Coronary heart disease

Introduction

Coronary heart disease (CHD) is a big killer. About one in five men and one in eight women die from the disease.

CHD generally affects more men than women, but from the age of 50 the chances of developing CHD are similar for men and women.

As well as angina (chest pain), the main symptoms of CHD are heart attacks and heart failure. However, not everyone has the same symptoms and some people may not have any before CHD is diagnosed.

CHD is sometimes called ischaemic heart disease.

About the heart

The heart is a muscle about the size of your fist. It pumps blood around your body and beats approximately 70 times a minute. After the blood leaves the right side of the heart, it goes to your lungs, where it picks up oxygen.

The oxygen-rich blood returns to your heart and is then pumped to the organs of your body through a network of arteries. The blood returns to your heart through veins before being pumped back to your lungs again. This process is called circulation.

The heart gets its own supply of blood from a network of blood vessels on the surface of your heart, called coronary arteries.

Why does coronary heart disease happen?

Coronary heart disease is the term that describes what happens when your heart's blood supply is blocked or interrupted by a build-up of fatty substances in the coronary arteries.

Over time, the walls of your arteries can become furred up with fatty deposits. This process is known as atherosclerosis and the fatty deposits are called atheroma.

Atherosclerosis can be caused by lifestyle habits and other conditions, such as:

smoking

high cholesterol

high blood pressure (hypertension)

diabetes

Diagnosing coronary heart disease

If your doctor feels you are at risk of CHD, they may carry out a risk assessment. This involves asking about your medical and family history, your lifestyle and taking a blood test.

Further tests may be needed to confirm a diagnosis of CHD, including:

an electrocardiogram (ECG)

an X-ray

an MRI scan

a CT scan

coronary angiography

Treating coronary heart disease

Although coronary heart disease cannot be cured, treatment can help manage the symptoms and reduce the chances of problems such as heart attacks.

Treatment can include lifestyle changes, such as doing regular exercise and stopping smoking, as well as medication and surgery.

Recovery

If you have problems such as a heart attack, or have any heart surgery, it is possible to eventually resume your normal life.

Advice and support is available to help you deal with aspects of your life that may have been affected by CHD.

Prevention

By making some simple lifestyle changes, you can reduce your risk of getting CHD. These include:

eating a healthy, balanced diet

being physically active

giving up smoking

controlling blood cholesterol and sugar levels

Keeping your heart healthy will also have other health benefits, and help reduce your risk of stroke and dementia.

Symptoms of coronary heart disease

Do you know what to do if someone has a heart attack?

When a heart attack happens, a bystander – often a relative with no medical expertise – is likely to be the first on the scene. Yet less than 1% of the population have attended an emergency life support (ELS) course.

Heartstart UK (funded by the British Heart Foundation), British Red Cross and St John Ambulance teach you how to help someone having a heart attack.

The most common symptoms of coronary heart disease (CHD) are chest pain (angina) and a heart attack.

You can also experience other symptoms, such as palpitations and unusual breathlessness. In some cases, people may not have any symptoms before they are diagnosed.

Angina

If your coronary arteries become partially blocked, it can cause chest pain (angina).

This can be a mild, uncomfortable feeling similar to indigestion. However, a severe angina attack can cause a painful feeling of heaviness or tightness, usually in the centre of the chest, which may spread to the arms, neck, jaw, back or stomach.

Angina is often triggered by physical activity or stressful situations. Symptoms usually pass in less than 10 minutes and can be relieved by resting or using a nitrate tablet or spray.

Heart attacks

If your arteries become completely blocked, it can cause a heart attack (myocardial infarction).

Heart attacks can cause permanent damage to the heart muscle and, if not treated straight away, can be fatal.

If you think you are having a heart attack, dial for immediate medical assistance.

Although symptoms can vary, the discomfort or pain of a heart attack is usually similar to that of angina, but it is often more severe. During a heart attack you may also experience the following symptoms:

sweating

lightheadedness

nausea

breathlessness

The symptoms of a heart attack can be similar to indigestion. For example, they may include a feeling of heaviness in your chest, a stomach ache or heartburn. However, these symptoms can also be accompanied by a pain that affects the arms (particularly the left arm), the neck and the jaw.

A heart attack can happen at any time, including while you are resting. If heart pains last longer than 15 minutes, it may be the start of a heart attack.

Unlike angina, the symptoms of a heart attack are not usually relieved using a nitrate tablet or spray.

In some cases, you may have a heart attack without any symptoms, called a silent myocardial infarction. This is more common in people with diabetes.

Heart failure

Heart failure can also occur in people with CHD when the heart becomes too weak to pump blood around the body, which can cause fluid to build up in the lungs that makes it increasingly difficult to breathe.

Heart failure can happen suddenly (acute heart failure) or gradually over time (chronic heart failure).

Causes of heart disease

Coronary heart disease (CHD) is usually caused by a build-up of fatty deposits on the walls of the arteries around the heart (coronary arteries).

The fatty deposits, called atheroma, are made up of cholesterol and other waste substances.

The build-up of atheroma on the walls of the coronary arteries makes the arteries narrower and restricts the flow of blood to the heart. This process is called atherosclerosis. Your risk of developing atherosclerosis is significantly increased if you:

smoke

have high blood pressure (hypertension)

have a high blood cholesterol level

do not take regular exercise

have diabetes

Other risk factors for developing atherosclerosis include:

being obese or overweight

having a family history of CHD – the risk is increased if you have a male relative with CHD under 55 or a female relative under 65

Cholesterol

Cholesterol is a fat made by the liver from the saturated fat that we eat. Cholesterol is essential for healthy cells, but if there is too much in the blood it can lead to CHD.

Cholesterol is carried in the blood stream by molecules called lipoproteins. There are several different types of lipoproteins, but two of the main ones are low-density lipoproteins (LDL) and high-density lipoproteins (HDL).

LDL, often referred to as bad cholesterol, takes cholesterol from the liver and delivers it to cells. LDL cholesterol tends to build up on the walls of the coronary arteries, increasing your risk of heart disease.

HDL, often referred to as "good cholesterol", carries cholesterol away from the cells and back to the liver, where it is broken down or passed from the body as a waste product.

The recommendation is that you should have a total blood cholesterol level of less than 5mmol/litre, and an LDL cholesterol level of under 3mmol/litre. This should be even lower if you have symptoms of CHD.

High blood pressure (hypertension) puts a strain on your heart and can lead to CHD.

Blood pressure is measured at two points during the blood circulation cycle. The systolic pressure is a measure of your blood pressure as the heart contracts and pumps blood out. The diastolic pressure is a measure of your blood pressure when your heart is relaxed and filling up with blood.

Blood pressure is measured in terms of millimetres of mercury (mmHg). When you have your blood pressure measured, the systolic pressure is the first, higher number to be recorded. The diastolic pressure is the second, lower number to be recorded. High blood pressure is defined as a systolic pressure of 140mmHg or more, or a diastolic pressure of 90mmHg or more.

Smoking

Smoking is a major risk factor. Carbon monoxide (from the smoke) and nicotine both put a strain on the heart by making it work faster. They also increase your risk of blood clots.

Other chemicals in cigarette smoke damage the lining of your coronary arteries, leading to furring of the arteries. If you smoke, you increase your risk of developing heart disease by 24%.

Diabetes

While a high blood sugar level doesn't directly increase the risk of developing CHD, it may lead to diabetes, which can more than double your risk of developing CHD.

Diabetes can lead to CHD because it may cause the lining of blood vessels to become thicker, which can restrict blood flow.

