Stroke: diagnosis and initial management of acute stroke and transient ischaemic attack (TIA)

NICE guideline
Draft for consultation, January 2008

If you wish to comment on this version of the guideline, please be aware that all the supporting information and evidence is contained in the full version.
Contents

Introduction ...................................................................................................... 4
Patient-centred care......................................................................................... 6
Key priorities for implementation...................................................................... 7
1  Guidance .................................................................................................. 8
   1.1 The rapid recognition of symptoms and diagnosis ............................. 8
   1.2 Imaging in people with TIA or non-disabling stroke ....................... 9
   1.3 Specialist care for people with acute stroke ................................ 10
   1.4 Pharmacological treatments for people with acute stroke ............ 11
   1.5 Maintenance or restoration of homeostasis .................................. 14
   1.6 Hydration and nutrition .................................................................. 15
   1.7 Mobilisation ................................................................................... 17
   1.8 Avoidance of complications ......................................................... 17
   1.9 Surgery for people with acute stroke ........................................... 17
2  Notes on the scope of the guidance ....................................................... 19
3  Implementation ....................................................................................... 20
4  Research recommendations .................................................................. 20
   4.1 Aspiration pneumonia ................................................................. 20
   4.2 Aspirin treatment and anticoagulant treatment in acute ischaemic
       stroke ............................................................................................... 21
   4.3 Aspirin treatment in acute ischaemic stroke ................................ 22
   4.4 Mobilisation .................................................................................. 22
   4.5 Blood pressure control .................................................................. 22
5  Other versions of this guideline .............................................................. 23
   5.1 Full guideline ................................................................................ 23
   5.2 Quick reference guide ................................................................... 23
   5.3 ‘Understanding NICE guidance’ ................................................... 24
6  Related NICE guidance .......................................................................... 24
7  Updating the guideline ............................................................................ 24
Appendix A: The Guideline Development Group ........................................... 26
Appendix B: The Guideline Review Panel ..................................................... 28
Appendix C: The algorithms (provided as separate files)...............................29
Introduction

Stroke is a treatable disease. Over the last two decades a growing body of evidence has overturned the traditional perception that stroke is simply a consequence of aging which inevitably results in death or severe disability. Evidence is accumulating for more effective primary and secondary prevention strategies, better recognition of people at highest risk and thus in need of most active intervention, effective acute interventions, and an understanding of the processes of care that contribute to better outcome. In addition, there is now good evidence to support interventions and care processes in stroke rehabilitation. In the UK, the National Sentinel Stroke Audits have documented changes in secondary care provision over the last 10 years, with increasing numbers of patients treated in stroke units, more evidence-based practice, and reductions in mortality and length of stay. In order for evidence from research studies to improve outcomes for patients, it needs to be put into practice. National guidelines provide clinicians, managers and service users with summaries of evidence and recommendations for clinical practice. Implementation of guidelines in practice, supported by regular audit, improves processes of care and clinical outcome.

This guideline covers the evidence for interventions in the acute stage of a stroke or transient ischaemic attack (TIA). Most of the evidence considered relates to interventions in the first 48 hours after onset of symptoms, although in some cases this period can be up to 2 weeks. This guideline is a stand-alone document, but is designed to be read alongside the Intercollegiate Working Party (ICWP) guideline on stroke rehabilitation, which considers evidence for interventions from the acute stage into rehabilitation and life after stroke.

Definitions

Stroke is defined by the World Health Organisation\textsuperscript{1} as “a clinical syndrome consisting of rapidly developing clinical signs of focal (or global in case of coma) disturbance of cerebral function lasting more than 24 hours or leading

to death with no apparent cause other than a vascular origin”. A transient ischaemic attack (TIA) is defined as stroke symptoms and signs that resolve within 24 hours.

Incidence

Stroke is a major health problem in the UK. It accounted for over 56,000 deaths in England and Wales in 1999, which represents 11% of all deaths\(^2\). The majority of people survive a first stroke, often with significant morbidity. Approximately 110,000 people suffer a first or recurrent stroke and a further 20,000 people suffer a TIA each year in England. More than 900,000 people in England are living with the effects of stroke, with half of these being dependent on other people for help with everyday activities\(^3\).

Health and resource burden

Stroke is estimated to cost the economy in England around £7 billion per year, comprising direct costs to the NHS of £2.8 billion, informal care costs of £2.4 billion and costs to the economy of lost productivity and disability of £1.8 billion\(^3\). Until recently, stroke has not been perceived as a high priority within the NHS. However, following the publication of the National Audit Office report in 2005, a National Stroke Strategy was developed (2007)\(^4\) which outlines an ambition for stroke including all aspects of care from emergency response to life after stroke.

Drugs

The guideline will assume that prescribers will use a drug’s summary of product characteristics to inform their decisions for individual patients.

---


Patient-centred care

This guideline offers best practice advice on the care of people with acute stroke or TIA.

