



British Heart
Foundation

Angina

**and living
life to
the full**

Jonathan Kirkman

**FIGHT
FOR EVERY
HEARTBEAT**

bhf.org.uk



ABOUT THE BRITISH HEART FOUNDATION

As the nation's heart charity, we have been funding cutting-edge research that has made a big difference to people's lives.

But the landscape of cardiovascular disease is changing. More people survive a heart attack than ever before, and that means more people are now living with long-term heart conditions and need our help.

Our research is powered by your support. Every pound raised, every minute of your time and every donation to our shops will help make a difference to people's lives.

If you would like to make a donation, please:

- call our donation hotline on **0300 330 3322**
- visit **[bhf.org.uk/donate](https://www.bhf.org.uk/donate)** or
- post it to us at BHF Customer Services, Lyndon Place, 2096 Coventry Road, Birmingham B26 3YU.

For more information, see **[bhf.org.uk](https://www.bhf.org.uk)**



Find out more about our life saving heart research at **[bhf.org.uk/research](https://www.bhf.org.uk/research)**

CONTENTS

About this booklet	02
What is angina?	03
What causes angina?	06
What to do if you get chest pain	10
Heart attack? The symptoms ... and what to do	12
Why do people get angina?	14
How is angina diagnosed?	15
What can be done for angina?	21
What changes should I make to my lifestyle?	23
Treatment with medicines	40
Coronary angioplasty and coronary bypass surgery	48
Everyday life with coronary heart disease and angina	50
Other causes of angina	56
Cardiac arrest? The symptoms ... and what to do	62
For more information	69
Index	74
Have your say	76

This booklet is for people with angina, and for their family and friends. It explains:

- what angina is
- what causes it
- how angina is diagnosed
- what to do if you get an episode of angina, or if you think you may be having a heart attack, and
- what can be done for angina, including:
 - making changes to your lifestyle
 - treatment with medicines, and
 - coronary angioplasty and coronary bypass surgery.

We also explain what acute coronary syndrome is.

This booklet does not replace the advice that your doctors or the other health professionals looking after you may give you, but it should help you to understand what they tell you.

Angina is an uncomfortable feeling, tightness, heaviness or pain in your chest, which may spread to your arms, neck, jaw, shoulders, back or stomach. People sometimes describe the feeling as a dull ache. The symptoms are not the same for everyone. Some people may feel the pain or tightness only in their arm, neck, stomach or jaw. For some people the pain or tightness is severe, while others may feel nothing more than a mild discomfort or pressure.

You might experience angina if it is a cold day, or if you're walking after a meal. Being very upset can sometimes trigger an angina episode too. Or you may get angina if you're exerting yourself – for example, during activities such as exercise or sexual intercourse.

The symptoms of angina usually fade after a few minutes' rest, or after taking the medicines that your doctor or nurse may have prescribed for you, such as GTN (glyceryl trinitrate). For more information on GTN and how to use it, see page 43.

Stable angina and unstable angina

You may have angina that comes on with a particular amount of activity, but resolves quickly with rest, is well controlled with medicines, and doesn't become more frequent or more severe. This is known as **stable angina**.

Unstable angina is when you have symptoms that you have developed for the first time, or angina which was previously stable but has recently got worse or changed in pattern. For example, your angina symptoms may come on after doing much less activity or with less stress than usual, and may even come on while you are resting.

Changes you should tell your doctor about

Contact your doctor:

- if your angina episodes become more frequent or severe, or if you start to get angina while you are resting, or
- if your GTN spray or tablets (the medicines you are given to use if you have an angina episode) seem to become less effective.

If you have any changes to your symptoms, it's important to tell your doctor as soon as possible. It may mean that you need to have further tests or treatment.

How will I know if the pain in my chest is angina?

Many episodes of chest pain or discomfort have nothing to do with the heart.

- Short, sharp, stabbing pains can often be muscular pain.
- Some people feel discomfort in their chest when they are tense or anxious.
- Indigestion that comes on after a heavy or spicy meal can sometimes cause discomfort in the chest.
- Severe anaemia can also cause chest pain.

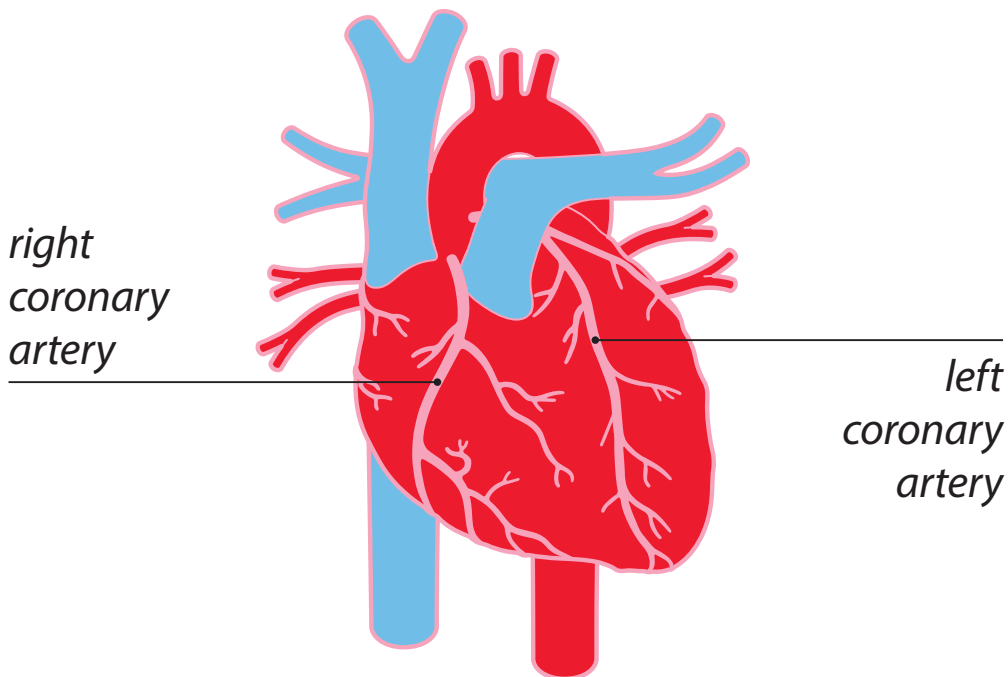
If you have chest pain, it's very important to talk to your doctor as soon as possible, so that he or she can assess you to find out why you are getting the pain.

How the heart works

Your heart is a muscle that pumps blood around your body, delivering oxygen and other nutrients to all your cells.

Your heart muscle needs its own supply of oxygen and nutrients so that it can pump blood around your body. Your heart gets its blood supply from the **coronary arteries**, which are on the outside of your heart.

