, see our booklet *Implantable cardioverter defibrillators (ICDs)*.
Heart blocks and slow heart rhythms

Most heart blocks are when the electrical impulses sent by the atria to the ventricles are delayed or are blocked. If the impulses are just delayed (rather than blocked), this rarely causes symptoms. Some heart blocks can cause a bradycardia (a slow heart rate) but others don’t.

On the next pages, we describe the following types of heart rhythms:

- bundle branch blocks
- AV heart blocks, and
- tachybrady syndrome.

Tests

The main way to diagnose a heart block is by having an ECG (see page 19). Different patterns on the ECG indicate different types of heart block.

Bundle branch blocks

What are they?

A bundle branch block is when the electrical impulses travel through the ventricles more slowly than normal, due to a block in the electrical pathway. This delay will not cause symptoms.
There are two types of bundle branch blocks. These are called left and right bundle branch blocks. The blockages can be seen as a particular pattern on an ECG.

What causes them?

Right bundle branch block (RBBB) can happen naturally in people with a normal heart and with no heart disease. Other causes of right bundle branch block include coronary heart disease, or a problem with the structure of the heart such as a hole in the heart, and some lung conditions.

Left bundle branch block (LBBB) usually means that there is some underlying heart disease such as coronary heart disease (including heart attack), cardiomyopathy, thickening of the heart muscle (left ventricular hypertrophy) which can be caused by high blood pressure or aortic stenosis (narrowing around the aortic valve), or wearing and ageing of the electrical pathway.

Treatment

A bundle branch block itself doesn’t need treatment, but it could be a sign of an underlying condition, which you may need to have treatment for.
AV heart blocks

Also called atrioventricular heart blocks.

What is it?
An AV heart block is where there is a delay or block in the electrical impulses travelling between the atria and the ventricles.

There are different ‘degrees’ of AV heart block. First-degree AV heart block doesn’t cause symptoms and doesn’t need treatment. Symptoms of some second-degree and third-degree AV heart blocks can include collapsing. This is sometimes called a Stokes-Adams attack. Other symptoms are feeling dizzy, extremely tired, confused or breathless, and fluid retention (when there is too much fluid in the body).

In some people, these heart blocks are always there, while in others they are intermittent (which means that they come and go). Some heart blocks may develop into higher degree AV heart blocks if they are left untreated.

What causes them?
The possible causes of AV heart blocks include:

- coronary heart disease, including a heart attack
- cardiomyopathy
- congenital heart disease
• ageing of the electrical pathways in the heart
• electrolyte imbalances, and
• some medications.

**Treatment**

If you do need to have treatment, the type of treatment will depend on your heart rate and symptoms, and on what has caused the heart block.

People who have a second-degree or third-degree AV heart block with a very slow heart rhythm – either with or without symptoms – will usually need to have a permanent pacemaker implanted. Young people who have congenital heart disease may have a second-degree or third-degree AV heart block but often don’t have a slow heart rate. If they don’t have any symptoms from this, their condition may be stable and they may not need a pacemaker.

If you have a second-degree or third-degree AV heart block that was caused by a heart attack, you may need only a temporary pacemaker. If the normal rhythm hasn’t recovered a few weeks after your heart attack, you may need to have a permanent pacemaker fitted.

For more information on pacemakers, see page 43, or our booklet *Pacemakers.*
Tachybrady syndrome

Also called bradytachy syndrome or sick sinus syndrome.

What is it?
This is when someone has a disease of the sinus node causing fast, abnormal heart rhythms at some times, and slow heart rhythms at other times. (‘Tachy’ means fast, and ‘brady’ means slow.) An example of this is having atrial flutter which alternates with a slow heart rhythm and significant pauses in the heart rhythm. This can lead to symptoms such as collapsing.

What causes it?
The most likely cause of tachybrady syndrome is ageing of the electrical conduction system in the heart.

Treatment
People with tachybrady syndrome may need a combination of drugs to control their fast heart rhythms. They may also need to have a pacemaker fitted to prevent pauses in the heart rhythm and slow heart rhythms. See the next page for information on pacemakers.
Treatments for heart blocks and slow heart rhythms

Some heart blocks and slow heart rhythms don’t need any treatment, but some do. This section gives information about the treatments used for AV heart blocks and tachybrady syndrome. You may need to have one or both of these treatments, depending on your condition.

Medicines

Your cardiologist will review the drugs that you are taking, to make sure that they are not causing or contributing to a heart block or slow heart rhythm.

If you have a very slow heart rhythm and are unwell, doctors may give you an intravenous drug to speed your heart up temporarily.

Pacemakers

Pacemakers are most commonly used for people who have heart blocks, some of whom get symptoms such as collapsing.

Sometimes pacemakers are used for people who have both fast and slow heart rhythms due to tachybrady syndrome (see page 42).
Occasionally, people who are having a catheter ablation procedure may need to have a pacemaker fitted.

Pacemakers are also sometimes used for controlling fast heart rhythms such as atrial fibrillation. For more on this, see our booklet *Atrial fibrillation*.