Treatment and care should take into account patients’ needs and preferences. People with acute stroke or TIA should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If patients do not have the capacity to make decisions, healthcare professionals should follow the Department of Health guidelines – ‘Reference guide to consent for examination or treatment’ (2001) (available from www.dh.gov.uk). Healthcare professionals should also follow a code of practice accompanying the Mental Capacity Act (summary available from www.dca.gov.uk/menincap/bill-summary.htm).

Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient’s needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.

If the patient agrees, families and carers should have the opportunity to be involved in decisions about treatment and care.

Families and carers should also be given the information and support they need.
Key priorities for implementation

The rapid recognition of symptoms and diagnosis

- In people with sudden onset of neurological symptoms a validated tool, such as FAST (Face Arm Speech Test), should be used to screen for a diagnosis of stroke or TIA. (1.1.1.1)

- People with a suspected TIA who are at high risk of stroke (e.g. an ABCD² score of 4 or above) should receive:
  - immediate initiation of aspirin
  - specialist assessment within 24 hours of onset of symptoms
  - commencement of secondary prevention as soon as the diagnosis is confirmed. (1.1.2.2)

Specialist care for people with acute stroke

- All people with suspected stroke should be admitted directly to a specialist acute stroke unit. (1.3.1.1)

- Brain imaging should be performed immediately (ideally the next slot and definitely within 1 hour, whichever is sooner) for people with acute stroke who have:
  - indications for thrombolysis or early anticoagulation, or
  - been taking anticoagulant treatment, or
  - a known bleeding tendency, or
  - a depressed level of consciousness, or
  - unexplained progressive or fluctuating symptoms, or
  - papilloedema, neck stiffness or fever, or
  - severe headache at onset of stroke. (1.3.2.1)

Hydration and nutrition

- On admission, people with acute stroke should have their swallowing screened by an appropriately trained healthcare professional before being given any oral foods, fluid or medication. (1.6.2.1)
1 Guidance

The following guidance is based on the best available evidence. The full guideline ([add hyperlink]) gives details of the methods and the evidence used to develop the guidance.

1.1 The rapid recognition of symptoms and diagnosis

1.1.1 Pre-hospital health professional checklists for the prompt recognition of symptoms of TIA and stroke

1.1.1.1 In people with sudden onset of neurological symptoms a validated tool, such as FAST (Face Arm Speech Test), should be used to screen for a diagnosis of stroke or TIA.

1.1.1.2 In people with sudden onset of neurological symptoms, hypoglycaemia should be excluded.

1.1.1.3 People who are admitted to A&E with a suspected stroke or TIA should have the diagnosis established rapidly using a validated tool, such as ROSIER.

1.1.2 Early versus late assessment of people with TIA, and identifying those at high risk of stroke

1.1.2.1 People with a suspected TIA should be assessed for their risk of subsequent stroke using a validated scoring system, such as ABCD².

1.1.2.2 People with a suspected TIA who are at high risk of stroke (e.g. an ABCD² score of 4 or above) should receive:

- immediate initiation of aspirin
- specialist assessment within 24 hours of onset of symptoms
- commencement of secondary prevention as soon as the diagnosis is confirmed.
1.1.2.3 People with a suspected TIA who are at low risk of stroke (e.g. an ABCD² score of less than 4) should receive:

- immediate initiation of aspirin
- specialist assessment as soon as possible, but definitely within 1 week of onset of symptoms
- commencement of secondary prevention as soon as the diagnosis is confirmed.

1.2 Imaging in people with TIA or non-disabling stroke

1.2.1 What type of brain imaging should be used in people with a suspected TIA?

1.2.1.1 People with a suspected TIA who require brain imaging (i.e. those in whom vascular territory or pathology is uncertain) should undergo MR with DWI (magnetic resonance with diffusion-weighted imaging) except where contraindicated\(^5\), in which case CT (computed tomography) should be used.

1.2.2 Which people with a suspected TIA should be referred for urgent brain imaging?

1.2.2.1 People with a suspected TIA whose symptoms and signs have completely resolved should be assessed by a specialist before a decision on brain imaging is made.

1.2.2.2 People with a suspected TIA at high risk of stroke (e.g. an ABCD² score of 4 or greater) in whom vascular territory or pathology is uncertain should undergo urgent brain imaging (preferably MR with DWI) within 24 hours of onset of symptoms.

1.2.2.3 People with a suspected TIA at low risk of stroke (e.g. an ABCD² score of less than 4) in whom vascular territory or pathology is

\(^5\) Contraindications to MR scanning include people who have any of the following: a pacemaker, shrapnel, some brain aneurysm clips and heart valves, metal fragments in eyes, severe claustrophobia.
uncertain should undergo brain imaging (preferably MR with DWI) within 1 week of onset of symptoms.

1.2.3 Early carotid imaging in people with acute non-disabling stroke or TIA

1.2.3.1 All people with suspected non-disabling stroke or TIA and who are candidates for carotid intervention should have carotid imaging within 1 week of onset of symptoms.