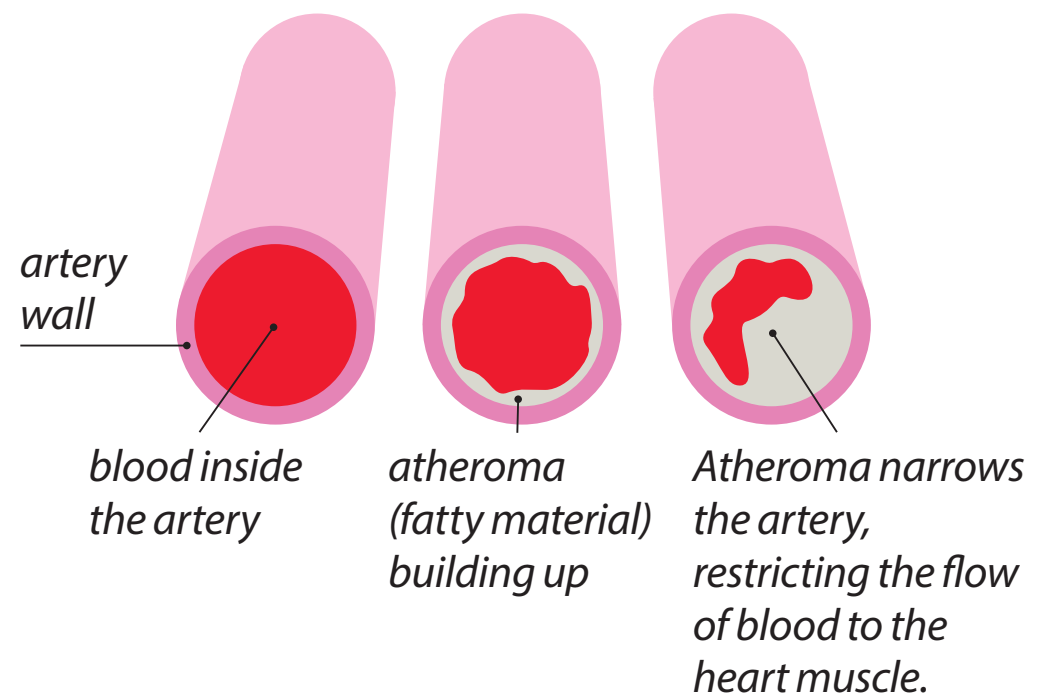
The heart and coronary arteries



Coronary heart disease

Your coronary arteries play a vital role in keeping your heart healthy and pumping properly. But in some people, the coronary arteries can become narrowed because fatty deposits, called **atheroma**, have built up within the artery walls. This process is called **atherosclerosis** and it is what causes **coronary heart disease**.

How atheroma builds up



Having coronary heart disease can increase your risk of having a heart attack. We explain more about heart attacks below.

Angina and heart attacks

The artery may become so narrow that it doesn't allow enough blood and oxygen to your heart at times when your heart needs more than usual, like when you're physically active, for example. If this happens, you may feel discomfort, tightness or pain in your chest. This is **angina**. The amount of pain or discomfort you feel does not always reflect how badly your coronary arteries are affected.

Having coronary heart disease can lead to a **heart attack**. A heart attack happens when a coronary artery becomes blocked by a blood clot. This usually happens because the atheroma in the artery wall has become unstable. A piece may break off (rupture) and a blood clot may form around it, blocking the artery and starving your heart muscle of blood and oxygen. This can lead to irreversible damage to some of the heart muscle.

What's the difference between angina and a heart attack?

It can be very difficult to tell if your pain or symptoms are angina or if they are due to a heart attack, as the symptoms can be similar. If it's angina, your symptoms usually ease or go away after a few minutes' rest, or after taking the medicines your doctor or nurse has prescribed for you, such as GTN. If you're having a heart attack, your symptoms are less likely to ease or go away after resting or taking medicines.

On the next pages we explain what to do if you get an episode of angina or if you think you are having a heart attack.

What is acute coronary syndrome?

Acute coronary syndrome is a term that covers unstable angina (see page 04) and a heart attack. 'Syndrome' means a set of symptoms that happen at the same time, and 'coronary' means to do with the coronary arteries.

WHAT TO DO IF YOU GET CHEST PAIN

If you've not already been diagnosed with angina or coronary heart disease and you get chest pain that does not go away within a few minutes, **you should call 999 immediately for an ambulance.**

The information on the next page is for people who already have coronary heart disease and who are taking GTN (glyceryl trinitrate) spray or tablets for their angina symptoms.

As you already have coronary heart disease, you may get chest pain or discomfort from time to time. Sometimes this will be angina, which you will be able to manage at home with your GTN. However, it could also be a symptom of a heart attack.

IF YOU GET CHEST PAIN...

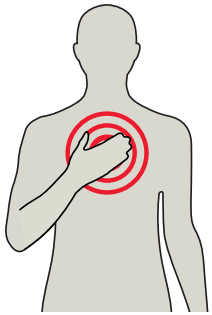
- 1** Stop what you are doing.
- 2** Sit down and rest.
- 3** Use your **GTN spray or tablets**. Take the GTN as your doctor or nurse has told you. The pain should go away within five minutes. If it doesn't, take your GTN again.
- 4** If the pain has not gone away within five minutes of taking the second dose of GTN, **call 999 immediately.**
- 5** Chew an adult aspirin tablet (300mg) if there is one easily available, unless you're allergic to aspirin or have been told not to take it. If you don't have an aspirin next to you, or if you don't know if you're allergic to aspirin, just stay resting until the ambulance arrives.

If you have symptoms that do not match the ones we have described but you think that you are having a heart attack, call 999 immediately.

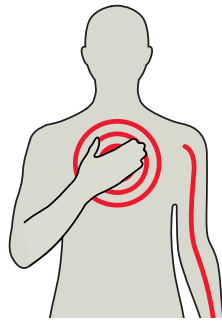
HEART ATTACK? THE SYMPTOMS ... AND WHAT TO DO

A heart attack is when a part of the heart muscle suddenly loses its blood supply. This is usually due to coronary heart disease.

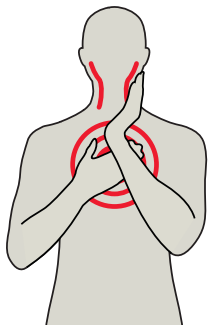
The symptoms of a heart attack



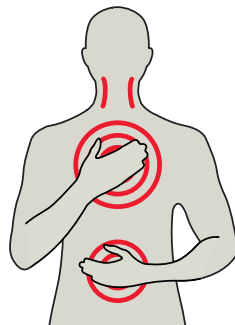
Pain or discomfort in the chest that doesn't go away.



The pain may spread to the left or right arm ...



... or may spread to the neck and jaw.



You may feel sick or short of breath.

Think quick ... act fast. Call 999 immediately.

ACT FAST...

What to do if you think someone is having a heart attack

- 1** Send someone to call 999 for an ambulance immediately.

If you are alone, go and call 999 immediately and then come straight back to the person.
- 2** Get the person to sit in a comfortable position, stay with them and keep them calm.
- 3** Give the person an adult aspirin tablet (300mg) to chew if one is easily available, unless they're allergic to aspirin or they've been told not to take it.

If you don't have an aspirin next to you, or if you don't know if the person is allergic to aspirin, just get them to stay resting until the ambulance arrives.

WHY DO PEOPLE GET ANGINA?

The most common cause of angina is coronary heart disease, as we have described on page 08. We tell you about some other causes of angina on page 56.

There are certain things about your lifestyle or family history that mean you may be more likely to get coronary heart disease. These are known as **risk factors**. You are more likely to get coronary heart disease if you:

- smoke any form of tobacco
- have high blood pressure
- have a high blood cholesterol level
- take too little physical activity
- are overweight or obese
- have diabetes, or
- if you have a family history of premature heart disease. (This means if your father or a brother has, or had, angina or a heart attack before the age of 55, or if your mother or a sister has, or had, angina or a heart attack before the age of 65.)

HOW IS ANGINA DIAGNOSED?

Your doctor may be able to tell if you have angina from the symptoms you describe and how often you get them.

Your doctor will listen to your heart to check its rate and rhythm, check your blood pressure and assess your general condition. They will also ask you questions about your lifestyle to see if you are at risk of getting coronary heart disease. They may do some blood tests to measure your cholesterol and blood glucose levels. And they may organise for you to have an ECG (electrocardiogram) to look at the electrical activity of your heart.

As a result of their examination and what they find, your doctor or nurse may:

- decide that you need to go to hospital in an ambulance as an emergency, or
- decide that you need an appointment with a specialist nurse or doctor at a chest pain clinic at the hospital, or
- refer you to a cardiologist (a heart specialist) as an outpatient, to have more tests and investigations.

To help diagnose your condition and prescribe the right treatment for you, your doctor, cardiologist or specialist nurse may also send you for one or more tests, which we describe below.



