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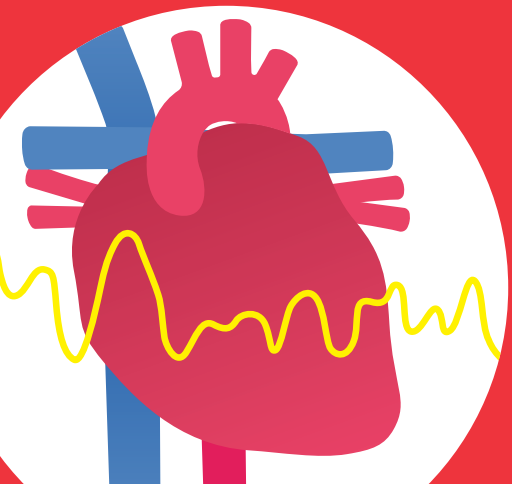
British Heart Foundation

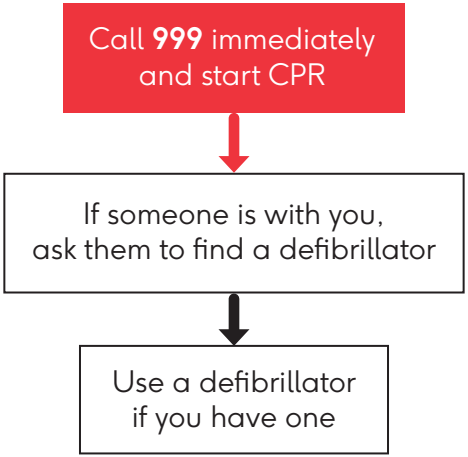
Understanding cardiac arrest



What to do if you see someone in cardiac arrest

If you see someone who is unconscious and not breathing properly, call **999**. They may be in cardiac arrest.

If you see someone in cardiac arrest:



How to give CPR

1. Kneel at the side of the person and make sure they're on their back.
2. Put the heel of your hand in the centre of their chest. Put your other hand on top and interlock your fingers.
3. Keep your arms straight and elbows locked.
4. Push down hard and fast, you want to press straight down by 5 or 6cm.
5. Let the chest come back up before you press down again.
6. Push down twice per second until an ambulance arrives.

About this booklet

If you or a loved one has had a cardiac arrest, it can be a worrying time. This booklet can help answer some of your questions.

This booklet talks about cardiac arrest in adults. It covers:

- what cardiac arrest is
- symptoms of a cardiac arrest and learning CPR
- life after a cardiac arrest and where to get support.

It can feel overwhelming to be given lots of information about your heart. Please use this booklet when you're ready. There's no need to read it all at once.

Contents

What is cardiac arrest?

Cardiac arrest means your heart has stopped beating and blood is not being pumped around your body.

It happens when your heart's electrical system does not work properly and your heart beats too quickly, too slowly or not regularly (arrhythmia).

Cardiac arrest is a medical emergency. Without immediate treatment a cardiac arrest is life-threatening.

What are the symptoms of cardiac arrest?

A cardiac arrest often happens without warning.

If someone is in cardiac arrest, they will collapse suddenly and will not be:

- moving (unconscious)
- breathing or they may be making gasping sounds
- responding when you touch them or speak to them.

Call **999** immediately for an ambulance and start CPR if you see someone in cardiac arrest.

