

Stroke

A stroke is a serious medical condition that occurs when the blood supply to part of the brain is cut off.

Strokes are a medical emergency and prompt treatment is essential because the sooner a person receives treatment for a stroke, the less damage is likely to happen.

If you suspect that you or someone else is having a stroke, phone immediately and ask for an ambulance.

The main symptoms of stroke can be remembered with the word FAST: Face-Arms-Speech-Time.

- **Face** – the face may have dropped on one side, the person may not be able to smile or their mouth or eye may have dropped
- **Arms** – the person with suspected stroke may not be able to lift one or both arms and keep them there because of arm weakness or numbness
- **Speech** – their speech may be slurred or garbled, or the person may not be able to talk at all despite appearing to be awake
- **Time** – it is time to dial immediately if you see any of these signs or symptoms

Read more about the [symptoms of stroke](#).

If you suspect that you or someone else is having a stroke, phone immediately and ask for an ambulance.

Even if the symptoms of a stroke disappear while you are waiting for the ambulance to arrive, you or the person having the stroke should still go to hospital for an assessment. Symptoms that disappear may mean you have had a transient ischaemic attack (TIA) and you could be at risk of having a full stroke at a later stage.

After an initial assessment, you may need to be admitted to hospital to receive a more in-depth assessment and, if necessary, for specialist treatment to begin.

Recognising the signs and symptoms of a stroke

The signs and symptoms of a stroke vary from person to person but usually begin suddenly. As different parts of your brain control different parts of your body, your symptoms will depend upon the part of your brain affected and the extent of the damage.

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It is important for everyone to be aware of these signs and symptoms. If you live with or care for somebody in a high-risk group, such as someone who is elderly or has diabetes or high blood pressure, being aware of the symptoms is even more important.

Symptoms in the FAST test identify about nine out of 10 strokes.

Other signs and symptoms may include:

- numbness or weakness resulting in complete paralysis of one side of the body
- sudden loss of vision
- dizziness
- communication problems, difficulty talking and understanding what others are saying
- problems with balance and coordination
- difficulty swallowing
- sudden and severe headache, unlike any the person has had before, especially if associated with neck stiffness
- blacking out (in severe cases)

'Mini-stroke' or transient ischaemic attack (TIA)

The symptoms of a [transient ischaemic attack \(TIA\)](#) are the same as a stroke, last from between a few minutes to a few hours, then completely disappear. However, never ignore a TIA as it is a serious warning sign there is a problem with the blood supply to your brain.

There is about a one in 10 chance those who have a TIA will experience a full stroke during the four weeks following the TIA. If you have had a TIA, you should contact your DOCTOR, local hospital or out-of-hours service, as soon as possible.

Why do strokes happen?

Like all organs, the brain needs the oxygen and nutrients provided by blood to function properly. If the supply of blood is restricted or stopped, brain cells begin to die. This can lead to brain damage and possibly death.

Types of stroke

There are two main causes of strokes:

- ischaemic (accounting for over 80% of all cases) – the blood supply is stopped due to a blood clot
- haemorrhagic – a weakened blood vessel supplying the brain bursts and causes brain damage

There is also a related condition known as a [transient ischaemic attack \(TIA\)](#), where the supply of blood to the brain is temporarily interrupted, causing a 'mini-stroke'. TIAs should be treated seriously as they are often a warning sign that a stroke is coming.

Who is at risk from stroke?

It is the third largest cause of death, after [heart disease](#) and [cancer](#). The brain damage caused by strokes means that they are the largest cause of adult disability in the UK.

People over 65 years of age are most at risk from having strokes, although 25% of strokes occur in people who are under 65. It is also possible for children to have strokes.

If you are south Asian, African or Caribbean, your risk of stroke is higher. This is partly because of a predisposition (a natural tendency) to developing [diabetes](#) and [heart disease](#), which are two conditions that can cause strokes.

Smoking, being overweight, lack of exercise and a poor diet are also risk factors for stroke. Also, conditions that affect the circulation of the blood, such as [high blood pressure](#), [high cholesterol](#), atrial fibrillation (an irregular heartbeat) and diabetes, increase your risk of having a stroke.

Stroke is a largely preventable condition. Many risks can be reduced by making lifestyle changes.