For more information, see our booklet **Tests**.
Or to see video clips of many of the tests, visit
[bhf.org.uk/heart-health/tests](https://www.bhf.org.uk/heart-health/tests)

Electrocardiogram (ECG) or exercise ECG

An electrocardiogram – or ECG for short – records the electrical activity of your heart. The test is painless and takes about five minutes. Small sticky patches called ‘electrodes’ are put on your chest, and sometimes on your arms and legs. These are connected, by wires, to an ECG recording machine. The recording machine picks up the electrical activity in your heart and interprets it into wavy lines which are printed onto paper.

Angina often comes on when you are physically active. This means that if the ECG is done while you are resting, it may show a normal reading. For this reason you may be asked to do an **exercise ECG**. This

is an ECG that is carried out while you’re pedalling an exercise bike or walking on a treadmill.

This test will help your doctors decide if you may have coronary heart disease and if you have angina.

The ECG can also show if you have had a heart attack in the past and if there is any area of your heart muscle that has been damaged.

Myocardial perfusion scan

This is also known as a **radionuclide scan**, **myoview** or **thallium scan**.

This test helps to diagnose coronary heart disease. It can show the blood flow to your heart and how your heart functions when it has to work harder – for example, when you’re active. You will be given an injection of a small amount of isotope (a radioactive substance). A large camera is then put in position close to your chest and takes pictures of your heart. These pictures help your doctor to work out if the problem is angina, how much it is affecting the heart, and what treatment would be most helpful.

Coronary CT scan

This is also called a **computed tomography scan** or a **coronary CAT scan**.

A coronary CT scan is a sophisticated type of X-ray that can provide detailed images of your heart. Among other things, it can show the blood flow through your coronary arteries and will give you a 'calcium score', which is a measure of how much calcium there is in the artery walls. The higher your calcium score is, the higher your risk of having coronary heart disease.

To have this test, you'll need to lie flat on a bed under a scanner. Some dye (called 'contrast dye') will be injected into your arm before the scanner takes pictures of your heart. The dye means that your heart and coronary arteries will show up clearly in the pictures.

CT coronary calcium scoring test

Calcium scoring involves having a special CT scan to assess how likely it is that you may have coronary heart disease. The scan is non-invasive and doesn't involve using any contrast dyes. It usually takes about five

minutes to do. You'll be asked to lie on a narrow bed, which is then moved inside the scanner. The scanner is shaped a bit like a doughnut in that it's a large round hole through which the bed is moved until the scanner is over your chest with your head, shoulders and legs sticking out. You'll be asked to lie still and hold your breath for a few seconds at a time. The scan will measure the amount of calcified, or hardened, plaques in the arteries, which is usually explained as a calcium score of low, moderate or high.

Echocardiogram

An echocardiogram – or **echo** for short – is a scan of the heart that uses ultrasound to produce detailed pictures. It looks at the structure of your heart and how well it's working, and also allows doctors to see the heart valves. Gel is put on your chest and a probe (recorder) is then placed on the chest. The probe picks up 'echoes' from the heart and shows them as a picture on the screen.

A **stress echocardiogram** is when the echocardiogram is recorded after the heart has been put under stress – either during exercise or after giving you a particular type of medicine that

speeds up the heart to mimic exercise. The test can show if any areas of your heart are getting less blood flow when your heart is working hard. The stress echocardiogram pictures help your doctor to work out if the problem is angina, and how much it is affecting the heart. Your doctor can then decide what treatment might be most helpful.

Coronary angiogram

A coronary angiogram is a special type of X-ray picture of the blood flowing through your coronary arteries. The X-rays are like a 'road map' of all your coronary arteries, showing where they are narrowed and how narrow they have become. This is the most accurate test for diagnosing coronary heart disease.

A coronary angiogram is done in a 'catheter lab', which looks a bit like an operating theatre. You'll be awake during the procedure, but you will be given a local anaesthetic. A catheter (a long, thin, flexible, hollow plastic tube) is then put into an artery in your groin or wrist and is passed through the blood vessels to your heart. A dye is injected into the catheter and the X-ray pictures are taken. The dye shows up all the coronary arteries on the X-rays.

There's a lot you can do to prevent your angina or coronary heart disease from getting worse, and to reduce your risk of having a heart attack.

- You may need to make **changes to your lifestyle** (see page 23).
- You may also need to take **medicines** to control things like your blood pressure and cholesterol levels (see page 40).
- You may need a **coronary angioplasty** or **coronary artery bypass surgery**, to improve the blood supply to your heart muscle. We tell you more about these treatments on page 48.

What type of treatment you are offered will depend on how severe your angina is, whether your angina is stable or unstable, the results of your tests, and your overall state of health. If your angina is stable, the best treatment option may be to give you medicines, rather than having an invasive treatment such as coronary angioplasty or bypass surgery.

The treatments mentioned above do not cure coronary heart disease or remove the atheroma that has built up, but they do help to relieve the symptoms it causes.

Making changes to your lifestyle can help prevent your angina from getting worse.

On page 14, we told you about the risk factors that can cause coronary heart disease. Even if you already have coronary heart disease or angina, making changes to your lifestyle can help to prevent your condition and your symptoms from getting worse.

On the next few pages we tell you about some of the things you can do to help yourself. Talk to your GP or practice nurse. They will help you to decide what changes you need to make and help you to make them.

Changing your habits is not easy. Our booklet *My progress record* can help you identify what changes you need to make and help you to set realistic goals. (See page 70 for how to order a copy.) You can also join our free Heart Matters service and receive personalised information and support on how to make the changes you need to make (see page 72).

If you smoke, stop

Smoking is a major cause of coronary heart disease. Any type of smoking will make your condition worse. This includes cigarettes, pipes and cigars, and all other types of tobacco products such as shisha.

If you are a smoker, stopping smoking is the single most important step you can take to live longer.

If you have tried to quit and have gone back to smoking, there are things that can help. These include using products to help you stop, or joining a stop-smoking group. Ask your doctor or nurse about these. Or you can visit the **Smokefree** website at www.nhs.uk/smokefree, or call the Smokefree National Helpline on 0300 123 1044.

Control high blood pressure

High blood pressure makes your heart work harder and can damage the lining of your arteries. If you already have angina, high blood pressure could make your symptoms worse and increase the risk of having a heart attack. If you have high blood pressure, it's essential that you try to reduce it.

If you have coronary heart disease or diabetes, your doctor will aim to get your blood pressure to a level **below 130/80 mmHg**. (mmHg stands for millimetres of mercury.) He or she may prescribe for you some medicines that will reduce the workload of your heart and help to control your blood pressure.

To help to reduce your blood pressure you need to do the following.

- Make sure you're a healthy weight and body shape.
- Be physically active within your limits.
- Cut down on salt and alcohol.



For more information see our booklets **Stop smoking** and **Blood pressure**.

Control your cholesterol

Cholesterol is a fatty substance that is mainly made in the body. It plays a vital role in how every cell in the body works. However, too much cholesterol in the blood can be harmful.

There are several different types of cholesterol:

- **HDL** is a protective type of cholesterol, because it helps to remove some harmful types of cholesterol from your bloodstream.
- **Non-HDL** includes all the harmful types of cholesterol in your body. Having a high level of non-HDL is thought to increase your risk of developing coronary heart disease.

One of the causes of high levels of non-HDL cholesterol is eating too much saturated fat. This is a type of fat we get mainly from foods like butter, ghee, cheese and fatty meats. But some people may have a high level of non-HDL cholesterol even though they eat healthily. For example, they may have inherited a condition called familial hypercholesterolaemia – or FH for short. For more information on this, see our booklet *Life with familial hypercholesterolaemia*. See page 70 for how to order a copy.

Eating healthily can help to improve your cholesterol levels and protect your heart. In particular, you need to replace saturated fats with unsaturated fats. Unsaturated fats include monounsaturated fats like olive oil and rapeseed oil, and polyunsaturated fats such as sunflower oil or the fats found in oily fish, nuts and seeds.