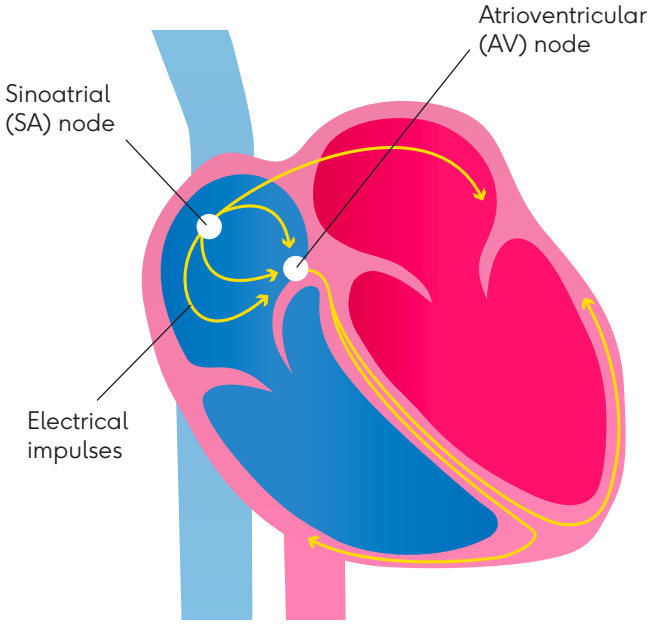
How does the heart beat normally?

Your heart needs to beat regularly to help pump blood around your body. There are electrical impulses in your heart that help it to beat regularly and in time.

The electrical impulses are sent by your sinoatrial (SA) node. They travel across the top chambers (atria) of your heart, causing them to contract (squeeze) and pump blood into the bottom chambers (ventricles).

You also have an atrioventricular (AV) node that sits between the top and bottom chambers of your heart. The AV node slows down the impulses for a very short period of time. This helps make sure your atria have enough time to pump out blood (contract).

Watch our short animation on how your heart works at **bhf.org.uk/yourheart**



What causes cardiac arrest?

Cardiac arrest happens when your heart's electrical system does not work properly causing a dangerous and abnormal heart rhythm.

This type of abnormal heart rhythm is called an arrhythmia.

Not all types of arrhythmias are life-threatening, but how some affect the heart mean that the heart cannot pump blood around the body.

Which arrythmias can cause cardiac arrest?

Arrhythmias that can lead to a cardiac arrest include:

- **Ventricular fibrillation (VF)** is when your heart beats too fast and starts fibrillating (quivering or twitching).
- **Ventricular tachycardia (VT)** is when your heart beats too fast. It can lead to dangerously low blood pressure.
- **Supraventricular tachycardia (SVT)** is when your heart beats much faster than normal.

The most common cause of cardiac arrest is ventricular fibrillation (VF).

Find out more about arrhythmias at **bhf.org.uk/arrhythmias**

Am I at risk of a life-threatening arrhythmia?

Some conditions can cause a life-threatening arrhythmia and can lead to a cardiac arrest if they're severe or not treated properly, such as:

- **Cardiomyopathy** is a disease of the heart muscle which affects its size, shape and thickness. There are different types of cardiomyopathies.
- **Inherited heart conditions** are conditions that are passed on through families, such as Brugada syndrome. They can affect the electrical system of your heart.
- **Congenital heart disease** is a problem with the heart's structure that's there from birth. This means it develops in the womb, before a baby is born.
- **Heart failure** is when your heart cannot pump blood around your body as well as it should.
- **Heart valve disease** is when one or more of your heart valves do not work like they should. This affects how blood flows around your heart.
- **Myocarditis** is when your heart muscle is inflamed.

Read more about these conditions at **bhf.org.uk/conditions**

Other causes of cardiac arrest include:

- a heart attack
- losing a large amount of blood (severe haemorrhage)
- a sudden drop in oxygen levels in your body (hypoxia)
- being electrocuted
- overusing recreational drugs.

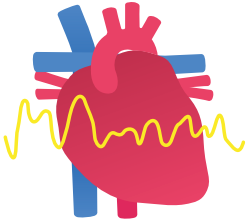
What's the difference between cardiac arrest and a heart attack?

A cardiac arrest and a heart attack are not the same thing.

- A cardiac arrest is when your heart stops beating and blood is not pumped around your body. You're usually unconscious and not breathing or not breathing normally.
- A heart attack is when the blood supply to a part of your heart muscle is blocked. You're usually conscious and breathing.

A heart attack can lead to a cardiac arrest if the person develops a life-threatening arrhythmia that stops their heart beating.