Thrombosis

A thrombosis is a blood clot within an artery (or a vein). If a thrombosis occurs in a coronary artery (coronary thrombosis), it will cause the artery to narrow, preventing the blood supply from reaching the heart muscle. This increases your chance of having a heart attack. Coronary thrombosis usually happens at the same place that the atherosclerosis is forming (furring of the coronary arteries).

Diagnosis and risk assessment

Coronary heart disease (CHD) is usually diagnosed after a risk assessment and some further tests.

Risk assessment

If your doctor thinks you may be at risk of developing CHD, they may carry out a risk assessment for cardiovascular disease, heart attack or stroke. This may be carried out as part of an NHS Health Check.

Your doctor will ask about your medical and family history, check your blood pressure, and do a blood test to assess your cholesterol level.

Before having the cholesterol test, you may be asked not to eat for 12 hours so there is no food in your body that could affect the result. Your DOCTOR or practice nurse can carry out the blood test. A sample will be taken either using a needle and a syringe or by pricking your finger.

Your DOCTOR will also ask about your lifestyle, how much exercise you do and whether you smoke. All these factors will be considered as part of the diagnosis.

Further tests

To confirm a suspected diagnosis, you may be referred for more tests. A number of different tests are used to diagnose heart-related problems, including:

electrocardiogram (ECG)

X-rays

echocardiogram

blood tests

coronary angiography

radionuclide tests

magnetic resonance imaging (MRI) scans

computerised tomography (CT) scans

Electrocardiogram (ECG)

An ECG records the rhythm and electrical activity of your heart. A number of electrodes (small, sticky patches) are put on your arms, legs and chest. The electrodes are connected to a machine that records the electrical signals of each heartbeat.

Although an ECG can detect problems with your heart rhythm, an abnormal reading does not always mean there is anything wrong. Similarly, a normal reading does not always rule out heart problems.

In some cases, you may have an exercise ECG test, or "stress test". This is when an ECG recording is taken while you are exercising (usually on a treadmill or exercise bike). If you experience pain while exercising, the test can help identify whether your symptoms are caused by angina, which is usually due to CHD.

X-rays

An X-ray may be used to look at the heart, lungs and chest wall. This can help rule out any other conditions that may be causing your symptoms.

Echocardiogram (echo)

An echocardiogram is similar to the ultrasound scan used in pregnancy. It produces an image of your heart using sound waves. The test can identify the structure, thickness and movement of each heart valve and can be used to create a detailed picture of the heart.

During an echocardiogram, you will be asked to remove your top and a small handheld device called a transducer will be passed over your chest. Lubricating gel is put onto your skin to allow the transducer to move smoothly and make sure there is continuous contact between the sensor and the skin.

Blood tests

In addition to cholesterol testing, you may need to have a number of blood tests to monitor the activity of the heart. These may include cardiac enzyme tests, which can show whether there has been recent damage to the heart muscle.

Coronary angiography

Coronary angiography, also known as a cardiac catheter test, can identify whether the coronary arteries are narrowed and how severe any blockages are. It also provides information about the pressure inside your heart chambers and how well your heart is functioning.

In an angiogram, a catheter (flexible tube) is passed into an artery in your groin or arm and guided into the coronary arteries using X-rays. A dye is injected into the catheter to show up the arteries supplying your heart with blood. A number of X-ray pictures are taken, which will highlight any blockages. It is usually performed under local anaesthetic.

A coronary angiogram is relatively safe and serious complications are rare. The risk of having a heart attack, stroke or dying during the procedure is estimated at about one or two in every 1,000. However, after having a coronary angiogram you may experience some minor side effects, including:

a slightly strange sensation when the dye is put down the catheter

a small amount of bleeding when the catheter is removed

a bruise in your groin or arm

Radionuclide tests

Radionuclide tests can indicate how strongly your heart pumps and show the flow of blood to the muscular walls of your heart. Radionuclide tests provide more detailed information than the exercise ECG test.

During a radionuclide test, a small amount of a radioactive substance called an isotope is injected into your blood (sometimes during exercise). If you have difficulty exercising, you may be given some medication to make your heart beat faster. A camera placed close to your chest picks up the radiation transmitted by the isotope as it passes through your heart.

Magnetic resonance testing (MRI)

An MRI scan can be used to produce detailed pictures of your heart. During an MRI scan, you lie inside a tunnel-like scanner that has a magnet around the outside. The scanner uses a magnetic field and radio waves to produce images.

Computerised tomography (CT) scan

A CT scan uses X-rays and a computer to create detailed images of the inside of your body. During a CT scan, you lie on a bed while a small tube that takes X-rays moves and rotates around your body.

Treating heart disease

Although coronary heart disease (CHD) cannot be cured, treatment can help manage the symptoms and reduce the risk of further problems.

Good heart disease care

Effective treatment of coronary heart disease (CHD) saves lives. Since 2000, there has been a 40% reduction in deaths from heart disease in people under 75. A national review of heart disease services set out standards that define good heart disease care:

tackling factors that increase the risk of heart disease, such as smoking, poor diet and little physical exercise

preventing CHD in high-risk patients and, where patients have CHD, avoiding complications and tackling the progression of the disease

rapid treatment for heart attack, including the choice of angioplasty in a specialist cardiac centre

rapid diagnosis of heart disease and access to diagnostic tests

rapid access and choice of treatment centre for specialised cardiac care

Treatment overview

CHD can be managed effectively with a combination of lifestyle changes, medicine and, in some cases, surgery. With the right treatment, the symptoms of CHD can be reduced and the functioning of the heart improved.

Lifestyle changes

hide

If you have been diagnosed with CHD, you can reduce your risk of further episodes by making simple lifestyle changes.

For example, stopping smoking after a heart attack will quickly reduce your risk of having a heart attack in the future to near that of a non-smoker.

Other lifestyle changes, such as eating more healthily and doing regular exercise, will also reduce your future risk of heart disease.

Medicines

Many different medicines are used to treat CHD. Usually they either aim to reduce blood pressure or widen your arteries. Some heart medicines have side effects, so it may take a while to find one that works for you. Your DOCTOR or specialist will discuss the various options with you.

Antiplatelets

Antiplatelets are a type of medicine that can help reduce the risk of a heart attack by thinning your blood and preventing it from clotting. Common antiplatelet medicines include low-dose aspirin, clopidogrel, ticagrelor and prasugrel.

Statins

If you have a high blood cholesterol level, cholesterol-lowering medicine called statins may be prescribed. Examples include simvastatin, pravastatin and atorvastatin. They work by blocking the formation of cholesterol and increasing the number of LDL receptors in the liver, which helps remove the LDL cholesterol from your blood. This helps slow the progression of CHD, and will make having a heart attack less likely. Not all statins are suitable for everyone, so you may need to try several different types until you find one that is suitable.

Beta-blockers

Beta-blockers – including acebutolol, atenolol, bisoprolol, metoprolol and propranolol – are often used to prevent angina and treat high blood pressure. They work by blocking the effects of a particular hormone in the body, which slows down your heartbeat and improves blood flow.

Nitrates

Nitrates are used to widen your blood vessels. Doctors sometimes refer to nitrates as "vasodilators". They are available in a variety of forms, including tablets, sprays, skin patches and ointments such as glyceryl trinitrate and isosorbide mononitrate.

Nitrates work by relaxing your blood vessels, letting more blood pass through them. This lowers your blood pressure and relieves any heart pain you have. Nitrates can have some mild side effects, including headaches, dizziness and flushed skin.