Keeping to a healthy weight and being active will also help to improve your cholesterol.

If you have coronary heart disease, angina or FH, it is likely that your doctor will prescribe a medicine such as a statin to help lower your cholesterol and protect your heart. (See page 46.)



For more on cholesterol and healthy eating, including information on the different types of fats, see our booklets **Reducing my blood cholesterol** and **Eating well**.

Eat a healthy, balanced diet

Eating a healthy, balanced diet can help to reduce your risk of coronary heart disease.

- Eat at least five portions of a variety of fruit and vegetables each day.
- Choose healthier fats. This will improve your cholesterol levels and protect your heart.
- Aim to have two portions of fish a week. One of these portions should be oily fish – such as trout, sardines, herrings, mackerel or fresh tuna.
- Eat high-fibre foods, especially foods like oats and pulses such as kidney beans and lentils.
- Reduce the amount of salt and sugar you eat.

If you drink alcohol, you should drink no more than 14 units of alcohol a week. You should also have several alcohol-free days each week. These guidelines apply whether you're a man or a woman and if you drink regularly or only occasionally.

Keep to a healthy weight and body shape

Keeping to a healthy weight and not carrying too much weight around your middle will help to keep your heart healthy. It will also help to control your blood pressure and reduce your risk of diabetes.

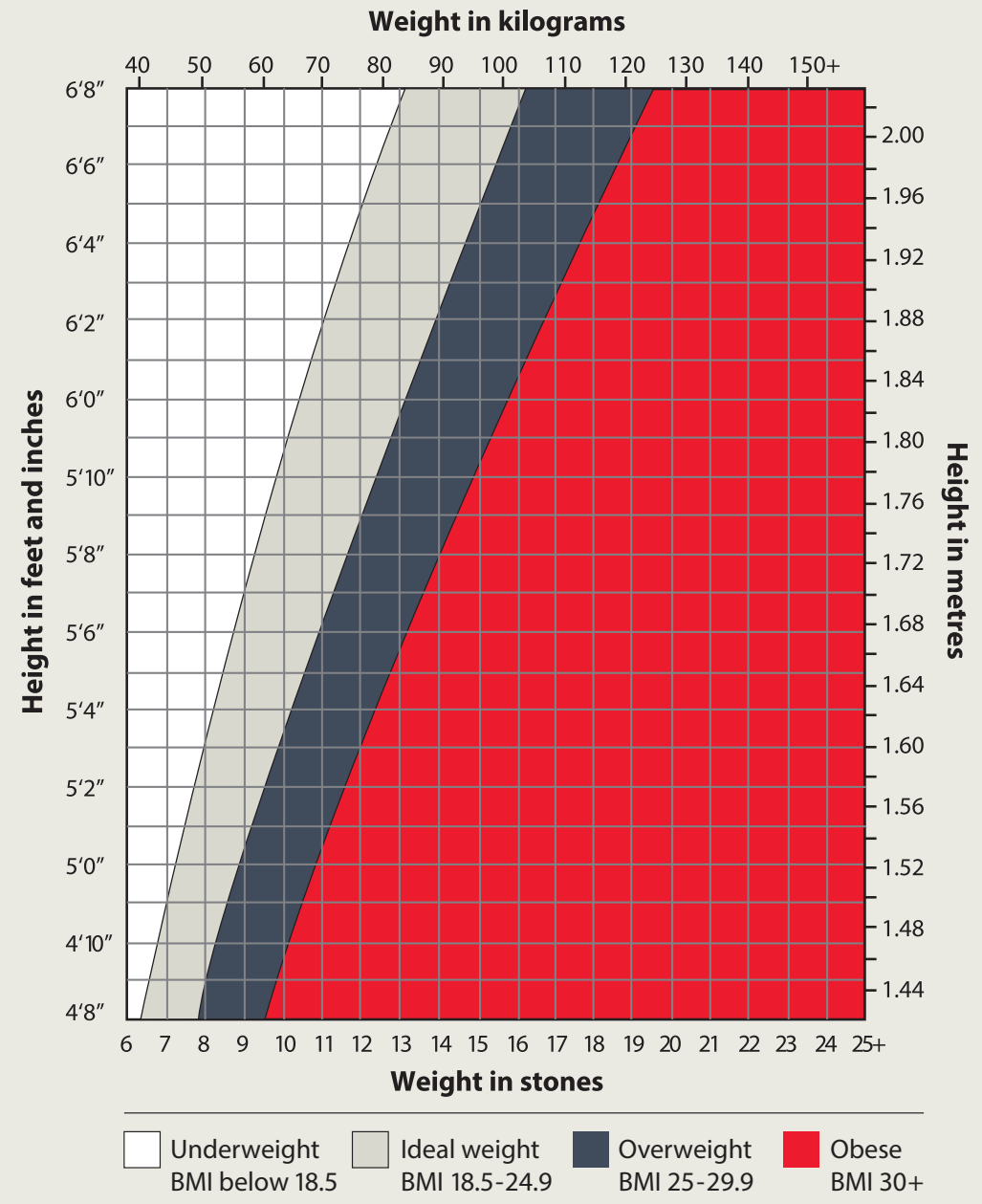
Your weight

To find out if you're an ideal weight – that is, a healthy weight for your height – a measurement called body mass index (BMI) is often used. This is calculated from your weight and height.

You can use the chart on the next page to find out if you need to lose weight. If you fall into the 'Overweight' or 'Obese' category in the chart, you need to lose some weight.

Take a straight line up or down from your weight, and a line across from your height (without shoes). Put a mark where the two lines meet to find out if you are a healthy weight. This is an approximate guide.

Are you a healthy weight?



Your body shape

To find out if you have a healthy body shape, measure your waist with a tape measure. Find the midpoint between the bottom of your ribs and the top of your hips. For most people this is at the level of the tummy button. Breathe out normally and measure around your waist. Try to relax, and avoid breathing in while taking your measurement. Check your measurement in the box on the next page.

Research shows that if you're South Asian, African Caribbean, Black African, Chinese, Middle Eastern or have parents of two or more different ethnic groups, you may be at increased risk of some health conditions at a lower BMI and waist size than people from white European backgrounds. This means that the measurements that indicate high risk are lower for people from these groups.

	Your health is at risk if your waist size is:	Your health is at high risk if your waist size is:
Men – White European	Over 94 centimetres (about 37 inches)	Over 102 centimetres (about 40 inches)
Men – African Caribbean – South Asian – some other minority ethnic groups	–	Over 90 centimetres (about 35½ inches)
Women – White European	Over 80 centimetres (about 31½ inches)	Over 88 centimetres (about 34½ inches)
Women – African Caribbean – South Asian – some other minority ethnic groups	–	Over 80 centimetres (about 31½ inches)

If you need to lose weight or reduce your waist size

The best way to do this is by:

- reducing your calorie intake by cutting down on the amount of fat and sugar in your diet, and
- increasing your daily physical activity, with the aim of doing a total of 150 minutes (two and a half hours) a week. See the next page.

If you have any questions about what or how much you should be eating, ask your GP, practice nurse or cardiac rehabilitation team.

If you're very overweight, you may benefit from talking to a dietitian. Your doctor or the cardiac rehab team may be able to arrange this.

Keep physically active

Physical activity will help to keep your heart healthy and help prevent your condition from getting worse. It also:

- helps to control your blood glucose levels and blood pressure
- helps to improve your cholesterol levels
- helps you reach and stay a healthy weight, and
- reduces stress levels.

How much and what sort of activity to do

It's recommended that adults do a total of at least 150 minutes (two and a half hours) of moderate-intensity activity a week.