**What is a pacemaker?**

A pacemaker is a small device with two parts – the pacemaker box which contains a battery and electrical circuit, and one or more electrode leads. The pacemaker box is put under the skin on your chest. The leads go from the pacemaker box, through a vein in your chest, into your heart. The pacemaker sends out electrical impulses into the heart muscle to help it beat at a normal rate.

For more information on both permanent and temporary pacemakers, see our booklet *Pacemakers*.
What to do if someone has a heart attack or cardiac arrest

Heartstart UK is an initiative co-ordinated by the British Heart Foundation to teach members of the public what to do in a life-threatening emergency – simple skills that can save lives. For more details see page 51.

If you think someone is having a heart attack
1 Get help immediately.
2 Get the person to sit in a comfortable position.
3 Phone 999 for an ambulance.

If the person seems to be unconscious and you think they are having a cardiac arrest
• Approach with care, making sure that you, the person and anybody nearby are safe. To find out if the person is conscious, gently shake him or her, and shout loudly, ‘Are you all right?’
• If there is no response, shout for help.
• You will need to assess the casualty and take suitable action. Remember ABC – airway, breathing, CPR.
A  Airway
Open the person’s airway by tilting their head back and lifting the chin.

B  Breathing
Check
Look, listen and feel for signs of normal breathing. Only do this for up to 10 seconds.

Action: Get help
If the person is unconscious, and is either not breathing or not breathing normally, phone 999 for an ambulance.

C  CPR
Action: Cardiopulmonary resuscitation (CPR)

1  Chest compression
Start chest compression.
Place the heel of one hand in the centre of their chest. Place the heel of your other hand on top of your first
hand and interlock your fingers. Press down firmly and smoothly 30 times. Do this at a rate of about 100 times a minute – that’s a little less than two each second.

2  **Rescue breaths**

After 30 compressions, open the airway again by tilting the head back and lifting the chin, and give two of your own breaths to the person. These are called rescue breaths.

To do this, pinch the person’s nostrils closed using your index finger and thumb and blow into the person’s mouth. Make sure that no air can leak out and that the chest rises and falls with each breath.

Then give another 30 chest compressions and then 2 rescue breaths.

3  **Continue CPR**

Keep doing the 30 chest compressions followed by 2 rescue breaths until:

- the casualty shows signs of life, or
- professional help arrives, or
- you become exhausted.
If you are not able, or are not willing, to give rescue breaths, give chest compressions only, as described in step 1 on page 46. Keep doing the chest compressions – at a rate of 100 times a minute – until:

• the casualty starts breathing, or
• professional help arrives, or
• you become exhausted.
For more information

British Heart Foundation website

bhf.org.uk
For up-to-date information on heart disease, the BHF and its services.

Heart HelpLine

0300 330 3311
A local rate number.
For information and support on anything heart-related.

Booklets and DVDs

To order any of our booklets or DVDs:
• call the BHF Orderline on 0870 600 6566, or
• email orderline@bhf.org.uk, or
• visit bhf.org.uk/publications

You can also download many of our publications from our website.

For information on other BHF booklets, and on DVD’s and videos, ask for a copy of the Heart health catalogue.

Our booklets are free of charge, but we would welcome a donation. (See page 2 for how to make a donation.)
Heart Information Series

This booklet is one of the booklets in the *Heart Information Series*. The other titles in the series are as follows.

1. Physical activity and your heart
2. Smoking and your heart
3. Reducing your blood cholesterol
4. Blood pressure
5. Eating for your heart
6. Angina
7. Heart attack
8. Living with heart failure
9. Tests for heart conditions
10. Coronary angioplasty
11. Heart valve disease
12. Having heart surgery
13. Heart transplantation
14. Heart rhythms
15. Pacemakers
16. Peripheral arterial disease
17. Medicines for the heart
18. The heart – technical terms explained
19. Implantable cardioverter defibrillators (ICDs)
20. Caring for someone with a heart condition
21. Returning to work with a heart condition
22. Diabetes and your heart
23. Cardiac rehabilitation
24. Atrial fibrillation
25. Keep your heart healthy
Heart Matters

Heart Matters is a free service designed for anyone who has, or is at risk of developing, a heart condition, and for anyone who cares for someone with a heart problem. Members receive personalised information, and can get specialist support from cardiac nurses or heart health advisers, either by phone or email. They also get regular issues of Heart health magazine, which includes updates on treatment and research and looks at issues related to heart health. To join Heart Matters, either register at our website bhf.org.uk/heartmatters or call 0300 330 3300 (a local rate number).