Cardiac arrest is an electrical problem



The person **will be unconscious**

A heart attack is a circulation problem

The person will **usually be conscious**

Heart attack and cardiac arrest are medical emergencies. Call 999 for an ambulance.

How to give someone CPR

Many of us will witness a cardiac arrest in our lifetime. CPR can help save someone's life.

The faster CPR is started the more likely someone is to survive.

Find steps on giving CPR on page 18.

You can find steps on how to do CPR on children and babies at **bhf.org.uk/cpr-child-baby**

Tools to save lives

You can learn how to give CPR and use a defibrillator (defib) in just 15 minutes with our free digital training tool, RevivR.

All you need is your phone or tablet and a cushion to practice on. Search **bhf.org.uk/revivr**

Be prepared in case you ever need one and find your closest defib at **defibfinder.uk**

If someone is in cardiac arrest, call 999 and start CPR:

1 Kneel at the side of the person and make sure they're on their back.

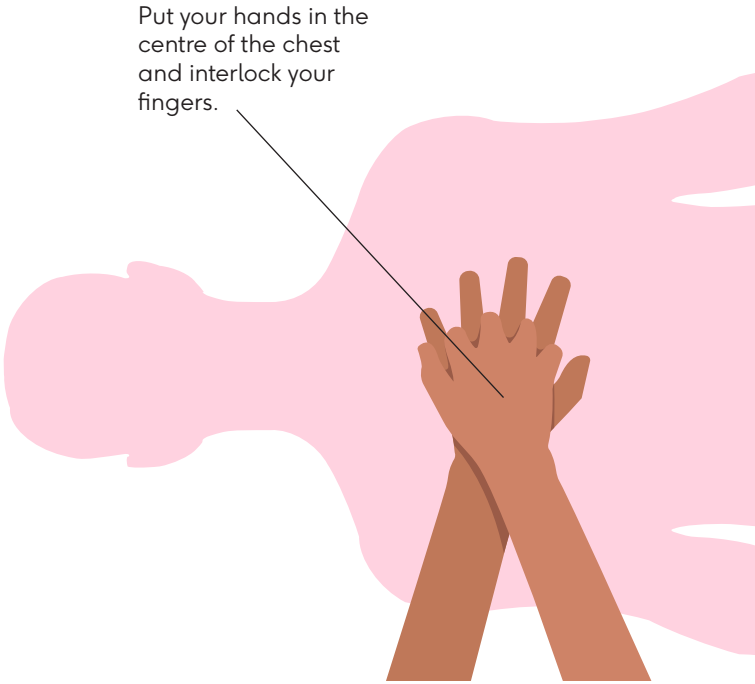
2 Put the heel of your hand in the centre of their chest. Put your other hand on top and interlock your fingers.

3 Keep your arms straight and elbows locked.

4 Push down hard and fast, you want to press straight down by 5 or 6cm.

5 Let the chest come back up before you press down again.

6 Push down twice per second until an ambulance arrives.



How to use a defibrillator

A defibrillator or defib is a device that gives a burst of energy (a shock) to get the heart beating again.

Anyone can use a defibrillator. You do not need training. Once you turn it on, it will give clear step-by-step voice instructions. It may also have images showing you how to use it.

A defib checks the person's heart rhythm and will only tell you to give them a shock if it's needed. You cannot shock yourself or someone else accidentally.

If you're on your own, do not stop CPR to go and find a defibrillator. If it's possible, send someone else to find one.

Learn how to use a defibrillator at **bhf.org.uk/defibs**

Non-shockable rhythms

Non-shockable rhythms are when the electrical activity in your heart does not respond to electrical shocks from a defibrillator.

If someone is in a non-shockable rhythm the defibrillator will detect this and give you instructions. It's important to keep giving the person CPR.

The main types of non-shockable heart rhythms are:

- **Pulseless electrical activity (PEA) –** you have electrical activity in your heart, but your heart cannot pump blood properly, so you have no pulse.
- **Asystole –** you have no electrical activity in your heart, and your heart is not pumping blood.