You can do the 150 minutes in bouts of 10 minutes or more. One way to achieve the 150 minutes is to do 30 minutes of activity a day, five days a week. If you can't do as much as 30 minutes a day, try to be as active as possible. Doing even a small amount is better than doing nothing.

Build up your activity gradually over a period of time to the recommended level.

'Moderate intensity' means working hard enough to make you feel warm and make you breathe more heavily than normal, but you should still be able to carry on a conversation.

Examples of activities recommended for the heart include brisk walking, cycling, dancing or climbing stairs. Walking and cycling are particularly good as you can often build them into your daily routine.

If you have stable angina and are not waiting for further tests or investigations, it's important to keep physically active, but within the limits of your angina symptoms or how breathless you become. A good guide is that you should be able to 'walk and talk'. If you're too breathless to talk, you should stop and take a break. Don't try to 'walk through' pain.

You may have been given a GTN spray or tablets to carry with you. Always keep your spray or tablets with you in case you need them.

If your symptoms make it difficult for you to walk uphill, try walking on a flat surface to start with. If the weather is good, walk to your local shop. It can be helpful to go walking with a friend or relative.

You may also find it helpful to plan a weekly exercise programme based on walking. You can keep a walking diary to keep track of your progress.

Warming up and cooling down

Whenever you do any exercise, start slowly for the first few minutes and build up gradually. This will prepare your muscles and heart for exercise. At the end, spend some time slowing down gradually and don't stop suddenly.

Exercises and activities to avoid

Depending on your condition, you may be advised to avoid certain strenuous everyday activities, such as carrying very heavy objects, or doing heavy DIY or gardening.

Exercises such as weightlifting, press-ups and sit-ups are not recommended if you have a heart condition. However, if you used to do these activities before you started getting angina, you may want to ask your doctor if it's OK for you to start doing them again. You should also check with your doctor before you do any competitive

vigorous sports such as squash, particularly if you've had a pacemaker or ICD implanted as part of the treatment for your heart condition.

It's important that you talk to your doctor or nurse about how much activity you can do and how to increase your level of activity. You can also ask them what types of activity are suitable and safe for you to do. Always check before you take up a new activity.

If you get symptoms of angina while exercising

If, while you're exercising, you get symptoms of angina or breathlessness, or if you think you may be about to get an episode of angina, it's important to stop, sit down and rest. Use your GTN spray or tablets as prescribed. See page 10 for what to do if you get chest pain.

Safety tips

- Avoid doing activity after a large meal or when it's very hot or cold, or at high altitudes.

- If you're doing any activity outdoors in cold or windy weather, dress warmly with a hat or scarf.
- When it's hot, wear a hat and something cool, slow down your pace and drink plenty of liquids.
- Avoid strenuous activity outdoors whenever air pollution is very high. (See page 52.)
- Make sure your clothing and footwear are comfortable and fit well.
- Don't exercise if you feel unwell, and stop exercising if you get any pain, or feel dizzy or sick. If the symptoms don't go away, call for an ambulance.
- Listen to your body. If you feel uncomfortable while exercising, stop and take a break.

Reduce stress

If you have angina, it's important to learn how to relax. Some people find that physical activity, yoga or other relaxation techniques help. You also need to identify situations that make you feel stressed and learn ways to cope with them effectively.



For more information on how to deal with stress, see our booklet **Coping with stress**.

JONATHAN'S STORY

Jonathan was a fit guy who played rugby and golf regularly. But in 2002, he started having episodes of chest discomfort.

"I thought it was heartburn, so I took remedies for indigestion. But I started feeling excessively tired too. One day in 2003 my mum said I looked grey and insisted that I go and see my doctor. We have a family history of coronary heart disease, as my dad had a heart attack in his 50s.

I was referred to a cardiologist. They did a stress test and an angiogram, which showed that I needed a triple heart bypass operation.

The operation changed my life and my way of thinking. I gave up smoking and started eating well. The cardiac rehabilitation team were really supportive in my journey. I regularly coach rugby and enjoy cycling now. I live my life well and enjoy it to the full because life is too short."



You will need to take a combination of medicines every day for the rest of your life. There are some medicines that you take only if you get symptoms, such as GTN. Also, some people may be shown how to use GTN as a 'preventer' – that is, to help prevent having an episode of angina. See page 44 for more on this.

Not everyone who has angina will be prescribed the same medicines. Your doctor will prescribe the medicines that work best for you.

The medicines prescribed to manage angina act in different ways. You may be given medicines that:

- reduce the chance of blood clots developing (anti-platelet medicines and platelet inhibitors)
- increase the blood supply to your heart (nitrates, some calcium-channel blockers and potassium-channel activators)
- reduce the work your heart has to do (beta-blockers and some calcium-channel blockers), and
- help to control your blood cholesterol and blood pressure levels.

All medicines can have some side effects. But these side effects often go away or lessen after you have taken the medicine for a short time, and few medicines produce any serious problems.

If you find that some side effects don't go away, or if you experience troublesome side effects, talk to your doctor. Don't stop taking your medicines without discussing it with your doctor first, as this could make your condition worse.

Medicines to prevent the blood from clotting

Medicines that help to prevent the blood from clotting work in different ways. They can do this:

- either by reducing the 'stickiness' of platelets – the small blood cells that can clump together to form a clot (anti-platelet medicines)
- or by stopping them clumping together to form a clot (platelet inhibitors).

So these medicines can help to prevent heart attacks and strokes.



For more information about medicines and the most common side effects, see our booklet **Medicines for my heart**.

Aspirin

Aspirin is an anti-platelet medicine. Most people with angina or coronary heart disease are prescribed low-dose aspirin. If you can't take aspirin because you are allergic to it or because you are at increased risk of bleeding, your doctor may prescribe a different anti-platelet medicine for you (see below).

If you are prescribed aspirin as an anti-platelet, it's important that you don't take any other medicines that contain aspirin. This includes any remedies that you buy over the counter for coughs and colds. Always check with your doctor, nurse or pharmacist before taking something that has not been prescribed for you.

Clopidogrel

Clopidogrel is another anti-platelet medicine. It can be given if you cannot take aspirin. It's often prescribed for people who have had a treatment called coronary angioplasty with a stent. Your specialist will decide how long you need to take clopidogrel for, based on the type of stent you have and your medical history.

Prasugrel and ticagrelor

These medicines are platelet inhibitors. This means that they stop platelets clumping together and forming a blood clot. You may be given prasugrel or ticagrelor along with aspirin, and instead of clopidogrel.

Nitrates

Nitrates work by relaxing the muscle in the walls of the blood vessels so that the blood vessels become wider and allow more blood to flow through them. This reduces the symptoms of angina. You may be given nitrates as a fast-acting spray or tablets, as slow-release tablets, or as skin patches.

Fast-acting nitrate spray or tablets

Your doctor will give you a nitrate spray or tablets. The spray is usually glyceryl trinitrate (GTN). You should keep the spray or tablets with you at all times.

To relieve an episode of angina, use the spray or tablet under your tongue. It will start acting within a few seconds and the symptoms should go away within a few minutes.

You can also use the GTN spray or tablets before you do something that you know may bring on an episode of angina, such as walking uphill. This is known as using GTN as a preventer. You should only use your GTN as a preventer if your doctor or nurse has told you to do this and if you know which activities bring on your angina.

If you need to take your GTN medicines more often than usual, you should speak to your doctor.

Keep the GTN tablets in their original container. They will be OK for eight weeks after you have opened the container. After that time they lose their strength so you'll need to replace them. You can keep GTN sprays for up to two years after using them for the first time, but always check the instructions on the packaging.

Slow-release nitrate tablets

If you get regular episodes of angina, your doctor may give you a medicine that helps to prevent you getting the angina. This medicine lasts longer than GTN sprays or tablets and can be taken either once or twice a day, depending on your condition.

