

Understanding NICE guidance

Information for people who use NHS services

Early assessment and treatment of people who have had a stroke or transient ischaemic attack (TIA)

NICE 'clinical guidelines' advise the NHS on caring for people with specific conditions or diseases and the treatments they should receive.

This booklet is about the early care and treatment of adults after a stroke or a transient ischaemic attack (also called a TIA) in the NHS in England and Wales. It explains guidance (advice) from NICE (the National Institute for Health and Clinical Excellence). It is written for adults who have had a stroke or TIA and their families and carers, but it may also be useful for anyone with an interest in these conditions.

The booklet aims to help you understand the care and treatment options that should be available in the NHS. It does not describe stroke and TIA or the tests or treatments for them in detail. If you or someone close to you has had a stroke or TIA, the healthcare team should discuss the care and treatment options with you. There are examples of questions you could ask in this booklet to help you with these discussions. Some sources of further information and support are on page 15. Medical terms printed in **bold type** are explained on pages 13–14.

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The advice in the NICE guideline covers:

- how healthcare professionals should recognise the symptoms of a stroke or transient ischaemic attack (TIA) and make a diagnosis quickly
- when people should have a brain scan and other types of scan
- specialist care for people in the first 2 weeks after a stroke
- drug treatments for people who have had a stroke
- surgery for people who have had a stroke.

It does not specifically look at:

- people who have a type of bleeding in the brain called a subarachnoid haemorrhage
- treatment for any medical conditions (such as high blood pressure) that might have caused a person to have a stroke or TIA
- children and young people aged 16 and under.

Care of people who have had a stroke or TIA

Stroke can have a sudden and dramatic impact on the person and their family, who should be given continuing information and support. The treatment and care of someone who has had a stroke or TIA should take into account their personal needs and preferences where possible. They, and their family and carers, have the right to be fully informed, and decisions should be made in partnership with the healthcare team. To help with this, the healthcare team should give the person (or their family or carer in the case of a person who is unable to communicate) information they can understand and that is relevant to their circumstances.

All healthcare professionals should treat individuals with respect, sensitivity and understanding, and explain stroke and TIA and the treatments for them simply and clearly. The information from the healthcare team should include details of the possible benefits and risks of particular treatments. The person, and/or their family or carers, can ask any questions they want to and can always change their mind as treatment progresses or if their condition or circumstances change.

Treatment and care, and the information given about them, should take account of any religious, ethnic or cultural needs. It should also take into account any additional factors, such as physical or learning disabilities, sight or hearing problems, or difficulties with reading or speaking English. The healthcare team should be able to arrange an interpreter or an advocate (someone who supports a person in putting across their views) if needed.

If people are unable to understand a particular issue or are not able to make decisions for themselves, healthcare professionals should follow the advice that the Department of Health has produced about this. You can find this by going to the Department of Health website (www.dh.gov.uk/consent). Healthcare professionals should also follow the code of practice for the Mental Capacity Act. For more information about this, including details about lasting power of attorney and advance decisions about treatment, visit www.publicguardian.gov.uk

Sometimes a person who has had a stroke needs urgent treatment, and medical staff may not have time to fully discuss what is involved with the person or their family or carers beforehand. In these circumstances, detailed discussions and explanations may have to wait.

If you think that care does not match what is described in this booklet, please talk to a member of the healthcare team.

Stroke and TIA

A stroke occurs when the blood flow to part of the brain is cut off – it is a ‘brain attack’ (in the same way that a heart attack happens when the blood supply to the heart muscle is cut off). Without a blood supply, brain cells can be damaged or destroyed because they may not receive enough oxygen.

The brain controls everything that the body does. This means that a stroke can affect many different body functions, depending on the part of the brain that is involved. The symptoms of stroke can include:

- numbness
- weakness or lack of movement on one side of the body
- slurred speech
- difficulty finding words or understanding speech
- problems with vision
- confusion
- severe headache.