Tests after a cardiac arrest

Once your heart is beating again, you'll be taken to hospital to a coronary care or intensive care unit (ITU). This is where people who need special monitoring go.

Doctors may use medicine to keep you asleep and allow your body to recover, this is called an induced coma.

To try and find out what has caused your cardiac arrest, you may have tests such as:

- an echocardiogram (echo)
- an electrocardiogram (ECG)
- blood tests
- a coronary angiogram.

Find out more about these tests at **bhf.org.uk/tests**

For some people, doctors may not be able to find out why you've had a cardiac arrest. You will be given support to help reduce your risk of having another cardiac arrest.

Treatment after a cardiac arrest

Once doctors know what has caused your cardiac arrest, they can recommend treatment to reduce the risk of it happening again. Treatments may include:

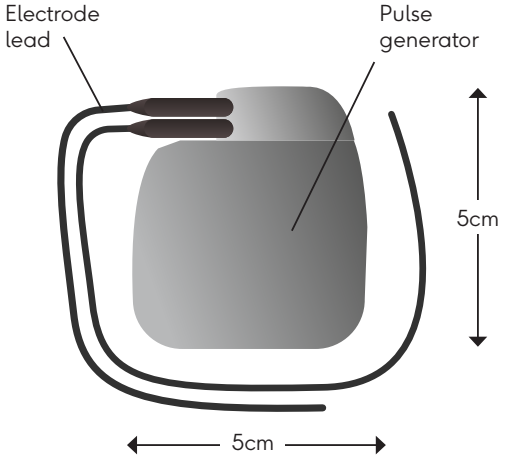
- an implantable cardioverter defibrillator (ICD)
- a pacemaker
- ablation
- an angioplasty and stents
- coronary artery bypass surgery
- medicines.

They may also refer you to cardiac rehabilitation (see page 43) to help rebuild your confidence, fitness and strength levels.

Implantable cardioverter defibrillator (ICD)

An implantable cardioverter defibrillator (or ICD) is a small electrical device that's put under the skin in your chest, near your collarbone.

You may have an ICD fitted if your cardiac arrest was caused by a ventricular arrhythmia (see page 11).



Your ICD checks your heart rhythm. If it notices an abnormal heart rhythm it will:

1. Send a small burst of electrical impulses to try and get your heart to beat at a normal rhythm (called **pacing**).

2. If this does not work, it may also send one or more small electric shocks to get your heart to beat at a normal rhythm (called **cardioversion**).

3. It can also give one or more larger shocks to get your heart to beat in a normal rhythm (called **defibrillation**). This can feel like a sharp thump or kick in your chest or back.

You'll have an ICD fitted in hospital. You'll be given local anaesthetic – this means you're awake, but you should not feel any pain.

Read our free booklet **Understanding ICDs**. Order your copy at **bhf.org.uk/publications**

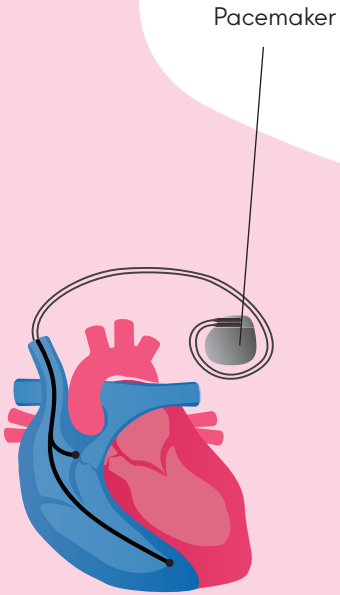
Pacemakers

A pacemaker is a small electrical device that's put under the skin in your chest, below your collarbone.

It's used to treat some abnormal heart rhythms that can cause your heart to beat too slowly or miss beats.

If the pacemaker senses that you have an abnormally slow heartbeat or your heart has missed beats, it will send electrical signals to your heart to make it beat normally.

You'll have a pacemaker fitted in hospital. You'll be given local anaesthetic – this means you're awake, but you should not feel any pain.