ACE (angiotensin-converting enzyme) inhibitors

ACE inhibitors are commonly used to treat high blood pressure. Examples include ramipril and lisinopril. They block the activity of a hormone called angiotensin II, which causes the blood vessels to narrow. As well as stopping the heart working so hard, ACE inhibitors improve the flow of blood around the body.

Your blood pressure will be monitored while you are taking ACE inhibitors, and regular blood tests will be needed to check that your kidneys are working properly. Around one in 10 people have kidney problems as a result of taking the drug.

If ACE inhibitors have been prescribed for you, do not stop taking them without first consulting your doctor. If you do, it is likely your symptoms will get worse quickly.

Side effects of ACE inhibitors can include a dry cough and dizziness.

Angiotensin II receptor antagonists

Angiotensin II receptor antagonists work in a similar way to ACE inhibitors. They are used to lower your blood pressure by blocking angiotensin II. Mild dizziness is usually the only side effect. Angiotensin II receptor antagonists are often prescribed as an alternative to ACE inhibitors, as they do not cause a dry cough.

Calcium channel blockers

Calcium channel blockers also work to decrease blood pressure by relaxing the muscles that make up the walls of your arteries. This causes the arteries to become wider, reducing your blood pressure. Examples include verapamil and diltiazem. Side effects include headaches and facial flushing, but these are mild and usually decrease over time.

Procedures and surgery

If your blood vessels are narrow due to a build-up of atheroma (fatty deposits), or if your symptoms cannot be controlled using medication, surgery may be needed to open up or replace blocked arteries. Some of the main procedures used to treat blocked arteries are outlined below.

Coronary angioplasty

Coronary angioplasty is also known as percutaneous coronary intervention (PCI), percutaneous transluminal coronary angioplasty (PTCA), or balloon angioplasty.

Angioplasty may be a planned procedure for some people with angina, or an urgent treatment if the symptoms have become unstable. Having a coronary angiogram will determine if you are suitable for treatment. Coronary angioplasty is also performed as an emergency treatment during a heart attack.

During angioplasty, a small balloon is inserted to push the fatty tissue in the narrowed artery outwards. This allows the blood to flow more easily. A metal stent (a short, wire mesh tube) is usually placed in the artery to hold it open. Drug eluting stents can also be used. These release drugs to stop the artery from narrowing again.

Coronary artery bypass graft

Coronary artery bypass grafting (CABG) is also known as bypass surgery, heart bypass, or coronary artery bypass surgery.

It is performed in patients where the arteries become narrowed or blocked. A coronary angiogram will determine if you are suitable for treatment. Off-pump coronary artery bypass (OPCAB) is a type of coronary artery bypass surgery

performed without the need for a heart-lung machine, and keeps blood and oxygen circulating around the body.

A blood vessel is inserted (grafted) between the aorta (the main artery leaving the heart) and a part of the coronary artery beyond the narrowed or blocked area. This allows the blood to bypass (get around) the narrowed sections of coronary arteries.

Heart transplant

In a small number of cases, when the heart is severely damaged and medicine is not effective, or when the heart becomes unable to adequately pump blood around the body (heart failure), a heart transplant may be needed. A heart transplant involves replacing a heart that is damaged or is not working properly with a healthy donor heart.

Recovering from heart disease

After having heart surgery or problems like a heart attack, it is possible to resume a normal life.

Cardiac rehabilitation programme

If you have heart surgery, a member of the cardiac rehabilitation team may visit you in hospital to give you information about your condition and the procedure you are having. This care will usually continue after you have left hospital. For the first few weeks following your surgery, a member of the cardiac rehabilitation team may visit you at home or call you to check on your progress.

What happens in cardiac rehabilitation programmes can vary widely throughout the country, but most will cover the following basic areas:

exercise

education

relaxation and emotional support

Once you have completed your rehabilitation programme, it is important you continue to take regular exercise and lead a healthy lifestyle. This will help protect your heart and reduce the risk of further heart-related problems.

Self-care

Self-care is an integral part of daily life, and is all about you taking responsibility for your own health and wellbeing with the support of those involved in your care. Self-care includes actions you take for yourself every day in order to stay fit and maintain good physical and mental health, prevent illness or accidents, and care more effectively for minor ailments and long-term conditions.

People living with long-term conditions can benefit enormously from being supported so they reach self-care. They can live longer, have less pain, anxiety, depression and fatigue, have a better quality of life, and be more active and independent.

Support groups

If you have or have had a heart condition, or if you are caring for someone with a heart condition, you might find it useful to meet other people in your area who are in a similar situation. There are a number of heart support groups that organise regular exercise sessions, such as walking groups, as well as other social activities. Your DOCTOR or specialist can provide you with details about your nearest group.

Relationships and sex

Coming to terms with a long-term condition such as heart disease can put a strain on you, your family and your friends. It can be difficult to talk with

people about your condition, even if they are close to you. Be open about how you feel and let your family and friends know what they can do to help. But do not feel shy about telling them that you need some time to yourself.

Your sex life

If you have coronary heart disease (CHD) or you have recently had heart surgery, you may be concerned about having sex. Usually, as soon as you feel well enough you can resume sexual activity. Communicate with your partner and stay open-minded. Explore what you both like sexually. Simply touching, being touched and being close to someone helps a person feel loved and special.

Returning to work

After recovering from heart surgery, you should be able to return to work, but it may be necessary to change the type of work you do. For example, you may not be able to do a job that involves heavy physical exertion. Your specialist will be able to advise you about when you can return to work and what type of activities you should avoid.

Preventing heart disease

There are several ways you can help reduce your risk of developing coronary heart disease (CHD), such as lowering your blood pressure and cholesterol levels.

There are a number of ways you can do this, which are discussed below.

Eat a healthy, balanced diet

A low-fat, high-fibre diet is recommended, including plenty of fresh fruit and vegetables (five portions a day) and whole grains. You should limit the amount of salt you eat to no more than 6g (0.2oz) a day as too much salt will increase your blood pressure. Six grams of salt is about one teaspoonful.

There are two types of fat: saturated and unsaturated. You should avoid food containing saturated fats because these will increase your cholesterol levels.

Foods high in saturated fat include:

meat pies

sausages and fatty cuts of meat

butter

ghee, a type of butter often used in Indian cooking

lard

cream

hard cheese

cakes and biscuits

foods that contain coconut or palm oil

However, a balanced diet should include a small amount of unsaturated fat, which will help reduce your cholesterol levels.

Foods high in unsaturated fat include:

oily fish

avocados

nuts and seeds

sunflower, rapeseed, olive and vegetable oils

You should also try to avoid too much sugar in your diet as this can increase your chances of developing diabetes, which is proven to dramatically increase your chances of developing CHD.

Be more physically active

Combining a healthy diet with regular exercise is the best way of maintaining a healthy weight. Having a healthy weight reduces your chances of developing high blood pressure.

Regular exercise will make your heart and blood circulatory system more efficient, lower your cholesterol level, and also keep your blood pressure at a healthy level.

Keep to a healthy weight

Your DOCTOR or practice nurse can tell you what your ideal weight is in relation to your build and height. Alternatively, find out what your BMI (body mass index) is by using a BMI calculator.

Give up smoking

If you smoke, giving up will reduce your risk of developing CHD. Smoking is a major risk factor for developing atherosclerosis (furring of the arteries). It also causes the majority of cases of coronary thrombosis in people under the age of 50.

Research has shown you are up to four times more likely to successfully give up smoking if you use support.