A stroke happens suddenly and the effects are experienced straight away.

This booklet is not a guide to what you should do if you think someone is having or has had a stroke. However, advice from the Department of Health says that if you think that someone has had a stroke, you should dial 999 straight away (see the ‘More information’ section on page 15 for more details).

There are two main types of stroke. The most common type (an **ischaemic stroke**) is when one of the blood vessels leading to or in the brain is blocked. The second type (**haemorrhagic stroke**) is when a blood vessel in the brain bursts, causing bleeding into the brain.

A **transient ischaemic attack (TIA)**, often called a ‘mini-stroke’, happens when the blood supply to part of the brain is interrupted for a short time. The symptoms are the same as for a stroke, but they usually last only a few minutes or hours, and disappear altogether within 24 hours.

The NICE guideline on stroke describes the early treatment that a person who has had a stroke or TIA should receive. These recommendations are based on evidence about best clinical practice.

Finding out what is wrong (making the diagnosis)

The NICE guideline says that anyone who suddenly has symptoms that might be caused by a stroke or TIA should be assessed as soon as possible using a test such as **FAST (Face Arm Speech Test)**. This should happen before they arrive at hospital. A check should be done to rule out low blood sugar (hypoglycaemia) as a cause of the symptoms.

On arrival at A&E or the stroke unit, the diagnosis of a stroke or TIA should be checked using an accepted test such as **ROSIER (Recognition of Stroke in the Emergency Room)**.

Questions about finding out what is wrong (diagnosis)

- Please give me more details about what tests are being done.
- What do these tests involve?
- Where and when will these tests be carried out?
- How long will it take to get the results of these tests?

Specialist early care for people who have had a stroke

Anyone who is suspected of having had a stroke should be admitted to a **specialist acute stroke unit** after assessment.

Brain scan

All people who have had a stroke should have a brain scan. How soon this should happen depends on the person's symptoms. The scan should happen immediately after they are admitted to hospital if any of the reasons in the box below apply to them. (The NICE guideline suggests that 'immediately' means the next available slot, and definitely within 1 hour.) Otherwise the brain scan should be performed as soon as possible, which the NICE guideline says should be within 24 hours of their symptoms starting.

Reasons why a person should have an immediate brain scan

- Their symptoms suggest that they may benefit from treatment to dissolve a blood clot ('**thrombolysis**') or reduce blood clotting.
- They were taking drugs to reduce blood clotting (**anticoagulants**) before the stroke.
- They are prone to bleeding.
- They are unconscious.
- Their symptoms are varying or getting worse for no obvious reason.
- They have increased pressure at the back of their eyes (called 'papilloedema'), a stiff neck or fever.
- They had a very bad headache when the stroke symptoms began.

Some treatments may not be suitable, depending on the person's exact circumstances. If you have questions about the specific treatments and options covered in this booklet, please talk to a member of the healthcare team.

Medication

Thrombolysis

A 'clot-busting' drug called alteplase may be given if the person's brain scan indicates that it might help, and hospital staff have had training for its use in stroke. This treatment is known as **thrombolysis**. Treatment with alteplase must begin within 3 hours of stroke symptoms starting.

Aspirin and anticoagulants

Normally a person who has had a stroke shouldn't be given **anticoagulants** (drugs to reduce blood clotting) unless there is a particular reason for this. However, aspirin should usually be given to people who have had an ischaemic stroke. The table on the next page shows what the NICE guideline says about treatments for different types of stroke and other symptoms.