CRT pacemakers

Some people need a special type of pacemaker called a cardiac resynchronisation therapy (CRT) pacemaker. It's used when the pumping chambers of your heart beat out of time with each other.

A CRT helps the chambers to pump at the same time and helps your heart pump better.

It can be combined with other devices to help your heart, such as:

- cardiac resynchronisation therapy with a defibrillator (CRT-D)
- cardiac resynchronisation therapy with a pacemaker (CRT-P).

If you're at risk of a dangerous, abnormal heart rhythm you're more likely to have a CRT-D or an implantable cardioverter defibrillator (ICD).

Find more information on pacemakers and CRT pacemakers at **bhf.org.uk/pacemakers**

You can also order our free booklet, **Understanding pacemakers**. Order it online at **bhf.org.uk/publications**

Ablation

Ablation, or catheter ablation, is a procedure to stop parts of your heart sending extra or abnormal electrical impulses.

It involves very carefully using hot energy (radiofrequency ablation) or cold energy (cryoablation) to destroy or scar small areas of tissue in your heart. This blocks the extra impulses that are causing an arrhythmia.

The procedure can take up to four hours, but it may take much less time.

Depending on how long it will take, you will either be given local anaesthetic (you're awake) or general anaesthetic (you're asleep). You will not feel any pain with either option.

During the procedure flexible tubes (catheters) are put into a small cut in your wrist or the top of your leg (groin). They're then guided to your heart to record the electrical activity.

Once the area in your heart sending abnormal electrical impulses is found, an energy source is used to burn or freeze the tissue.

Find out more about ablation at **bhf.org.uk/ablation**

Coronary angioplasty and stents

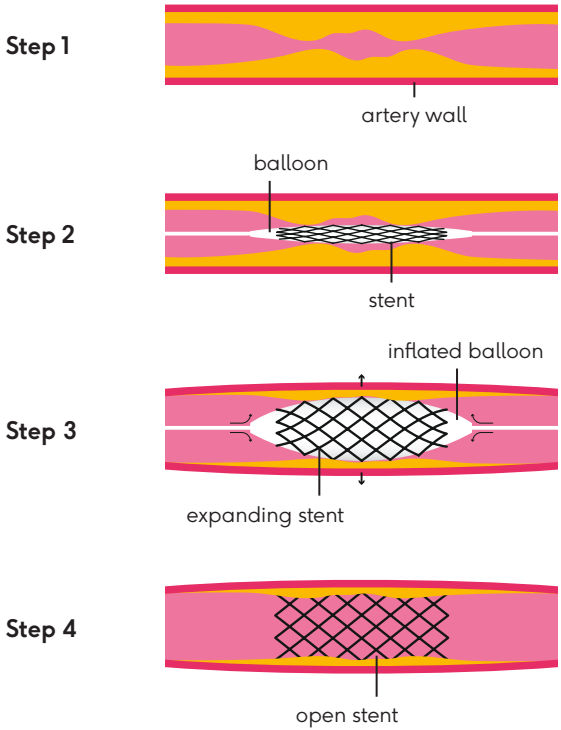
A coronary angioplasty with stenting is a procedure to widen a blocked coronary artery. It's also known as percutaneous coronary intervention or PCI.

A tiny balloon is used to flatten the fatty build-up (plaque) in your artery. You may also have a stent (a metal, mesh tube) put in your artery to hold it open.

The procedure takes about one hour.

Find more information on having an angioplasty at **bhf.org.uk/angioplasty**

You can also read our booklet **Understanding coronary angioplasty and stents.** Order your free copy at **bhf.org.uk/publications**



Coronary artery bypass graft (CABG) surgery

Coronary artery bypass graft (CABG) surgery is also known as heart bypass surgery. It might sound like people are calling it a 'cabbage'.

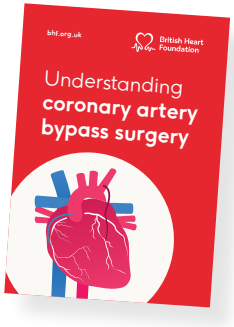
During surgery a vein or artery is taken from another part of the body, usually from the leg, arm or chest. This new blood vessel is called a graft.