Reduce your alcohol consumption

If you drink, stick to the recommended guidelines. The recommended daily amount of alcohol for men is three to four units a day and two to three units for women. Always avoid binge drinking.

Keep your blood pressure under control

You can keep your blood pressure under control by eating a healthy diet low in saturated fat, exercising regularly, and, if required, taking the appropriate medication to lower your blood pressure. Your target blood pressure should be below 140/85mmHg. If you have high blood pressure, ask your DOCTOR to check your blood pressure regularly.

Keep your diabetes under control

If you are diabetic, you have a greater risk of developing CHD. If you have diabetes, being physically active and controlling your weight and blood pressure will help manage your blood sugar level. If you are diabetic, your target blood pressure level should be below 130/80mmHg.

Take any medication prescribed for you

If you have CHD, you may be prescribed medication to help relieve your symptoms and stop further problems developing. If you do not have CHD but do have high cholesterol, high blood pressure or a history of family heart disease, your doctor may prescribe medication to prevent you developing heart-related problems.

If you are prescribed medication, it is vital you take it and follow the correct dosage. Do not stop taking your medication without consulting your doctor first, as doing so is likely to make your symptoms worse and put your health at risk.

Heart attack

Introduction

A heart attack is a serious medical emergency in which the supply of blood to the heart is suddenly blocked, usually by a blood clot. Lack of blood to the heart can seriously damage the heart muscle.

A heart attack is known medically as a myocardial infarction or MI.

Symptoms can include:

chest pain: the chest can feel like it is being pressed or squeezed by a heavy object, and pain can radiate from the chest to the jaw, neck, arms and back

shortness of breath

feeling weak and/or lightheaded

overwhelming feeling of anxiety

It is important to stress that not everyone experiences severe chest pain; often the pain can be mild and mistaken for indigestion.

It is the combination of symptoms that is important in determining whether a person is having a heart attack, and not the severity of chest pain.

Treating heart attacks

A heart attack is a medical emergency. Dial 999 and ask for an ambulance if you suspect that you or someone you know is having a heart attack.

If the casualty is not allergic to aspirin and it's easily available, give them a tablet (ideally 300mg) to slowly chew and then swallow while waiting for the ambulance to arrive.

The aspirin will help to thin the blood and restore blood supply to the heart.

Treatment for a heart attack will depend on how serious it is. Two main treatments are:

using medication to dissolve blood clots – this is known as thrombolysis

surgery to help restore blood to the heart

What causes a heart attack?

Coronary heart disease (CHD) is the leading cause of heart attacks. CHD is a condition in which coronary arteries (the major blood vessels that supply the heart with blood) get clogged up with deposits of cholesterol. These deposits are called plaques.

During a heart attack, one of the plaques ruptures (bursts), causing a blood clot to develop at the site of the rupture. The clot may then block the supply of blood running through the coronary artery, triggering a heart attack.

Smoking, a high-fat diet, diabetes and being overweight or obese all increase your risk of developing CHD.

Recovery

The time it takes to recover from a heart attack will depend on the amount of damage to the heart muscle. Some people are well enough to return to work after two weeks. Other people may take several months to recover. The recovery process aims to:

reduce your risk of another heart attack by a combination of lifestyle changes, such as eating a healthy diet, and medications such as statins (which help lower blood cholesterol levels)

gradually restore your physical fitness so you can resume normal activities (this is known as cardiac rehabilitation)

Most people can return to work after having a heart attack, but how quickly will depend on, your health, the state of your heart and the kind of work you do.

Who is affected

Heart attacks are one of the most common reasons why a person requires emergency medical treatment.

Most heart attacks occur in older people over 45 years of age. Men are two to three times more likely to have a heart attack than women.

Complications

Complications of heart attack can be serious and possibly life-threatening, and include:

cardiogenic shock – this is where the muscles of the heart are severely damaged, meaning the heart can no longer supply enough blood to maintain many body functions

heart rupture – is where the heart's muscles, walls or valves split apart (rupture)

arrhythmia – is an abnormal heartbeat, such as a ventricular arrhythmia, where the heart begins beating faster and faster before going into a kind of spasm and then stops beating (cardiac arrest)

These complications can occur quickly after a heart attack and are a leading cause of death.

Many people will die suddenly from a complication of a heart attack before reaching hospital.

Outlook

The outlook for people who have had a heart attack can be highly variable depending on:

their age – the older you are the more likely you are to experience serious complications

the severity of the heart attack – specifically how much of the muscle of the heart has been damaged during the attack

how long it took before a person received treatment – the longer the delay the worse the outlook tends to be

In general around one third of people who have a heart attack die as a result. These deaths often occur before a person reaches hospital, or alternatively, within the first 28 days after the heart attack.

If a person survives for 28 days after having a heart attack, their outlook improves dramatically and most people will go on to live for many years.

Symptoms of a heart attack

Symptoms include:

chest pain: usually located in the centre of your chest and can feel like a sensation of pressure, tightness or squeezing

pain in other parts of the body: it can feel as if the pain is travelling from your chest to your arms (usually the left arm is affected, but it can affect both arms), jaw, neck, back and abdomen

shortness of breath

feeling sick

being sick

an overwhelming sense of anxiety (similar to having a panic attack)

feeling light headed

coughing

wheezing

The level of pain can vary significantly from person to person. For many the pain is severe and it has been described as feeling like ‘an elephant sitting on my chest’. For others, pain can be minor and similar to that experienced during indigestion.

Also, people with diabetes, some women, and older people do not experience any chest pain at all.

It is not the level of chest pain that is important in determining whether you are having a heart attack, it's the overall pattern of symptoms that is important.

Do not worry if you have doubts about whether your symptoms indicate you are having a heart attack. Assume that you are having a heart attack and dial 999 to ask for an ambulance immediately.

Paramedics would rather be called out to find an honest mistake has been made than be called out when it is too late to save a person's life.

Waiting for the ambulance

If you know that you are not allergic to aspirin and aspirin is easily available, slowly chew and then swallow an adult size tablet (300 mg) while you are waiting for the ambulance to arrive.

The aspirin will help to thin your blood and restore blood supply to your heart.

Cardiac arrest

In some cases a complication called ventricular arrhythmia can lead to the heart first going into spasm and then stopping beating altogether. This is known as sudden cardiac arrest.

Signs and symptoms suggesting a person has gone into cardiac arrest include:

they appear to not be breathing

they are not moving

they do not respond to any stimulation, such as being touched or spoken to

If you think somebody has gone into cardiac arrest and you do not have access to a piece of equipment called an automated external defibrillator (see below) you should perform chest compressions as this can help restart the heart.

Chest compression

To carry out a chest compression, place the heel of your hand at the centre of the person's chest, in between their nipples. Place your other hand on top of your first hand and interlock your fingers. Using your body weight (not just your arms), press straight down (4-5cm) onto their chest.

Aim to do the chest compressions at a rate of 100 compressions a minute.

Watch this video on CPR for more information about how to perform ‘hands-only’ CPR.

The above advice only applies to adults. For information about how to perform CPR in children, see how to resuscitate a child.

Automated external defibrillator

If you have access to a device called an automated external defibrillator, which is a portable electrical device that effectively ‘reboots’ the heart, you should use it. Most large organisations keep an AED as part of their first aid equipment.

The charity Arrhythmia Alliance has more information about AEDs.

Causes of a heart attack

Like all other tissues and organs in the body, the heart needs a constant supply of oxygen-rich blood. If the blood supply to the heart is suddenly interrupted, heart muscles may be damaged and begin to die.