GTN skin patches

Self-adhesive skin patches containing GTN act in a similar way to slow-release nitrates, but the medicine is absorbed through your skin rather than as a tablet. Usually, you would put on a new patch each morning and take it off at night before going to bed.

General advice for people taking nitrates

If you're taking any type of nitrate medicine, you should not take medicines to improve your sex drive or to maintain an erection (PDE-5 inhibitors such as Viagra) without speaking to your doctor first.

Beta-blockers

These act by slowing down your heart rate. This reduces the amount of work the heart has to do, so that it needs less oxygen, blood and nutrients. Beta-blockers are very effective in preventing episodes of angina.

Calcium-channel blockers

Calcium-channel blockers are used to reduce the frequency of angina attacks. If you have asthma,

chronic obstructive pulmonary disease (COPD), or diabetes, your doctor may prescribe calcium-channel blockers for you rather than beta-blockers.

Potassium-channel activators

Potassium-channel activators have a similar effect to nitrates, as they relax the walls of the coronary arteries and so improve the flow of blood to the heart.

Medicines to reduce cholesterol

The most commonly used medicines to reduce cholesterol are statins. Statins will help to reduce your cholesterol and your risk of having a heart attack. If you have angina or coronary heart disease, you can benefit from taking statins even if you don't have a high cholesterol level.

There are other types of medicines that can be used when statins are not suitable, or that can be used as well as statins. These include fibrates and ezetimibe. You may be given ezetimibe as well as a statin or, if you cannot take a statin, your doctor may give you ezetimibe on its own.

For more information on cholesterol, see page 25.

LEADING THE FIGHT...

against angina

The BHF is the largest independent funder of cardiovascular research in the UK. Here are some highlights of our research into angina.

- 1** We're looking at the structure of the heart and blood flow through the coronary arteries and how these are affected by stressful experiences. This will help us develop medicines and treatments that are carefully tailored to the individual.
- 2** Atypical angina is when someone has less common symptoms of angina – including weakness and nausea – rather than the more usual symptoms. We are exploring ways to measure blood flow to the smaller blood vessels, to see if this can help to diagnose people with atypical angina.

Our life saving research is powered by your support. If you'd like to make a donation, please see the inside front cover for more details.



For more information on the BHF's research into angina, see [bhf.org.uk/anginaresearch](https://www.bhf.org.uk/anginaresearch)

If your angina symptoms are not relieved by lifestyle changes and medicines, you may be advised to have:

- a coronary angioplasty, or
- coronary artery bypass surgery.

Having an angioplasty or bypass surgery does not cure coronary heart disease. The aim of these treatments is to improve the blood supply to your heart muscle. This should help to improve your symptoms, although sometimes it does not get rid of all of them.

Coronary angioplasty

Your doctor may have advised you to have a coronary angioplasty with stenting to widen a narrowed artery. This treatment improves the blood supply to the heart muscle and can help to relieve your symptoms.

Coronary bypass surgery

This is major surgery and most patients leave hospital between five and seven days after their surgery. Some people who have other medical conditions such as diabetes may need to stay in for slightly

longer. Coronary bypass surgery has proved to be very effective in reducing the symptoms of angina.

Coronary angioplasty or coronary bypass surgery for unstable angina?

If your condition can be treated by having a coronary angioplasty, your cardiologist will recommend having this rather than bypass surgery. This is because coronary angioplasty is less invasive, avoids the need for a major operation, and involves a much shorter stay in hospital.

However, sometimes it is not possible or appropriate to do an angioplasty – for example, if the narrowed part of the artery is very long or is too narrow for the procedure equipment. In these cases, or if your symptoms have not been relieved by an angioplasty, your cardiologist will refer you to a cardiac surgeon to discuss the option of bypass surgery.

Sometimes a combination of bypass surgery and angioplasty might be offered.



For more information on coronary angioplasty and coronary bypass surgery, see our booklets **Coronary angioplasty and Heart surgery**, and our DVD **The road ahead**.

Making lifestyle changes, taking the medicines you've been prescribed, having other treatments, and adjusting to your symptoms should mean you can live a relatively normal life. But if your symptoms are severe, you may need to make some changes that affect you and your family.

Work

Most people with coronary heart disease and angina can continue working. However, if you have a manual job or one that is very stressful, you might need to make some adjustments to the type of work you do. You may also find that it's better to work reduced hours for a while and then go back to full-time work later on. Talk to your doctor and employer about your work and what it is reasonable for you to be able to do.

Caring for others, and family life

If you care for a partner, relative or friend, you may need to discuss this with other members of your family or other agencies. Your symptoms might mean you won't be able to cope with some of the

responsibilities that you have taken on up to now. Sharing the workload may help you to continue in the role.

If you regularly look after children or grandchildren, you may need to think about how this affects your condition and symptoms. If you find you're tired or concerned that an angina attack may be coming on while you're with your children or grandchildren, try sitting down quietly with them and read a book or play card games.

Driving

If you have a car or motorcycle licence

You are likely to be able to continue to drive, as long as your angina is well controlled. You don't need to tell the Driver and Vehicle Licensing Agency (DVLA) that you have angina, but you must not drive if you have symptoms at rest or at the wheel. Talk to your GP about whether or not it is OK for you to drive.

If you have a bus, coach or lorry licence

Special regulations apply. You will need to tell the DVLA about your condition and any treatment you have had for it. Visit www.gov.uk/angina-and-driving



**For more information, see our booklet
Returning to work.**

or write to them at DVLA, Swansea SA99 1TU.

Telling your motor insurance company

Whatever sort of driving licence you have, you need to tell your motor insurance company that you have angina and about any treatment that you have had for it. If you don't, your insurance may not be valid. You may need to send them a note from your doctor to say that you are fit to drive.

Air pollution

Being exposed to high levels of air pollution can make existing heart conditions worse. The level of air pollution varies from day to day, depending on the weather and season. Pollution levels are classed as low, moderate, high or very high.

You may want to avoid spending long periods of time in places where there are high levels of air pollution. For example, avoid walking on or near busy roads.

For most people, the benefits of exercising outdoors outweigh the risks associated with air pollution. But if you have a heart condition, whenever air pollution is 'very high', you should avoid going outside for long

periods or doing strenuous activity. If air pollution is 'high', you should reduce strenuous activity particularly outdoors, and particularly if you have symptoms.

However, it's still important to be active when air quality is poor, so make sure you're active indoors.



For more information, see our information sheet **Air pollution.**

Holidays and travel

A holiday can give you the chance to rest and unwind. Talk to your doctor about whether it's OK for you to go away, and if it's OK for you to fly.

When choosing a holiday, make sure your accommodation is easily accessible. Avoid places at high altitudes or countries that are very hot or very cold. And avoid hilly destinations, unless you're fit enough for that level of activity.

Make sure you take along a good supply of your medicines, and keep an up-to-date list of all your medicines with you, just in case you lose any. Make sure you have travel insurance, too. For a list of insurers, call the BHF Heart Helpline on **0300 330 3311**.

Long journeys can increase your risk of developing a deep vein thrombosis (DVT). So, if you're travelling, make sure you have frequent breaks when you can get up and walk around. During your journey, drink plenty of water, and not alcohol. Whichever form of transport you're taking, plan your journey, allow plenty of time and don't carry heavy bags.

Sex

People with angina and their partners are often understandably anxious about their sex life. But people with angina can continue to enjoy sex.

Like any other physical activity, having sex can temporarily increase the heart rate and blood pressure. This increases the work of the heart and, in some people with coronary heart disease, it can lead to angina symptoms. However, sex is just as safe as other equally energetic forms of physical activity or exercise. If you're not sure whether it's safe for you to have sex, talk to your GP.

To reduce the chance of having angina symptoms, avoid having sex after a heavy meal and try not to be too energetic at the start of your sexual activity. If you

have GTN spray or tablets, keep them nearby in case you need them.