However, some things that increase the risk of stroke cannot be changed, including:

- **age** – you are more likely to have a stroke if you are over 65 years old, although about a quarter of strokes happen in younger people
- **family history** – if a close relative (parent, grandparent, brother or sister) has had a stroke, your risk is likely to be higher
- **ethnicity** – if you are south Asian, African or Caribbean, your risk of stroke is higher, partly because rates of diabetes and high blood pressure are higher in these groups
- **your medical history** – if you have previously had a stroke, TIA or heart attack, your risk of stroke is higher

Ischaemic strokes

Ischaemic strokes, the most common type of stroke, occur when blood clots block the flow of blood to the brain. Blood clots typically form in areas where the arteries have been narrowed or blocked by fatty cholesterol-containing deposits known as plaques. This narrowing of the arteries is caused by [atherosclerosis](#).

As we get older our arteries become narrower, but certain things can dangerously accelerate the process. These risks include:

- smoking
- [high blood pressure](#) (hypertension)
- [obesity](#)
- [high cholesterol levels](#) (often caused by a high-fat diet, but can result from inherited factors)
- a family history of [heart disease](#) or [diabetes](#)

- excessive alcohol intake (which can also make obesity and high blood pressure worse, as well as causing heart damage and an irregular heartbeat)

Diabetes is also a risk factor, particularly if poorly controlled, as the excess glucose in the blood can damage the arteries.

Another possible cause of ischaemic stroke is an irregular heartbeat ([atrial fibrillation](#)), which can cause blood clots that become lodged in the brain. Atrial fibrillation can be caused by:

- high blood pressure
- coronary artery disease
- mitral valve disease (disease of the heart valve)
- cardiomyopathy (wasting of the heart muscle)
- pericarditis (inflammation of the bag surrounding the heart)
- hyperthyroidism (overactive thyroid gland)
- excessive alcohol intake
- drinking lots of caffeine; for example, tea, coffee and energy drinks

Haemorrhagic strokes

Haemorrhagic strokes (also known as cerebral haemorrhages or intracranial haemorrhages) usually occur when a blood vessel in the brain bursts and bleeds into the brain (intracerebral haemorrhage). In about 5% of cases, the bleeding occurs on the surface of the brain (subarachnoid haemorrhage).

The main cause of haemorrhagic stroke is [high blood pressure](#) (hypertension), which can weaken the arteries in the brain and make them prone to split or rupture.

Things that increase the risk of high blood pressure include:

- being overweight or obese
- drinking excessive amounts of alcohol
- smoking
- a lack of exercise
- stress, which may cause a temporary rise in blood pressure

Another important risk of haemorrhagic stroke is treatment with medicines given to prevent blood clots, such as warfarin.

Haemorrhagic stroke can also occur from the rupture of a balloon-like expansion of a blood vessel (aneurysm) and badly-formed blood vessels in the brain.

A traumatic head injury can also cause bleeding into the brain. In most cases, the cause is obvious, but bleeding into the lining of the brain (subdural haematoma) can occur without any obvious signs of trauma, especially in the elderly. The symptoms and signs can then mimic a stroke.

Treating a stroke

Treatment depends on the type of stroke you have, including which part of the brain was affected and what caused it.

Most often, strokes are treated with medicines. This generally includes drugs to prevent and remove blood clots, reduce blood pressure and reduce cholesterol levels.

In some cases, surgery may be required. This is to clear fatty deposits in your arteries or to repair the damage caused by a haemorrhagic stroke.

Effective treatment of stroke can prevent long-term disability and save lives.

The [National Stroke Strategy](#), published in December 2007, provides a guide to high quality health and social care for those affected by stroke. Stroke experts have set out standards which define good stroke care, including:

- a rapid response to an ambulance call for suspected stroke
- prompt transfer to a hospital providing specialist care
- an urgent brain scan (for example, computerised tomography [CT] or magnetic resonance imaging [MRI]) undertaken as soon as possible
- immediate access to a high quality stroke unit
- early multidisciplinary assessment, including swallowing screening
- stroke specialised rehabilitation
- planned transfer of care from hospital to community and longer term support

The National Institute for Health and Clinical Excellence (NICE) has produced a [quality standard \(PDF, 61Kb\)](#) for stroke that describes the level of care that the NHS is working towards.