If this is not treated, heart muscles will experience irreversible damage. If a large portion of the heart is damaged in this way, the heart will stop beating (a cardiac arrest), resulting in death.

Coronary heart disease (CHD)

Coronary heart disease (CHD) is the leading cause of heart attacks. CHD is a condition in which the coronary arteries (the major blood vessels that supply the heart with blood) get clogged up with deposits of cholesterol. These deposits are called plaques.

During a heart attack, one of the plaques ruptures (bursts), causing a blood clot to develop at the site of the rupture. The clot may then block the supply of blood running through the coronary arteries to the heart, triggering a heart attack.

Who's at risk

Risk factors for CHD, many of which are related to each other are outlined below.

Smoking

The toxins in cigarettes narrow and damage coronary arteries. This makes smokers more vulnerable to CHD. Compared with non-smokers, people who smoke 20 or more cigarettes a day are 60-90% more likely to develop CHD and have a heart attack.

Even small amounts of tobacco can be harmful. If you smoke only one cigarette a day, you are still 30% more likely to develop CHD than a non-smoker.

Diet

If you eat a diet high in saturated fat, your blood cholesterol levels will rise. This leads to an increase in your risk of CHD and heart attacks.

Some foods, such as oily fish, can help lower cholesterol levels. See preventing a heart attack for more information about how diet can influence your heart attack risk.

High blood pressure

Having poorly controlled high blood pressure (hypertension) can weaken the coronary arteries, making them more vulnerable to CHD. The higher your blood pressure, the greater your risk of CHD and heart attacks.

Diabetes

The increased levels of blood glucose associated with type 1 diabetes and type 2 diabetes can damage the coronary arteries, making them more vulnerable to CHD.

It is estimated that people with diabetes are two to five times more likely to develop CHD than the general population.

Being overweight or obese

Being overweight or obese does not directly increase your risk of CHD and heart attacks, but leads to related risk factors that do. In particular, people who are overweight or obese:

have an increased risk of developing high blood pressure

tend to have higher levels of cholesterol as a result of eating a high-fat diet

have an increased risk of developing type 2 diabetes

Lack of exercise

Lack of exercise is not directly related to an increased risk of CHD and heart attacks. However, it is linked to an increased risk of being overweight or obese and having high blood pressure (hypertension).

Alcohol

Excessive consumption of alcohol can cause high blood pressure (hypertension) and increased blood cholesterol levels, increasing the risk of developing CHD. Most heavy drinkers also tend to have unhealthy lifestyles, such as smoking, eating a high-fat diet and not exercising enough. Find more information about managing your alcohol intake here.

Age and sex

The older you get, the more likely you are to develop some degree of CHD.

Men are two to three times more likely to have a heart attack than women.

A number of theories have been suggested to explain this increased risk, such as:

higher rates of excessive alcohol consumption in men

more men are overweight than women (although obesity levels are roughly the same for both sexes)

men may be less effective at coping with stress than women, and increased stress levels may affect their physical wellbeing

Family history

If you have a first-degree relative (a parent, brother or sister) with a history of heart disease, such as angina, heart attack or stroke, you are twice as likely to develop similar problems compared to the general population.

Ethnicity

Rates of high blood pressure and diabetes are higher in people of African and African-Caribbean descent, which means that they also have an increased risk of CHD and heart attacks.

People of South Asian descent (those of Sri Lankan, Indian, Bangladeshi and Pakistani origin) are five times more likely to develop diabetes than the general population. Again, this increases their risk of CHD and heart attacks.

Find out more information about health issues for black people and South Asian health.

Air pollution

Recent research has found that exposure to air pollution – specifically traffic pollution – can cause a significant rise in your chance of developing CHD, and in turn, heart attacks.

Research carried out in 2011 estimated that air pollution could play a part in as many as 1 in 13 cases of heart attacks.

Less common causes

Some less common causes are described below.

Drug misuse

Stimulants, such as cocaine, amphetamines (speed), crack and methamphetamines (crystal meth), can cause coronary arteries to narrow, restricting blood supply and triggering a heart attack. Heart attacks due to the use of cocaine are one of the most common causes of sudden death in young people.

Lack of oxygen in the blood (hypoxia)

If levels of oxygen in the blood decrease due to carbon monoxide poisoning or a loss of normal lung function, the heart will receive un-oxygenated blood. This will result in the heart muscles being damaged, triggering a heart attack.

Aneurysm

An aneurysm is a weakness in a blood vessel wall. If the blood vessel wall becomes weakened beyond a certain point, it will no longer be able to withstand the pressure of blood running through it and will rupture (burst).

Sometimes, an aneurysm can develop inside the coronary arteries, although this is much less common than other types of aneurysm. If a coronary artery aneurysm ruptures, the blood supply to the heart will stop, triggering a heart attack.

Diagnosing a heart attack

If a heart attack is suspected, you should be admitted to hospital immediately. You will usually be admitted to an acute cardiac care unit (ACCU) so the diagnosis can be confirmed and treatment begin.

Electrocardiograph (ECG)

An electrocardiograph (ECG) is an important test in suspected heart attacks. An ECG should be carried out within 10 minutes of being admitted to hospital.

An ECG measures the electrical activity of your heart. Every time your heart beats, it produces tiny electrical signals. An ECG machine records these signals onto paper, allowing your doctor to see how well your heart is functioning.

An ECG is painless and takes about five minutes to perform. During the test, electrodes (flat metal discs) are attached to your arms, legs and chest. Wires from the electrodes are connected to the ECG machine, which records the electrical impulses.

There are two reasons why an ECG is so important:

it helps confirm the diagnosis of a heart attack

it helps determine what type of heart attack you have had, which will help determine the most effective treatment for you

Types of heart attack

Heart attacks can be classified by a measurement known as the ST segment. The ST segment is an electrical measurement recorded by an ECG. It corresponds to the level of damage inflicted on the heart.

The higher the ST segment, the greater the damage likely.

Acute coronary syndrome

A heart attack is a form of acute coronary syndrome (ACS); which is where there is a significant blockage in the coronary arteries.

There are three main types of ACS:

ST segment elevation myocardial infarction (STEMI)

non-ST segment elevation myocardial infarction (NSTEMI)

unstable angina

The three types are described in more detail below.

ST segment elevation myocardial infarction (STEMI)

A STEMI is the most serious type of heart attack. In this type of heart attack, a prolonged interruption to the blood supply, resulting from a total blockage of the coronary artery, can cause extensive damage to a large area of the heart. A STEMI is what most people think of when they hear the term heart attack.

Non-ST segment elevation myocardial infarction (NSTEMI)

An NSTEMI can be less serious than a STEMI. This is because the supply of blood to the heart is only partially blocked, rather than completely blocked.

As a result, a smaller section of the heart is damaged. However, NSTEMI is still regarded as a serious medical emergency.

Unstable angina

Unstable angina is the least serious type of ACS although, like NSTEMI, it is still regarded as a medical emergency.

In unstable angina, the blood supply to the heart is still seriously restricted, but there is no permanent damage so the heart muscle is preserved.

Other tests

A number of other tests can be used to assess the state of your heart and check for related complications. However, because heart attacks are medical emergencies, some tests are usually only carried out once your initial treatment has begun and your condition has been stabilised.

Blood tests

Damage to your heart from a heart attack causes certain proteins to slowly leak into your blood. Enzymes are special proteins that help regulate chemical reactions that take place in your body.