Considerations	Treatment
Stroke caused by a blood clot (ischaemic stroke)	
The person does not have bleeding in the brain	<ul style="list-style-type: none"> • They should be given aspirin as soon as possible, and definitely within 24 hours of the stroke starting. • They should continue to receive daily aspirin for 2 weeks or until they leave hospital, whichever is sooner. Their specialist should then discuss future treatment with them. • If a person has had indigestion in the past associated with aspirin, a type of drug called a proton pump inhibitor should be offered as well as aspirin. • Anyone who has been shown to be allergic to or intolerant of aspirin should be given another antiplatelet drug instead.
There is a high risk of the person developing a type of blood clot called a venous thromboembolism	<ul style="list-style-type: none"> • They may be given anticoagulants, and should be monitored closely.
The person also has blood clots in their legs (deep vein thrombosis) or lungs (pulmonary embolism)	<ul style="list-style-type: none"> • They should normally be given anticoagulants rather than aspirin.
The person has had a type of stroke called a cerebral venous sinus thrombosis and might also have a bleed in the brain	<ul style="list-style-type: none"> • They should be given anticoagulants unless they have another condition that would make this unsafe.
The person: <ul style="list-style-type: none"> • was taking anticoagulants because they have replacement valves in their heart, <i>and</i> • is at risk of bleeding in the brain 	<ul style="list-style-type: none"> • Their anticoagulant treatment should be stopped. • They should be given aspirin instead. • If it is safe they can start taking anticoagulants again after a week.
The person has atrial fibrillation	<ul style="list-style-type: none"> • They should be given aspirin for 2 weeks before treatment with anticoagulants is considered.
Stroke caused by bleeding in the brain (haemorrhagic stroke)	
The person also has deep vein thrombosis or pulmonary embolism	<ul style="list-style-type: none"> • They should be treated with either anticoagulants or a device called a caval filter.
The person was taking anticoagulants before their stroke	<ul style="list-style-type: none"> • They should have treatment to reverse the effects of the anticoagulants.

Statins

Anyone who was taking a drug called a **statin** before their stroke should continue taking it. However, anyone who wasn't already taking a statin shouldn't be started on one immediately after a stroke.

Questions about treatment

- Why have you decided to offer this particular type of treatment?
- What are the pros and cons of having this treatment?
- What will the treatment involve?
- How will the treatment help? What effect will it have on symptoms? What sort of improvements might be expected?
- How long will it take to have an effect?
- Are there any risks associated with this treatment?
- What are the options for having treatments other than the recommended treatment?
- Is there any written material (like a leaflet) available about the treatment?

Other care

Nutrition and swallowing problems

People often have difficulty swallowing after having a stroke. In some cases, this can lead to problems such as pneumonia. Before a person who has had a stroke is given any food, liquid (including water) or medication by mouth, their swallowing should be checked by a trained healthcare professional.

If someone is unable to swallow, they should be given food and fluids through a tube that is passed through their nose into their stomach. This should happen within 24 hours of being admitted to hospital. Medication should also be given by tube or suppository.

Anyone who has problems with swallowing should be assessed by a specialist, preferably within 24 hours and definitely within 3 days of admission to hospital. If this assessment shows that it is safe, the person should be given food and fluids that they can swallow easily. Further tests may be carried out if they continue to have problems, and they may be referred for advice about their diet.

Anyone who is in hospital after a stroke should be screened when they are admitted and then once a week to make sure that they are not **malnourished**. If necessary, the person should be offered nutritional supplements, feeding through a tube and/or specialist dietary advice.

The healthcare team should also ensure that anyone in hospital after a stroke doesn't become dehydrated.

Blood sugar

The healthcare team should make sure that the person's blood sugar is within the normal range. If they have diabetes, they may need insulin injections and glucose.

Blood pressure

Treatment to lower blood pressure should be given only if a person's blood pressure is very high and they have another serious medical condition. High blood pressure may also be treated if a person is to be given thrombolysis (see page 6).

Moving about

Anyone who has had a stroke should be helped to sit up in bed, and to get out of bed and move around the stroke unit, as soon as they are able to.

If a treatment described in this booklet appears suitable, but it is not available, you should talk to your local Patient Advice and Liaison Service (PALS) in the first instance. If they are not able to help you, they should refer you to your local Independent Complaints Advocacy Service.

Surgery after stroke

A small number of people who have had a stroke may need an operation to help them recover.