If you are concerned about the standard of care provided, speak to your stroke specialist or a member of the stroke team.

Ischaemic strokes hide

Ischaemic strokes can be treated using a 'clot-busting' medicine called alteplase, which dissolves blood clots (thrombolysis). However, alteplase is only effective if started during the first four and a half hours after the onset of the stroke. After that time, the medicine has not been shown to have beneficial effects. Even within this narrow time frame, the quicker alteplase can be started the better the chance of recovery. However, not all patients are suitable for thrombolysis treatment.

You will also be given a regular dose of aspirin (an anti-platelet medication), as this makes the cells in your blood, known as platelets, less sticky, reducing the chances of further blood clots occurring. If you are allergic to aspirin, other anti-platelet medicines are available.

Anticoagulants

You may also be given an additional medication called an anticoagulant. Like aspirin, anticoagulants prevent blood clots by changing the chemical composition of the blood in a way that prevents clots from occurring. Heparin, warfarin and more recently rivaroxaban are examples of anticoagulants.

Anticoagulants are often prescribed for people who have an irregular heartbeat that can cause blood clots.

Blood pressure

If your blood pressure is too high, you may be given medicines to lower it. Medicines that are commonly used include:

- thiazide diuretics
- angiotensin converting enzyme (ACE) inhibitors
- calcium channel blockers
- beta-blockers
- alpha-blockers

Statins

If the level of cholesterol in your blood is too high, you will be given a medicine known as a statin. Statins reduce the level of cholesterol in your blood by blocking an enzyme (chemical) in the liver that produces cholesterol.

Carotid stenosis

Some ischaemic strokes are caused by a narrowing in the carotid artery, which is an artery in the neck, which takes blood to the brain. The narrowing, known as carotid stenosis, is caused by a build-up of fatty plaques.

If the carotid stenosis is particularly bad, surgery may be used to unblock the artery. This is done using a surgical technique called a carotid endarterectomy. It involves the surgeon making an incision in your neck in order to open up the carotid artery and remove the fatty deposits.

Haemorrhagic strokes

Emergency surgery is often needed to treat haemorrhagic strokes to remove any blood from the brain and repair any burst blood vessels. This is usually done using a surgical procedure known as a craniotomy.

During a craniotomy, a small section of the skull is cut away to allow the surgeon access to the cause of the bleeding. The surgeon will repair any damaged blood vessels and ensure there are no blood clots present that may restrict the blood flow to the brain. After the bleeding has been stopped, the piece of bone removed from the skull is replaced.

Following a craniotomy, the patient may have to be placed on a ventilator. A ventilator is a machine that assists someone with their breathing. It gives the body time to recover by taking over its normal responsibilities, such as breathing, and it will help control any swelling in the brain.

The patient will also be given medicines, such as ACE inhibitors, to lower blood pressure and prevent further strokes from occurring.

Transient ischaemic attack (TIA) hide

The treatment for a TIA involves addressing the risk factors that may have led to it, to try to prevent a bigger, more serious stroke.

If you have a TIA, the treatment you receive will depend on what caused it, but you will typically be given one of the medicines outlined above or a combination of them. So, if high blood pressure and high cholesterol levels put you at risk of having a stroke, you may be given a combination of statins and ACE inhibitors.

If the risk of a stroke is high due to a build-up of fatty plaques in your carotid artery, a carotid endarterectomy may be required.

Life after a stroke

The damage caused by a stroke can be widespread and long-lasting. Some people need to have a long period of rehabilitation before they can recover their former independence, while many will never fully recover.

The process of rehabilitation will be specific to you, and will depend on your symptoms and how severe they are. A team of specialists are available to help, including physiotherapists, psychologists, occupational therapists, speech therapists and specialist nurses and doctors.

The damage that a stroke causes to your brain can impact on many aspects of your life and wellbeing, and depending on your individual circumstances, you may require a number of different treatment and rehabilitation methods.

Can strokes be prevented?

Strokes can usually be prevented through a healthy lifestyle. Eating a [healthy diet](#), taking regular [exercise](#), drinking alcohol in moderation and not smoking will dramatically reduce your risk of having a stroke. Lowering high blood pressure and cholesterol levels with medication also lowers the risk of stroke substantially.