If you have had a suspected heart attack, a sample of your blood will be taken so it can be tested for these heart proteins (known as cardiac markers). Your protein levels will be measured through a series of blood samples taken over the course of a few days.

This will allow damage to your heart to be assessed, and also help determine how well you are responding to treatment.

Chest X-ray

A chest X-ray can be useful if diagnosis of a heart attack is uncertain and there are other possible causes of your symptoms, such as a pocket of air trapped between the layers of your lungs (pneumothorax).

A chest X-ray can also be used to check whether complications have arisen from the heart attack, such as a build-up of fluid inside your lungs (pulmonary oedema).

Echocardiogram

An echocardiogram is a type of ultrasound scan that uses sound waves to build up a picture of the inside of your heart. This can be useful to identify exactly

which areas of the heart have been damaged and how this damage has affected your heart's function.

Coronary angiography

Coronary angiography can help determine whether a blockage or narrowing has occurred in the coronary arteries and, if so, to locate the exact location of the blockage or narrowing.

The test involves inserting a thin tube, known as a catheter, into one of the blood vessels in your groin or arm. The catheter is guided into your coronary arteries using X-rays.

A special fluid, known as a contrast agent, is pumped through the catheter. This fluid shows up on X-rays. Studying how it flows around and through your heart can help locate the site of any blockage or narrowing.

A coronary angiogram is often performed just before surgery because the results can help guide the efforts of the surgeon. See treating a heart attack for more information.

Treating a heart attack

There are two main treatment options for people with the most serious form of heart attack; an ST segment elevation myocardial infarction (STEMI):

a combination of medication to dissolve the blood clot and restore the flow of blood to the heart (this is known as thrombolysis)

surgery to widen the coronary artery, which is usually done using a technique called coronary angioplasty

Angioplasty or thrombolysis?

If the results of your electrocardiograph (ECG) indicate that you have had a STEMI then an angioplasty is normally recommended as the first-line treatment.

(See diagnosing heart attacks for more information about ECG results).

However, a coronary angioplasty is a very complex type of surgery that requires specialist staff and equipment, and not all hospitals have the facilities needed to perform the surgery.

If you do have a STEMI but it is likely that you would have to wait longer than 150 minutes for a coronary angioplasty then you may be treated with thrombolysis as an alternative.

If the results of your ECG show you have a 'less serious' type of heart attack (which is known as a non-ST segment elevation myocardial infarction (NSTEMI) or unstable angina), then blood-thinning medication, including aspirin and other medications, is usually recommended.

In some cases, further treatment with coronary angioplasty or coronary artery bypass graft (see below for more information) may be recommended in cases of NSTEMI or unstable angina, after initial treatment with these medications.

Coronary angioplasty

During coronary angioplasty, a tiny tube known as a catheter, with a sausage-shaped balloon at the end, is put into a large artery in your groin or arm. The catheter is passed through your blood vessels and up to your heart, over a fine guidewire, using X-rays to guide it, before being moved into the narrowed section of your coronary artery.

Once in position, the balloon is inflated inside the narrowed part of the artery to open it wide. A stent (flexible metal mesh) is usually inserted into the artery to help keep it open afterwards.

Thrombolysis

Thrombolysis involves giving you injections of a type of medication called a thrombolytic.

Thrombolytics target and destroy a substance called fibrin. Fibrin is a tough protein that makes up blood clots by acting like a sort of fibre mesh that hardens around the blood.

Thrombolytic medications used in the treatment of heart attacks include reteplase, alteplase and streptokinase.

You may also be given a combination of additional blood-thinning medication, such as low-dose aspirin, heparin, fondaparinux, enoxaparin, clopidogrel, prasugrel or ticagrelor to prevent further clots from developing.

If you are allergic to aspirin, alternatives such as clopidogrel, prasugrel or ticagrelor may be used without it.

You may also be given an additional medication called a glycoprotein IIb/IIIa inhibitor if it is thought you have an increased risk of experiencing another heart attack at some point in the near future.

Glycoprotein IIb/IIIa inhibitors do not break up blood clots in the same way as thrombolytics, but they prevent blood clots from getting bigger. They are, therefore, an effective method of stopping your symptoms getting worse.

Coronary artery bypass graft

Sometimes, a coronary angioplasty may not be technically possible if the anatomy of your arteries is different from normal. This may be the case if there are too many narrow sections in your arteries or if there are lots of branches coming off your arteries that are also blocked.

In such circumstances, an alternative surgical procedure, known as a coronary artery bypass graft (CABG), may be considered. A CABG involves taking a blood vessel from another part of your body, usually your chest or leg, to use as a graft.

The graft replaces any hardened or narrowed arteries in the heart. A surgeon will attach the new blood vessel to the coronary artery above and below the narrowed area or blockage.

Complications of a heart attack

Potential complications arising from a heart attack can vary widely, from mild to life threatening.

Some people experience what is sometimes referred to as a ‘minor’ heart attack (although it is still very serious) with no associated complications. This is also known as an uncomplicated heart attack.

Other people experience a major heart attack, which has a wide range of complications and may require extensive treatment.

Some common complications of a heart attack are discussed in more detail below.

Arrhythmia

An arrhythmia is an abnormal heartbeat, such as beating too quickly (tachycardia), too slowly (bradycardia) or irregularly (atrial fibrillation).

Arrhythmias can develop after a heart attack as a result of damage to the muscles. Damaged muscles disrupt electrical signals used by the body to control the heart. Some arrhythmias, such as tachycardia, are mild and cause symptoms such as:

palpitations (the sensation of your heart racing in your chest or throat)

chest pain

dizziness

light-headedness

fatigue (tiredness)

breathlessness

Other arrhythmias can be life threatening, such as:

complete heart block, where electrical signals are unable to travel from one side of your heart to the other so your heart cannot pump blood properly

ventricular arrhythmia, where the heart begins beating faster before going into a spasm, stopping pumping altogether; known as sudden cardiac arrest – see symptoms of a heart attack for more information on cardiac arrest

These life-threatening arrhythmias can be a major cause of death during the 24 hours after a heart attack.

However, survival rates have improved significantly since the invention of the portable defibrillator, an external device that delivers an electric shock to the heart and ‘resets’ it to the right rhythm.

Mild arrhythmias can usually be controlled with medication, such as beta-blockers. More troublesome arrhythmias that cause repeated and prolonged symptoms may need to be treated with a pacemaker.

A pacemaker is an electric device surgically implanted in the chest which is used to help regulate the heartbeat.

Heart failure

Heart failure is where your heart is unable to effectively pump blood around your body. It can develop after a heart attack if muscles in your heart are extensively damaged. This usually occurs in the left side of the heart (the left ventricle). Symptoms of heart failure include:

shortness of breath

fatigue

swelling in your arms and legs due to a build-up of fluid

Heart failure can be treated with a combination of medications and, in some cases, surgery.

Read more about the treatment of heart failure.

Cardiogenic shock

Cardiogenic shock is similar to heart failure but more serious. It develops when the heart's muscles have been damaged so extensively it can no longer supply enough blood to maintain many of the functions of the body.

Symptoms include:

mental confusion

cold hands and feet

decreased or no urine output

rapid heartbeat and breathing

pale skin

Cardiogenic shock can be treated using blood-thinning medication, which makes the blood easier to pump. A type of medication called vasopressors may be used. Vasopressors help constrict (squeeze) the blood vessels, which increases the blood pressure and improves blood circulation.

Once the initial symptoms of cardiogenic shock have been stabilised, surgery may be required to improve the function of the heart. One option is to implant a small pump, known as an intra-aortic balloon pump. This can help improve the flow of blood away from the heart.