If someone has bleeding in the brain and their symptoms get worse, their specialist should refer them for an immediate brain scan.

A person may be offered an operation if:

- they were fit before their stroke *and*
- their stroke was caused by bleeding in the brain *and*
- there is increased pressure in their brain because of a condition called **hydrocephalus**.

Sometimes a blockage in a blood vessel called the **middle cerebral artery** can lead to swelling of the brain. A person with this condition may be offered an operation called a **decompressive hemicraniectomy** if all of the following apply to them:

- they are aged 60 or younger
- their symptoms are classed as severe
- their level of consciousness falls significantly
- a brain scan shows that a large part of the brain that receives blood from the middle cerebral artery has been affected by the blockage.

If this type of operation is needed, the person should be referred within 24 hours of their symptoms starting and have the operation within 48 hours.

Treatment after a transient ischaemic attack (TIA)

Stroke-like symptoms that disappear quickly could have been caused by a TIA. A TIA should always be treated as an emergency because it might indicate a greater risk of a major stroke in the near future. Anyone who has had stroke symptoms that lasted a short time should seek urgent medical advice.

The NICE guideline says that risk of future stroke in someone who has had a TIA should be assessed as soon as possible using a scale that takes into account age, blood pressure, and type of symptoms and how long they lasted (**ABCD² score**). Someone has a high risk of stroke in the near future if they have an ABCD² score of 4 or above. A person who has had two or more TIAs in a week is also at high risk.

Anyone who is at high risk of stroke should be started immediately on daily treatment with aspirin. They should also see a stroke specialist within 24 hours of when their symptoms started. If the specialist is unsure which area of the brain was affected by the TIA, the person should also have an urgent brain scan. (The NICE guideline suggests that 'urgent' means within 24 hours of the symptoms starting.) This will usually be a type of scan called an **MRI (magnetic resonance imaging) scan**, unless this is not suitable, in which case a **CT (computed tomography) scan** should be offered.

Anyone at lower risk of stroke should also be started on daily aspirin immediately. They should be assessed by a specialist as soon as possible, and definitely within a week. Again, if the specialist is unsure which area of the brain was affected by the TIA, the person should have a brain scan. The NICE guideline suggests that this should happen within a week of symptoms starting.

The healthcare team should talk to anyone who has had a TIA about medication and making changes to their lifestyle to reduce the risk of having a stroke. Suggested lifestyle changes are given on the Department of Health website (see the 'More information' section on page 15 for more details).

Further tests for people who have had a TIA or minor stroke

If the stroke specialist thinks that a TIA or **minor stroke** has been caused by a blockage of a blood vessel called the **carotid artery**, a neck scan should be done. This should happen within a week of the person's stroke symptoms starting.

If the scan shows significant narrowing of the carotid artery, an operation called a **carotid endarterectomy** should be done to remove the blockage. This should happen within 2 weeks of the stroke or TIA, provided that the person's symptoms have stabilised.

Whether or not surgery is needed, anyone with narrowing of the carotid artery should be given **antiplatelet drugs** to reduce blood clotting. They should also be offered advice and/or medication for controlling blood pressure and reducing cholesterol.

Glossary

ABCD² score: a score that predicts the risk of a person having a stroke within a few days of a TIA.

anticoagulant: a type of drug that reduces blood clotting. Examples include warfarin and heparin.

antiplatelet drug: a type of drug that helps prevent the formation of blood clots by affecting the function of blood cells called platelets. Examples include aspirin, dipyridamole and clopidogrel.

atrial fibrillation: a condition that affects the heart, causing an irregular and often fast heartbeat.

carotid artery: the main blood vessel in the neck that carries blood to the brain.

carotid endarterectomy: an operation to remove a blockage in the carotid artery.

caval filter: a device that is implanted in a blood vessel called the inferior vena cava in order to prevent the formation of a pulmonary embolism.

cerebral venous sinus thrombosis: a rare type of stroke that is caused by a blood clot in blood vessels that remove blood from the brain.