One end of the graft is attached to the aorta (the main artery leaving the heart) and the other end to the coronary artery below the narrow or blocked section to improve blood flow.

The surgery usually takes four to five hours. You'll be able to go home one week later if you're recovering well.

Find more information on having heart bypass surgery at **bhf.org.uk/bypass**

You can also read our booklet **Understanding coronary artery bypass surgery.** Order your free copy at **bhf.org.uk/publications**



Medicines

You may need to take medicine after having a cardiac arrest.

This will depend on the cause of your cardiac arrest. For example, if you've had a heart attack you'll usually have medicine to reduce your risk of having another one.

You may need medicines to:

- control your heart rate
- stop blood clots forming
- reduce your blood pressure
- help lower your risk of another heart attack, like statins.

Find out more about medicines at **bhf.org.uk/medication**

What can I do about side effects?

Most people taking medicine do not experience any side effects. However, for some people side effects can have a big impact on their daily life.

Side effects can be caused by your medicine but could also be caused by other things such as your condition, stress or a change in your lifestyle.

It's worth bearing in mind that symptoms with any medicine may improve over time or even disappear.

If you're struggling with the side effects of your medicine, it's important not to stop taking it before speaking to a healthcare professional.

Speak to your GP or a pharmacist. They can:

- find out if your medicine is causing the side effects
- help you manage side effects
- change the dose of your medicine if appropriate
- prescribe a different type of medicine
- recommend an alternative treatment.

If you're worried about side effects, talk to one of our cardiac nurses.

Call 0808 802 1234 (freephone) or email hearthelpline@bhf.org.uk Our helpline is open weekdays, 9am to 5pm (excluding bank holidays).

Can a cardiac arrest cause other conditions?

While you're in cardiac arrest, blood is not pumped around your body. This means your body and your brain do not get enough oxygen.

The lack of oxygen can sometimes have long-term effects on your brain, such as:

- acting differently (personality changes)
- difficulty remembering things
- feeling more tired than normal
- feeling dizzy or unbalanced
- difficulty talking (aphasia and dysphasia)
- difficulty controlling your body and movement (myoclonus)
- permanent brain injury.

When you're in hospital you should be checked for any long-term effects. The hospital team can explain them to you and answer any questions.

If they continue when you're home, your doctor can help you get specialist appointments. For example, physiotherapy or speech and language therapy.

What will my recovery look like?

The time it takes to recover depends on what caused your cardiac arrest and how long it took for your heart to beat on its own again after the arrest.

It could take several weeks, a few months or longer if you need rehab for things like learning to walk and caring for yourself again. You may also have a sore chest and discomfort after having CPR.

Before you go home, doctors, nurses, other healthcare professionals and sometimes a social worker, will assess your care needs and make plans to support you.

If you cannot go home, you may need temporary care to help you get back to normal and stay independent.

However long it takes, your doctor and the hospital team will support you during this time. You may want to ask them about:

- when you will go home
- any extra support you need at home
- any follow-up appointments you'll have.

It's normal to feel emotional and overwhelmed after having a cardiac arrest. It's a big and frightening event for you and your loved ones. Do not be afraid to ask for support (see page 57).

If you're worried about your mental wellbeing following a cardiac arrest and going home, ask your hospital team about emotional support and how to access it.

Cardiac rehabilitation

Cardiac rehabilitation (or cardiac rehab) is a programme of exercise and education sessions. It helps you recover and get back to as full a life as possible after cardiac arrest or treatments for cardiac arrest.

Cardiac rehab is as important as taking medicine or having a procedure. It can be done online, in person or a mix of both. You'll usually go to one or two sessions a week, for six or more weeks.

Cardiac rehab can help you:

- understand your heart condition
- feel fitter and be more active
- look after your heart health
- feel more confident managing your health
- manage side effects and medicines
- look after your physical and emotional wellbeing
- reduce the risk of future heart problems
- find a local support group.