Another option is a coronary artery bypass graft (where a blood vessel from another part of your body is used to bypass any blockage).

Heart rupture

A heart rupture is a serious and relatively common complication of heart attacks. Heart ruptures occur in around 1 in 10 cases.

A heart rupture is where the heart's muscles, walls, or valves rupture (split apart). A rupture can occur if the heart is significantly damaged during a heart attack. It usually happens one to five days after a heart attack.

Symptoms are the same as those of cardiogenic shock. Open heart surgery is usually required to repair the damage.

The outlook for people who have a heart rupture is not good, and an estimated half of all people die within five days of the rupture occurring.

Recovering from a heart attack

Recovering from a heart attack can take several months and it is very important not to rush your rehabilitation.

During your recovery period, you will receive help and support from a range of healthcare professionals, which may include:

nurses

physiotherapists

dietitians

pharmacists

exercise specialists

These healthcare professionals will support you physically and mentally to ensure your recovery is conducted safely and appropriately.

The recovery process will usually take place in stages starting in hospital, where your condition can be closely monitored and your individual needs for the future can be assessed. After discharge, you can continue your recovery at home.

There are two important aims of the recovery process:

to gradually restore your physical fitness so you can resume normal activities (known as cardiac rehabilitation)

to reduce your risk of another heart attack

Cardiac rehabilitation

Your cardiac rehabilitation programme will begin when you are in hospital.

A member of the cardiac rehabilitation team will visit you in hospital and provide detailed information about:

your state of health and how the heart attack may have affected it

the type of treatment you received

what medications you will need when you leave hospital

what specific risk factors are thought to have contributed to your heart attack

what lifestyle changes you can make to address those risk factors

Once you return home it is usually recommended you rest and do only light activities, such as walking up and down the stairs a few times a day or taking a short walk.

Gradually increase the amount of activity you do each day over several weeks. How quickly you can do this will depend on the condition of your heart and your general health. Your care team can provide more detailed advice about a recommended plan to increase your levels of activity.

You may also be invited to a cardiac rehabilitation programme at your local hospital four to eight weeks after leaving hospital. The programme consists of one to two hour exercise sessions, once or twice a week.

The type of exercise can vary depending on the programme, but should mainly be aerobic.

Aerobic exercises are designed to strengthen the heart, improve circulation and lower blood pressure. Examples of aerobic exercises include riding an exercise bike, jogging on a treadmill, and swimming.

Returning to work

Most people can return to work after having a heart attack, but how quickly will depend on your health, the state of your heart and the kind of work you do. If your job involves light duties, for example if you work in an office, you may be able to return to work in as little as two weeks.

However, if your job involves heavy manual work and /or your heart was extensively damaged, it may be several months before you can return to work.

Your care team will provide a more detailed prediction of how long it will take for you to return to work.

Sex

According to the British Heart Foundation, you should be able to safely have sex once you are fit enough to walk briskly up two flights of stairs without getting chest pains or becoming out of breath.

This is usually about four weeks after having a heart attack. Having sex will not put you at further risk of having another heart attack.

Following a heart attack, about one in three men have erectile dysfunction which may make having sex difficult.

This is most commonly due to anxiety and the emotional stress associated with having a heart attack.

Less commonly, erectile function is caused by a side effect of beta-blockers.

If you experience erectile dysfunction, speak to your DOCTOR. They may be able to recommend treatment.

For example, you may be prescribed medication that stimulates the flow of blood to your penis which makes it easier to get an erection – read more about treating erectile dysfunction.

Depression

Having a heart attack can be frightening and traumatic, and afterwards it is common to have feelings of anxiety. For many people, the emotional stresses can cause them to feel depressed and tearful for the first few weeks after returning home from hospital.

If feelings of depression persist, speak to your DOCTOR because you may have a more serious form of depression.

It is important you seek advice because serious types of depression often do not get better without treatment.

Your emotional state could also have an adverse effect on your physical recovery.

Reducing the risk

Reducing your risk of having another heart attack involves making lifestyle changes and taking a long-term course of different medications.

Lifestyle changes

Diet

It is recommended you eat two to four portions of oily fish a week. Oily fish contains a type of fatty acid known as omega-3. Omega-3 can help to lower your cholesterol levels.

Good sources of omega-3 include:

herring

sardines

mackerel

salmon

trout

tuna

If you are unable, or unwilling, to eat oily fish your DOCTOR may recommend that you take an omega-3 food supplement.

Never take a food supplement without first consulting your DOCTOR. Some supplements, such as beta-carotene, could be potentially harmful.

It is also recommended you eat a Mediterranean-style diet. This means eating more bread, fruit, vegetables and fish and less meat. Replace butter and cheese with products based on vegetable and plant oil, such as olive oil.

For more dietary information and advice, see changing your diet after a heart attack.

Smoking

If you smoke, it is strongly recommended you quit as soon as possible. The NHS Smokefree website can provide you with support and advice.

Your DOCTOR will also be able to recommend and prescribe medication that can help you give up. See treatment for quitting smoking for more information.

Alcohol

If you drink alcohol, do not exceed the recommended daily limits (no more than three to four units a day for men, and two to three units a day for women). A unit of alcohol is roughly half a pint of normal strength lager, a small glass of wine, or a single measure (25ml) of spirits.

Regularly exceeding the recommended alcohol limits will raise your blood pressure and cholesterol level, increasing your risk of another heart attack.

Avoid binge drinking (drinking more than three alcoholic drinks in one to two hours). Binge drinking can cause a sudden and large rise in your blood pressure, which could be potentially dangerous.

Research has found that people who have had heart attacks and continue to binge drink are twice as likely to die of a serious health condition, such as another heart attack or stroke, compared with people who moderate their drinking after having a heart attack.

Contact your DOCTOR if you find it difficult to moderate your drinking. Counselling services and medications can help you reduce your alcohol intake. See treatment for alcohol misuse for more information.

Weight management

If you are overweight or obese, it is recommended you lose weight and then maintain a healthy weight using a combination of exercise and a calorie-controlled diet.

Regular physical activity

Once you have made a sufficient physical recovery from the effects of the heart attack (see cardiac rehabilitation, below, for more information about how long this usually takes), it is recommended you do regular physical activity.

Adults should do at least 150 minutes (two and-a-half hours) of moderate-intensity aerobic activity (such as cycling or fast walking) every week.

The level of activity should be strenuous enough to leave you slightly breathless.

If you find it difficult to achieve 150 minutes of activity a week, start at a level that you feel comfortable with (for example, 5-10 minutes of light exercise a day) and gradually increase the duration and intensity of your activity as your fitness begins to improve.

Medication

There are currently four types of medication widely used to reduce the risks of heart attacks.

These are:

angiotensin-converting enzyme (ACE) inhibitors

anti-platelets

beta-blockers

statins

ACE inhibitors

ACE inhibitors are often used to lower blood pressure. They block the actions of some of the hormones that help regulate blood pressure. By stopping these hormones from working, the medicine helps reduce the amount of water in your blood and also widens your arteries, both of which will reduce your blood pressure.

ACE inhibitors have been known to reduce the supply of blood to the kidneys, which can reduce their efficiency. Therefore, blood and urine tests may be carried out before you start taking ACE inhibitors to make sure that there are no pre-existing problems with your kidneys.

Annual blood and urine tests may be required if you continue to use ACE inhibitors.