Loss of sex drive is not uncommon and some men may experience impotence (having difficulty getting or keeping an erection). This may be the result of anxiety, but it can also be due to other reasons. Impotence is a common problem so, if you are having difficulties, talk to your doctor about it.

Always check with your doctor before you take PDE-5 inhibitors such as Viagra, as it may not be safe for you to take this, depending on your condition and the medicines you are taking (see page 45).

Angina can be caused by some conditions other than coronary heart disease. **Coronary artery spasm** and **microvascular angina** are conditions with similar symptoms to angina. That's why it's important to tell your doctor about chest pain and what usually brings it on, so that they can make an accurate diagnosis.

Coronary artery spasm

Coronary artery spasm happens when one or more of your coronary arteries temporarily goes into spasm (tightens), causing chest pain or discomfort. It is also known as **variant angina** or **Prinzmetal's angina**.

Symptoms

Coronary artery spasm usually comes on when you are at rest. Unstable angina also typically happens while you're resting, so it's important to have tests to find out if your symptoms are caused by coronary heart disease or coronary artery spasm.

The pain you experience may be severe and may happen in 'clusters' of two or three episodes at a time. The pain often comes on late at night or early in the morning, and it tends to feel like a constriction or tightening in your chest.

The pain can sometimes cause abnormal heart rhythms, some of which can be dangerous. If your heartbeat feels different to normal, you experience palpitations or you feel like you are going to black out, you should see your doctor.

When the coronary artery goes into spasm it deprives the heart muscle of blood and oxygen, causing chest pain similar to that of angina. People with coronary artery spasm don't necessarily have atheroma (the build-up of fatty deposits in their coronary arteries). But if they do, it can make their condition worse.

If the heart muscle is deprived of blood and oxygen for too long, it can cause severe damage and could lead to a heart attack. So if you feel pain for more than a few minutes, you should call 999 immediately and ask for an ambulance.

What can bring on an episode of coronary artery spasm?

Smoking, using recreational drugs, alcohol abuse, and withdrawal from alcohol can trigger an episode. It could also be caused by emotional stress.

Treatment

Coronary artery spasm should be controlled by taking the medicines that are prescribed for you, which will usually include a GTN spray. You should also do what you can to prevent any risk factors that might cause it, for example by giving up smoking.

Microvascular angina

Microvascular angina is a condition affecting the small vessels supplying blood to your heart muscle. It's sometimes also known as **cardiac syndrome X** or **coronary microvascular dysfunction**.

Symptoms

You may feel severe pain in your chest. It may spread to your arms, neck, jaw, back or stomach. You may also feel sweaty, sick, short of breath or light-headed. These symptoms usually happen when you are feeling stressed, doing exercise or in cold weather.

If you have these symptoms, you should go to A&E so doctors can control the pain and investigate the cause. You will have an electrocardiogram (ECG) and several blood tests. You may need to have more tests after these, such as a coronary angiogram, a cardiac

MRI scan or a PET scan, to look at the small blood vessels in detail.

Research shows that people with microvascular angina may be at increased risk of a heart attack or other heart problems. If you have been diagnosed with microvascular angina and you feel chest pain that does not go away after around 15 minutes, you should still call 999 immediately and ask for an ambulance.

What causes microvascular angina?

The causes aren't fully known, although there may be several factors. These include problems with the inner lining of the small blood vessels, changes in the size and number of these vessels, and problems with these vessels expanding to allow more blood to the heart during exercise or when you feel stressed.

Treatment

Angina medicines (see pages 40 to 46) and other medicines, such as statins, may help control your symptoms. Keeping your heart healthy with exercise and a good diet (see pages 23 to 37) can also help you feel better physically, and can help improve your mood if your symptoms make you feel anxious.

CATHERINE'S STORY

Catherine first began feeling chest pain when she was 19. The doctor suspected it was caused by stress and anxiety. When her symptoms continued she was referred to see a cardiologist.

“When I was 29, I got really bad chest pain and was taken to hospital in an ambulance. I had been driving my car and I felt faint and hot, as if I was going to pass out. I was kept in hospital for three days.

I was discharged and, as my symptoms continued, I was referred to have some more tests. I had a stress test, an echo, and an angiogram which revealed I had normal coronary arteries. I then had a myocardial perfusion scan. I was given the diagnosis of coronary microvascular dysfunction. I was started on medicines which dramatically improved my symptoms. I feel passionate about raising awareness of this condition.”



A **cardiac arrest** is when a person's heart stops pumping blood round their body and they become unconscious and stop breathing or stop breathing normally.

A person who is having a cardiac arrest may develop a dangerously fast heart rhythm which can be fatal. It is sometimes possible to shock the heart back into a normal heart rhythm by giving **defibrillation**. This means giving the heart an electrical shock using a defibrillator.

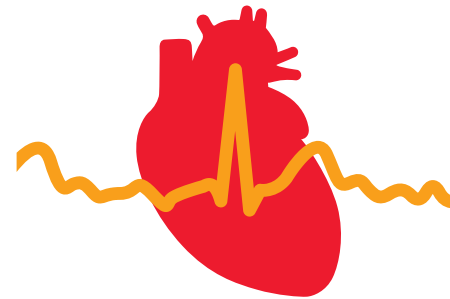
There are now **public access defibrillators** – or **PADs** for short – in many workplaces, shopping centres, train stations, leisure centres and village halls. It's very easy to use a PAD. The machine gives clear, spoken instructions and you don't need training to use one.

Once switched on, the PAD will instruct you on how to attach the pads, whether or not a shock is needed and how to deliver it.

For more information, go to bhf.org.uk/defibs

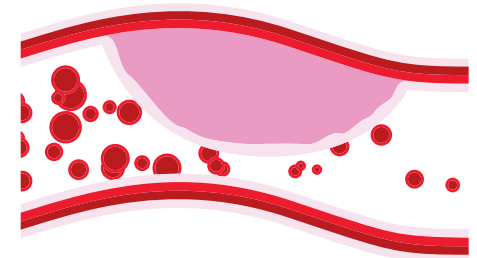
The most important thing you can do to help save a person's life is **CPR – cardiopulmonary resuscitation**. This, along with defibrillation, can double someone's chance of survival in some cases. We explain how to do this on the next pages.

CARDIAC ARREST is an **ELECTRICAL** problem



The person will be **UNCONSCIOUS**
■ Call 999 ■ Start CPR

A HEART ATTACK is a **CIRCULATION** problem



The person will probably be **CONSCIOUS**
■ Call 999 ■ Keep them calm

CALL PUSH RESCUE

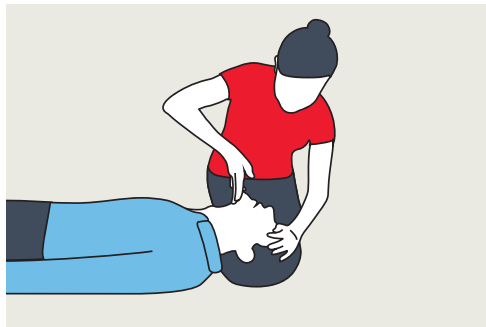
If someone has had a cardiac arrest, they will be unconscious, and either not breathing or not breathing normally. The person needs immediate help or they will die within minutes.

First check that it is safe to approach the person.

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, the person is unconscious.

You will need to assess the person's **airway** and **breathing**.

Open the person's airway by tilting their head back and lifting their chin.



Look, listen and feel for signs of normal breathing. Only do this for up to ten seconds. Don't confuse gasps with normal breathing. If you're not sure if their breathing is normal, act as if it is not normal.

Now remember: **Call Push Rescue**

CALL...

Call for help.

If the person is unconscious and is either not breathing or not breathing normally, they are in cardiac arrest.

Call 999 immediately.

- Send someone else to call 999 for an ambulance while you start CPR.
- **Or, if you are alone with the person, call 999 before you start CPR.**



PUSH...