It's also a good opportunity to meet other people going through a similar situation and ask any questions you may have.

Find out more in our **Understanding cardiac rehabilitation** booklet. Order your free copy at **bhf.org.uk/publications**

Will I have another cardiac arrest?

Many people wonder if a cardiac arrest will happen again. It's normal to feel scared or worried about this.

By finding out the cause of your cardiac arrest and having treatment, you're less likely to have another cardiac arrest.

You can also make healthy lifestyle changes to look after your heart (see page 46).

If you need someone to talk to, you can contact our cardiac nurses.

Call 0808 802 1234 (freephone) or email hearthelpline@bhf.org.uk Our helpline is open weekdays, 9am to 5pm (excluding bank holidays).

How can I reduce the chances of having a cardiac arrest?

Simple lifestyle changes can help look after your heart health and reduce your risk of problems in the future.

These can include:

maintaining a healthy weight

eating a healthy, balanced diet

limiting how much alcohol you drink (under 14 units per week)

stopping smoking and using other tobacco products

being physically active and moving more

taking medicines given to you by your doctor.

Thinking about changes to your daily life can feel overwhelming. But there are lots of small changes you can make today to lower your risk.

You could commit to making one swap this week. By making lots of smaller changes you're more likely to stick to them. Small changes build up to make a big difference.

You can find lots of easy swaps in our **Understanding your heart health** booklet. Order your free copy at **bhf.org.uk/publications**

Emotional support

It's normal to have no memory of a cardiac arrest. You may feel sad, angry, confused or a combination of lots of different emotions due to the shock of the experience. You may also feel anxious about having another cardiac arrest.

It can be difficult for your friends and family who may have seen it happening.

If you or your loved ones are feeling anxious and sad a lot of the time, and it's affecting daily life, talk to your GP. Many people feel much better once they have spoken to someone.

You can refer yourself to the NHS for talking therapies, like cognitive behavioural therapy (CBT) or counselling. Search **'NHS talking therapies'** for more information.

You can also get in touch with Mind, a charity offering support to anyone affected by their mental health. Visit **mind.org.uk**

Cardiac arrest and CPR support

There is support available for you and your loved ones.

Sudden Cardiac Arrest UK has resources to help you and a supportive community you can join. Get support at **suddencardiacarrestuk.org**

You can also find support after a cardiac arrest or after giving someone CPR at **resus.org.uk**

If you've given someone CPR you can find information to support you at **bhf.org.uk/supportaftercpr**

Work

When you can go back to work depends on the type of work you do and how you're feeling. Some people may feel ready to go back to work not long after a cardiac arrest, but for others it can take longer.

It's important to decide what the right decision is for you and your health, and what options are available.

It can be helpful to speak to your employer. UK law requires most employers to make reasonable adjustments, so you can continue working despite the changes to your health.

Reasonable adjustments could be:

- changing your hours or start and finish times
- working shorter days
- time off for appointments
- having less time on your feet
- working from home more often.

Citizen's Advice can give you free, confidential advice. Find out more at **citizensadvice.org.uk**

Exercise

While it's normal to worry about exercising after a cardiac arrest, staying active can help to improve your confidence and heart health.

It's important to speak to your doctor about your individual situation and how to exercise in a safe way.

If you have ongoing symptoms, you're still having treatment or you're recovering, it may be better to wait before starting exercise. You may also have some problems moving around after a cardiac arrest.

Your doctor can refer you to a physiotherapist for support with exercise and being more active. Speak to your hospital doctor or GP about this.

Find ways to get active with a heart condition at **bhf.org.uk/activity**

Sex

You can enjoy a healthy sex life if you have a heart condition.

It's normal to worry that having sex might trigger a dangerous arrhythmia, but the risk of this happening is low.

Like any exercise you do, if you feel well and listen to your body, you should be ok. Stop and rest if you start to feel unwell.

It may feel embarrassing or uncomfortable to ask questions, but healthcare professionals speak to people all the time about sex and relationships.