The side effects of ACE inhibitors can include:

dizziness

tiredness or weakness

headaches

a persistent, dry cough

Most of these should pass within a few days, although some people continue to have a dry cough.

If ACE inhibitors are taken with other forms of medication, including over-the-counter medicines, they can cause unpredictable effects.

Therefore, check with your DOCTOR or pharmacist before taking anything in combination with ACE inhibitors.

It is usually recommended that you begin taking ACE inhibitors immediately after having a heart attack and, in most cases, continue taking them indefinitely. In some individuals who prove intolerant of ACE inhibitors, a related alternative medication, an angiotensin receptor blocker (ARB), may be prescribed.

Anti-platelets

Anti-platelets are a type of medication that can help prevent blood clots. They work by reducing the 'stickiness' of platelets. Platelets are tiny particles in the blood that help it to clot.

It is usually recommended you take low-dose aspirin, which has blood-thinning properties as well as being a painkiller.

You may also be given an additional anti-platelet medication such as clopidogrel, prasugrel or ticagrelor. These can also be used if you are allergic to aspirin.

Side effects can include:

diarrhoea

bruising or bleeding

breathlessness

abdominal pain

indigestion

heartburn

As with ACE inhibitors, treatment with anti-platelets usually begins immediately after a heart attack. The amount of time for which you are prescribed these medications can be anywhere between 4 weeks and 12 months, and depends on the type of heart attack you have had and the other treatment you have received.

It is usually recommended you take aspirin indefinitely. If you experience troublesome side effects due to aspirin you should contact your DOCTOR for advice. But do not suddenly stop taking the aspirin as this could increase your risk of another heart attack.

You may occasionally also be put on another blood thinning medication, warfarin. This is usually only if you have remained in an irregular heart rhythm (atrial fibrillation) or have sustained severe damage to your heart.

Excessive bleeding is the most serious side effect of warfarin. Seek immediate medical attention and have an urgent blood test if you experience any of the following side effects:

passing blood in your urine or faeces (stools or ‘poo’)

passing black faeces

severe bruising

prolonged nosebleeds (that last longer than 10 minutes)

blood in your vomit

coughing up blood

unusual headaches

in women, heavy or increased bleeding during your period or any other bleeding from the vagina

Immediate medical attention must also be sought if you:

are involved in major trauma (an accident)

experience a significant blow to the head

are unable to stop any bleeding

Beta-blockers

Beta-blockers are a type of medication used to protect the heart from further damage after a heart attack. They help relax the heart's muscles so the heart beats slower and the blood pressure drops, both of which will help reduce the strain on your heart.

It is usually recommended that you begin treatment with beta-blockers as soon as your condition stabilises and continue taking them indefinitely.

Fairly common side effects of beta-blockers include:

tiredness

cold hands and feet

slow heartbeat

diarrhoea

feeling sick

Less common side effects include:

sleep disturbances

nightmares

inability to obtain or maintain an erection (erectile dysfunction or 'impotence')

Beta-blockers can also interact with other medicines, causing possible adverse side effects.

Therefore, check with your DOCTOR or pharmacist before taking other medicines, including over-the-counter medication, in combination with beta-blockers.

Statins

Statins are a type of medication used to lower your blood cholesterol level. This will help prevent further damage to your coronary arteries and should reduce the risk of another heart attack.

Statins block the effects of an enzyme in your liver called HMG-CoA reductase, which is used to make cholesterol.

Statins sometimes have mild side effects, including:

constipation

diarrhoea

headaches

abdominal pain

Occasionally, statins can cause muscle pain, weakness and tenderness. Contact your DOCTOR if you experience these symptoms as your dosage may need to be adjusted.

It is usually recommended that you take statins indefinitely.

Getting help

Everyone who experiences a heart attack will face different problems and challenges, and any guidance or advice you receive will be tailored to your needs.

There are many local and national cardiac support groups where you can meet people who have been through a similar experience.

Preventing a heart attack

Making lifestyle changes is the most effective way to prevent having a heart attack (or having another heart attack).

There are three main steps you can take to prevent heart attacks (as well as strokes):

eat a healthy, balanced diet

avoid smoking

try to keep your blood pressure at a healthy level

Diet

Eating an unhealthy diet high in fat will make your atherosclerosis (hardening of the arteries) worse and increase your risk of heart attack.

Continuing to eat high fat foods will cause more fatty plaques to build-up in your arteries. This is because fatty foods contain cholesterol.

There are two main types of cholesterol:

low-density lipoprotein (LDL) – is mostly made up of fat plus a small amount of protein; this type of cholesterol can block your arteries so it is often referred to as ‘bad cholesterol’

high-density lipoprotein (HDL) – is mostly made up of protein plus a small amount of fat; this type of cholesterol can reduce deposits in your arteries so is often referred to as ‘good cholesterol’

There are also two types of fat, saturated and unsaturated. Avoid foods containing high levels of saturated fat because they increase levels of bad cholesterol in your blood.

Foods high in saturated fat include:

meat pies

sausages and fatty cuts of meat

butter

ghee (a type of butter often used in Indian cooking)

lard

cream

hard cheese

cakes and biscuits

foods that contain coconut or palm oil

Eating a small amount of unsaturated fat will increase the level of good cholesterol and help reduce any blockage in your arteries. Foods high in unsaturated fat include:

oily fish

avocados

nuts and seeds

sunflower, rapeseed and olive oil

Smoking

Smoking is a major risk factor for heart attacks because it causes atherosclerosis and raises blood pressure.

High blood pressure

Persistent high blood pressure can put your arteries and heart under extra strain, increasing your risk of heart attack.

High blood pressure can often be reduced by a healthy diet, moderating your intake of alcohol, maintaining a healthy weight, and taking regular exercise.

Diet

The dietary advice above also applies if you have high blood pressure. In addition, cut down on the amount of salt in your food and eat plenty of fruit and vegetables.

Salt raises your blood pressure. The more salt you eat, the higher your blood pressure. You should aim to eat less than 6g (0.2oz) of salt a day, which is about a teaspoonful. Find out more about how to cut down on salt.

Eating a low-fat diet that includes lots of fibre, such as wholegrain rice, bread and pasta, and plenty of fruit and vegetables, has been proven to help lower blood pressure. Fruit and vegetables are full of vitamins, minerals and fibre and help keep your body in good condition.

You should aim to eat five 80g portions of fruit and vegetables every day.

Alcohol

Regularly drinking alcohol above will raise your blood pressure.

Therefore, staying within the recommended levels is the best way to reduce your risk of developing high blood pressure. The recommended limits for alcohol consumption are:

three to four units a day for men

two to three units a day for women

Find out how many units are in your favourite tipple, track your drinking over time and get tips on cutting down.

Alcohol is also high in calories, so you will gain weight if you drink regularly. Being overweight will also increase your blood pressure. Find out how many calories are in popular drinks.

Weight

Being overweight forces your heart to work harder to pump blood around your body which can raise your blood pressure. Find out if you need to lose weight with the BMI healthy weight calculator.

If you do need to shed some weight, it is worth remembering that just losing a few pounds will make a big difference to your blood pressure and overall health. Get tips on losing weight safely.

Exercise

Being active and taking regular exercise will lower your blood pressure by keeping your heart and blood vessels in good condition. Regular exercise can also help you lose weight which will help lower your blood pressure.

Low-impact activities such as walking, swimming and cycling are recommended. More strenuous activities, such as playing football and squash, may not be recommended. Check with the doctor in charge of your care.

Find out more about walking for health, swimming for fitness and the benefits of cycling.