Push hard and fast on the centre of the chest.



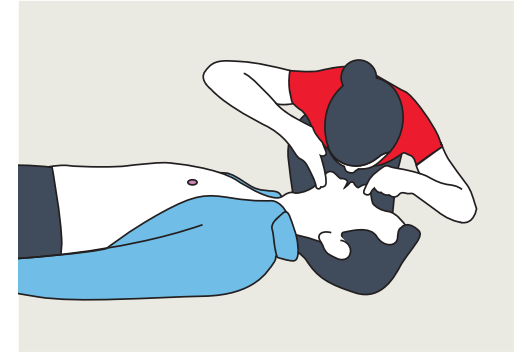
Start chest compressions.

- Place the heel of one hand in the centre of the person's chest.
- Place the heel of your other hand on top of your first hand and interlock your fingers.

- Press down firmly and smoothly on the chest 30 times, so that the chest is pressed down between five and six centimetres each time. Do this at a rate of about 100 to 120 times a minute. That's about two each second.

RESCUE...

Give 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 soft parts of the person's nose closed. Take a normal breath, make a seal around their mouth with your mouth, and then breathe out steadily. The person's chest should rise and fall with each breath. It should take no more than five seconds to give the two rescue breaths.

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

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

- the ambulance crew arrives and takes over, or

- the person starts to show signs of regaining consciousness, such as coughing, opening their eyes, speaking, or moving purposefully **and** starts to breathe normally, or
- you become exhausted.

If you prefer not to give rescue breaths

If you'd rather not give rescue breaths, call 999 and then deliver **hands-only CPR**. Keep doing the chest compressions – at a rate of about 100 to 120 times a minute.

For more on this, see [bhf.org.uk/handsonly](https://www.bhf.org.uk/handsonly)



For more information about training in how to do CPR, see page 72.

British Heart Foundation website [bhf.org.uk](https://www.bhf.org.uk)

For up-to-date information on cardiovascular disease, the BHF and its services.

Genetic Information Service **0300 456 8383**

(A similar cost to 01 or 02 numbers.)
For information and support on inherited heart conditions.

Online community
community.bhf.org.uk
Share your experiences, stories, tips and ideas with other people like you in our online community.

Heart Helpline **0300 330 3311**

(A similar cost to 01 or 02 numbers.)
For information and support about your heart condition and keeping your heart healthy.

Twitter

[@TheBHF](https://twitter.com/TheBHF)
Get our latest news and views directly into your Twitter feed.

Facebook

facebook.com/bhf
Join the conversation and get our latest news and updates on Facebook.

Booklets and DVDs

To order our booklets or DVDs:

- call the BHF Orderline on **0300 200 2222**
- email orderline@bhf.org.uk or
- visit bhf.org.uk/publications

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

Our resources and services are free of charge, but we rely on donations to continue our vital work. If you'd like to make a donation, please call our donation hotline on **0300 330 3322** or visit our website at bhf.org.uk/donate

Heart Information Series

This booklet is part of the *Heart Information Series*.

The booklets in this series are:

- Angina
- Atrial fibrillation (AF)
- Blood pressure
- Cardiac rehabilitation
- Caring for someone with a heart condition
- Coronary angioplasty
- Diabetes and your heart
- Heart attack
- Heart failure
- Heart rhythms
- Heart surgery
- Heart transplant
- Heart valve disease
- Implantable cardioverter defibrillators (ICDs)
- Keep your heart healthy
- Living with a pacemaker
- Medicines for my heart
- Peripheral arterial disease
- Reducing my blood cholesterol
- Returning to work
- Tests

Our services

For more information about any of our services, contact the BHF on **0300 330 3322** or visit **bhf.org.uk**

Nation of life savers

The BHF has a vision to create a nation of life savers. As part of that vision, we're doing everything we can to make sure the UK public know CPR and can use public access defibrillators. Join the fight for every heartbeat and help us save the lives of thousands of people across the UK every year. Find out more at **bhf.org.uk/cpr**

- **Heartstart** is a free, two-hour course where you can learn CPR and other emergency life saving skills.
- Our **Call Push Rescue** training kit is available free to eligible secondary schools, and for a small fee to workplaces and community groups. It has everything you need to learn CPR, including a training DVD.

Heart Matters

Heart Matters is the BHF's free, personalised service offering information to help you lead a heart-healthy lifestyle. Join today and enjoy the benefits, including *Heart Matters* magazine and access to online tools. Call the **Heart Matters Helpline** on **0300 330 3300**, or join online at **bhf.org.uk/heartmatters**

Heart Support Groups

Local Heart Support Groups give you the chance to talk about your own experience with other heart patients and their carers. They may also include exercise classes, talks by guest speakers, and social get-togethers. To find out if there is a Heart Support Group in your area, contact the **Heart Helpline** on **0300 330 3311**.

Help shape the BHF – Heart Voices

Heart Voices is a growing network of heart patients who use their experiences to make sure our work meets the needs of patients. By signing up, you'll get the chance to shape the BHF by getting involved with anything from helping us to make new resources to informing our research. Visit **bhf.org.uk/heartvoices** for more information and to sign up.

activity	33
acute coronary syndrome	09
angiogram	20
angioplasty	48
anti-platelet medicines	41
aspirin	42
atheroma	07
atherosclerosis	07
beta-blockers	45
blood pressure	24
bypass surgery	48
calcium-channel blockers	45
cardiac arrest	62
cardiac syndrome X	58
causes of angina	06, 14, 56
chest pain	03, 10
cholesterol	25, 46
cholesterol-lowering medicines	46
clopidogrel	42
coronary artery spasm	56
coronary CT scan	18
coronary heart disease	07
CT coronary calcium scoring test	18
diagnosis	15
driving	51
ECG	16
echocardiogram	19
electrocardiogram	16

exercise	33
familial hypercholesterolaemia	26
FH	26
GTN	43
HDL	25
heart attack	08, 12
holidays	53
medicines	40
microvascular angina	58
myocardial perfusion scan	17
nitrates	43
non-HDL	25
platelet inhibitors	41
potassium-channel activators	46
Prinzmetal's angina	56
risk factors for coronary heart disease	14
sex	54
smoking	23
stable angina	04
statins	46
stress	37
symptoms: of a heart attack	12
of angina	03
tests	16, 56, 58
unstable angina	04
variant angina	56
weight	28
work	50

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 [bhf.org.uk/contact](https://www.bhf.org.uk/contact). Or, write to us at:

BHF Customer Services
Lyndon Place
2096 Coventry Road
Birmingham B26 3YU.

ACKNOWLEDGEMENTS

The British Heart Foundation would like to thank all the doctors, nurses and other health professionals who helped to develop the booklets in the *Heart Information Series*, and all the patients who commented on the text and design.

Particular thanks for their work on this booklet are due to:

- **Professor Simon Ray**, Consultant Cardiologist, University Hospital of South Manchester NHS Foundation Trust, and
- **Jan Keenan**, Nurse Consultant, Oxford University Hospitals NHS Trust.

THANK YOU

This booklet is part of the *Heart Information Series*. We distribute 2 million booklets from this series each year. Without your hard work and support the British Heart Foundation wouldn't be able to provide this vital information for people with heart conditions.

Donate to the fight at [bhf.org.uk/donate](https://www.bhf.org.uk/donate), or text **FIGHT** to **70080** to donate £3 to fund our life saving research.



**British Heart
Foundation**

For over 50 years our research has saved lives.

We've broken new ground, revolutionised treatments
and transformed care.

But heart and circulatory disease still kills one in four
people in the UK.

That's why we need you.

With your support, your time, your donations,
our research will beat heart disease for good.

**FIGHT
FOR EVERY
HEARTBEAT**

bhf.org.uk

© British Heart Foundation 2017, a registered charity in England
and Wales (225971) and Scotland (SC039426).

HIS6/1217