Emergency life-support skills

Heartstart UK

For information about a free, two-hour course in emergency life-support skills, contact Heartstart UK at the British Heart Foundation. The course teaches you to:

- recognise the warning signs of a heart attack
- help someone who is choking or bleeding
- deal with someone who is unconscious
- know what to do if someone collapses, and
- perform cardiopulmonary resuscitation (CPR) if someone has stopped breathing and his or her heart has stopped pumping.
References


## Technical terms

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<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>arrhythmia</td>
<td>An abnormal heart rhythm.</td>
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<tr>
<td>atria</td>
<td>The two upper chambers of the heart.</td>
</tr>
<tr>
<td>atrial fibrillation</td>
<td>An irregular abnormal heart rhythm that starts in the atria.</td>
</tr>
<tr>
<td>atrioventricular node</td>
<td>See <em>AV node</em>.</td>
</tr>
<tr>
<td>AV node</td>
<td>Also called the atrioventricular node. A group of specialised cells which allows electrical impulses to pass from the atria to the ventricles.</td>
</tr>
<tr>
<td>bradycardia</td>
<td>A slow heart rhythm – below 60 beats a minute.</td>
</tr>
<tr>
<td>bradytachy syndrome</td>
<td>See ‘tachybrady syndrome’.</td>
</tr>
<tr>
<td>cardiac arrest</td>
<td>When the heart stops pumping and immediate cardiopulmonary resuscitation is needed.</td>
</tr>
<tr>
<td>cardioversion</td>
<td>A treatment to get an abnormal heart rhythm back into a normal rhythm using controlled electrical shocks applied to the chest.</td>
</tr>
<tr>
<td>catheter</td>
<td>A fine, flexible, hollow tube. It can be inserted into a vein or artery leading to the heart.</td>
</tr>
<tr>
<td><strong>catheter ablation</strong></td>
<td>A procedure that uses a catheter to destroy an extra electrical pathway in the heart that is causing abnormal heart rhythms.</td>
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<tr>
<td><strong>coronary heart disease</strong></td>
<td>When the coronary arteries become furred up by a build-up of fatty material called atheroma.</td>
</tr>
<tr>
<td><strong>defibrillation</strong></td>
<td>When one or more electrical shocks are delivered to the heart during a cardiac arrest, using a device called a defibrillator.</td>
</tr>
<tr>
<td><strong>ECG</strong></td>
<td>Electrocardiogram. A test to record the pattern of electrical activity in the heart.</td>
</tr>
<tr>
<td><strong>ectopic beat</strong></td>
<td>‘Extra’ heartbeats that can make you feel like your heart skips or misses a beat. They are usually harmless.</td>
</tr>
<tr>
<td><strong>electrolytes</strong></td>
<td>Substances in the body that can conduct an electrical charge, such as calcium, potassium and sodium.</td>
</tr>
<tr>
<td><strong>EP study</strong></td>
<td>Electrophysiological study. A test to find the abnormal electrical pathways in the heart that are producing arrhythmias.</td>
</tr>
<tr>
<td><strong>exercise ECG</strong></td>
<td>An ECG recording taken while the person is exercising on a stationary bike or treadmill.</td>
</tr>
<tr>
<td><strong>fibrillation</strong></td>
<td>Quivering of part of the heart muscle, caused by chaotic electrical activity in the heart. It can happen in the atria (atrial fibrillation) or in the ventricles (ventricular fibrillation).</td>
</tr>
<tr>
<td><strong>heart block</strong></td>
<td>Delaying or blocking of electrical impulses during their journey from the atria to the ventricles.</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>sick sinus syndrome</strong></td>
<td>See ‘tachybrady syndrome’.</td>
</tr>
<tr>
<td><strong>sinus bradycardia</strong></td>
<td>A slow but normal heart rhythm. The rhythm comes from the sinus node but produces a heart rate of less than 60 beats a minute.</td>
</tr>
<tr>
<td><strong>sinus node</strong></td>
<td>The heart’s natural pacemaker. Also called the SA node or sino-atrial node.</td>
</tr>
<tr>
<td><strong>sinus tachycardia</strong></td>
<td>A fast but normal heart rhythm. The rhythm comes from the sinus node but produces a heart rate of 100 beats a minute or more.</td>
</tr>
<tr>
<td><strong>supraventricular tachycardia</strong></td>
<td>See SVT.</td>
</tr>
<tr>
<td><strong>SVT</strong></td>
<td>Supraventricular tachycardia. An arrhythmia starting from above the ventricles.</td>
</tr>
<tr>
<td><strong>tachybrady syndrome</strong></td>
<td>Disease of the sinus node causing fast and slow abnormal heart rhythms. Also called bradytachy syndrome, or sick sinus syndrome.</td>
</tr>
<tr>
<td><strong>tachycardia</strong></td>
<td>A fast heart rate of over 100 beats a minute.</td>
</tr>
<tr>
<td><strong>ventricles</strong></td>
<td>The two pumping chambers of the heart.</td>
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Have your say

We would welcome your comments to help us produce the best information for you. Why not let us know what you think? Contact us through our website at bhf.org.uk/contact. Or, write to us at the address on the back cover.

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The British Heart Foundation would like to thank all the GPs, cardiologists and nurses who helped to develop the booklets in the Heart Information Series, and all the patients who commented on the text and design.

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