CT (computed tomography) scan: a type of three-dimensional scan that uses X-rays to give images of body tissues.

decompressive hemicraniectomy: an operation carried out to reduce pressure in the brain.

deep vein thrombosis (DVT): a blood clot that forms in a vein (usually in the leg).

FAST (Face Arm Speech Test): a test involving three simple checks (for facial weakness, arm weakness and speech problems) that indicate whether a person has had a stroke or TIA.

haemorrhagic stroke: a type of stroke caused when a blood vessel bursts, causing bleeding into the brain.

hydrocephalus: a condition that occurs when there is too much fluid in the cavities of the brain.

ischaemic stroke: a type of stroke that happens when a clot blocks an artery that carries blood to the brain.

malnourished: a person can become malnourished if their diet doesn't provide enough nutrients, such as calories, protein and vitamins, to keep them healthy.

middle cerebral artery: one of the three major blood vessels that supplies blood to the brain.

minor stroke: a type of stroke that doesn't result in a permanent disability.

MRI (magnetic resonance imaging) scan: a type of scan that uses a strong magnetic field and radio waves to produce detailed pictures of the inside of the body.

proton pump inhibitor: a type of drug that treats indigestion by reducing the amount of acid produced in the stomach.

pulmonary embolism: a blockage of the blood vessels of the lung, usually formed when a blood clot in another part of the body becomes dislodged and travels to the lung.

ROSIER (Recognition of Stroke in the Emergency Room): a test used by healthcare professionals in A&E to confirm that someone has had a stroke. Factors assessed include problems with vision and speech, loss of consciousness and face, arm and/or leg weakness.

specialist acute stroke unit: a unit in a hospital that contains a team of doctors, nurses, physiotherapists and other healthcare professionals who are experts in the care of people who have recently had a stroke.

statin: a type of drug used to lower cholesterol levels.

thrombolysis: treatment with a drug that breaks down blood clots.

transient ischaemic attack (TIA): sometimes called a 'mini-stroke', a TIA happens when the brain's blood supply is interrupted for a short time. Symptoms disappear within 24 hours.

venous thromboembolism: a blood clot that travels to a different part of the body, where it can cause problems. Examples include deep vein thrombosis and pulmonary embolism.

More information

The organisations below can provide more information and support for people who have had a stroke or TIA, and their families and carers. Please note that NICE is not responsible for the quality or accuracy of any information or advice provided by these organisations.

- The Stroke Association, 0845 3033 100, www.stroke.org.uk
- Northern Ireland Chest, Heart and Stroke Association, 0845 7697 299, www.nichsa.com
- Different Strokes, 0845 130 7172, www.differentstrokes.co.uk

NHS Direct online (www.nhsdirect.nhs.uk) may be a good place to find out more. There is also information about stroke and TIA on the Department of Health website – see ‘What you need to know about strokes’ at www.dh.gov.uk/en/Healthcare/NationalServiceFrameworks/Stroke/DH_4127817

Your local Patient Advice and Liaison Service (PALS) may also be able to give you further information and support.

About NICE

NICE produces guidance (advice) for the NHS about preventing, diagnosing and treating different medical conditions. The guidance is written by independent experts including healthcare professionals and people representing patients and carers. They consider the best available evidence on the condition and treatments, the views of patients and carers and the experiences of doctors, nurses and other healthcare professionals working in the field. Staff working in the NHS are expected to follow this guidance.

To find out more about NICE, its work and how it reaches decisions, see www.nice.org.uk/aboutguidance

This booklet and other versions of this guideline aimed at healthcare professionals are available at www.nice.org.uk/CG068

You can order printed copies of this booklet from NICE publications (phone 0845 003 7783 or email publications@nice.org.uk and quote reference N1622).

We encourage NHS and voluntary sector organisations to use text from this booklet in their own information about stroke and TIA.