They will be understanding and can offer you information and support. Many people feel much better once they speak to someone.

If you prefer to look for information online, use a trusted source of information. Search **bhf.org.uk/sex**

Driving

You'll need to stop driving for a while after a cardiac arrest. How long for depends on the cause of your cardiac arrest, your general health and what treatments you're having.

For example, if you drive a car:

- **Arrhythmia –** many people diagnosed with an arrhythmia can keep driving. But you must not drive if your arrhythmia stops you from being able to safely stop or control a car.
- **Implantable cardioverter defibrillator (ICD) –** you will need to stop driving for a period of time after having an ICD fitted, usually one to six months. How long will depend on why you need an ICD and if your ICD has delivered treatment.
- **Pacemaker –** you will need to stop driving for one week after having a pacemaker fitted.

This guidance may be different if you drive a heavy vehicle, such as a lorry or bus.

It's best to check whether you can drive with your doctor and the DVLA. They can give you more information and answer any questions you have.

You'll usually need to tell the DVLA about your condition. You'll need to let your car insurance provider know as well.

Read more at **bhf.org.uk/driving**

Travel and life insurance

If you've had a cardiac arrest and hold travel or life insurance, you will need to let your insurance provider know.

Many people can live well after a cardiac arrest by making lifestyle changes and taking medicine. But it's important to make sure your insurance provider knows about your condition in case you need to claim in the future.

Find out more about travel and life insurance at **bhf.org.uk/practicalsupport**

More information and support

It's normal for you and your loved ones to feel worried or unsure after having a cardiac arrest. It can also be scary to see someone in cardiac arrest.

There are places you can go to find more information and get support.

Tools to help save lives

We have free tools to help you save lives.

- Learn how to give CPR and use a defibrillator in just 15 minutes – search **bhf.org.uk/revivr**
- Find your closest defibrillator – search **defibfinder.uk**
- Learn more about defibrillators – search **bhf.org.uk/defibs**

Call the Heart Helpline

If you or your family have been affected by cardiac arrest, our cardiac nurses can help you with your questions or concerns.

Call **0808 802 1234** (freephone)
or email **hearthelpline@bhf.org.uk**
Our helpline is open weekdays,
9am to 5pm (excluding bank holidays).

You can also speak to our nurses using the live chat feature. Find out more at **bhf.org.uk/helpline**

Join Heart Matters

Discover the benefits of Heart Matters, your free heart-health membership.

Join to receive our free magazine or email newsletter, featuring expert tips, heart-healthy recipes, inspiring stories, and the latest updates backed by BHF-funded science.

Guided by our team of experts, Heart Matters helps you to make small changes for a healthier heart.

bhf.org.uk/heartmatters

Order our information

We have lots of information to help you understand what's happened and look after your heart health.

You can read and order our booklets for free at **bhf.org.uk/publications**

We also have information in audio, easy read, braille and other languages. Read or listen to our information online at **bhf.org.uk/infoforall**

Have your say

We want people with lived experience of cardiovascular disease to be involved in everything we do.

Join Heart Voices, our patient and public involvement (PPI) network. The network can connect you with opportunities to take part in our lifesaving work.

By getting involved, you'll have the chance to share your insights with us and build connections with people who have been through similar experiences as you.

Join the network at **bhf.org.uk/heart-voices**

Notes

For further information from BHF on cardiac arrest, scan here or visit bhf.org.uk/cardiacarrest

We are British Heart Foundation

British Heart Foundation

Through research, information and support we're here for everyone affected by cardiovascular disease.

Get help

Speak to one of our experienced cardiac nurses for more information and support. They can help answer your questions, big or small.

You can call **0808 802 1234** (freephone). Our helpline is open weekdays, 9am to 5pm (excluding bank holidays).

Support our work

If you've found this information helpful and would like to support our work, please scan the QR code or visit **bhf.org.uk/support-us**

Scan here with the camera on your phone

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Trusted Information Creator

Patient Information Forum