1.2.4 Urgent carotid endarterectomy and carotid stenting in people with carotid stenosis

1.2.4.1 People with acute non-disabling stroke or TIA who have symptomatic carotid stenosis of 50–99% according to the NASCET criteria, or 70–99% according to the ECST criteria, should:

- be assessed and referred for carotid endarterectomy within 1 week of onset of symptoms
- receive treatment within a maximum of 2 weeks of onset of symptoms.

1.2.4.2 People with acute non-disabling stroke or TIA who have symptomatic carotid stenosis of less than 50% according to the NASCET criteria, or less than 70% according to the ECST criteria, should:

- not undergo surgery
- receive best medical treatment (e.g. control of blood pressure, antiplatelet drugs [aspirin and dipyridamole] and cholesterol lowering through diet and drugs).

1.3 Specialist care for people with acute stroke

1.3.1 Specialist stroke units

1.3.1.1 All people with suspected stroke should be admitted directly to a specialist acute stroke unit.
1.3.2  **Brain imaging in people with acute stroke**

1.3.2.1  Brain imaging should be performed immediately (ideally the next slot and definitely within 1 hour, whichever is sooner) for people with acute stroke who have:

- indications for thrombolysis or early anticoagulation, or
- been taking anticoagulant treatment, or
- a known bleeding tendency, or
- a depressed level of consciousness, or
- unexplained progressive or fluctuating symptoms, or
- papilloedema, neck stiffness or fever, or
- severe headache at onset of stroke.

1.3.2.2  For all people with acute stroke without indications for immediate brain imaging, scanning should be performed as soon as possible (at most within 24 hours of onset of symptoms).

1.4  **Pharmacological treatments for people with acute stroke**

1.4.1  **Aspirin and anticoagulant treatment in people with acute ischaemic stroke**

1.4.1.1  All people presenting with acute stroke who have had a diagnosis of primary intracerebral haemorrhage excluded by brain imaging should be given:

- aspirin 150–300 mg orally if they are not dysphagic.
- aspirin rectally or by enteral tube if they are dysphagic.

And thereafter

- aspirin 150–300 mg should be continued until 2 weeks post-stroke, at which time definitive long-term antithrombotic treatment should be prescribed.
1.4.1.2 Any person with acute ischaemic stroke who reports previous
dyspepsia associated with aspirin should be given a proton pump
inhibitor in addition to aspirin.

1.4.1.3 Any person with acute ischaemic stroke who is allergic to or
genuinely intolerant of aspirin should be given an alternative
antiplatelet agent (e.g. clopidogrel).\(^6\)

1.4.1.4 Anticoagulation should not be used routinely for the treatment of
acute ischaemic stroke.

1.4.2 Antiplatelet and anticoagulant treatment in people with
acute venous stroke

1.4.2.1 People diagnosed with cerebral venous sinus thrombosis (including
those with secondary cerebral haemorrhage) should be treated with
full-dose anticoagulation (INR 2–3) unless there are comorbidities
that preclude its use.

1.4.3 Antiplatelet and anticoagulant treatment in people with
stroke due to arterial dissection

1.4.3.1 People with stroke secondary to acute arterial dissection should be
treated with either anticoagulants or antiplatelet agents, preferably
as part of a randomised controlled clinical trial.

1.4.4 Antiplatelet and anticoagulant treatment in people with
acute stroke due to antiphospholipid syndrome

1.4.4.1 People with antiphospholipid syndrome who have an acute
ischaemic stroke should be managed in the same way as people
without antiphospholipid syndrome.\(^7\)

---

\(^6\) Aspirin intolerance is defined as either of the following:
- proven hypersensitivity to aspirin-containing medicines
- history of severe dyspepsia induced by low-dose aspirin.

\(^7\) There was insufficient evidence to support any recommendation regarding the safety and efficacy of
anticoagulants versus antiplatelets for the treatment of antiphospholipid syndrome in people with acute
ischaemic stroke.
1.4.5 Thrombolysis in people with acute ischaemic stroke

1.4.5.1 Alteplase is recommended for the treatment of acute ischaemic stroke when used by physicians trained and experienced in the management of acute stroke. It should only be administered in centres with facilities that enable it to be used in full accordance with its marketing authorisation\(^8\).

1.4.5.2 Alteplase should only be administered within a well organised stroke service with:

- staff trained in the delivery of thrombolysis and monitoring for post-thrombolysis complications
- level 1 and level 2 nursing care staff trained in acute stroke and thrombolysis
- immediate access to imaging and re-imaging, and staff appropriately trained to interpret the images.

1.4.5.3 Protocols should be in place for the delivery and management of thrombolysis, including post-thrombolysis complications.

1.4.6 Statin treatment in people with acute stroke

1.4.6.1 Immediate initiation of lipid lowering agents is not recommended following acute stroke.

1.4.6.2 People with acute stroke who are already receiving statins should continue their statin treatment.

1.4.6.3 People with acute ischaemic stroke and a total cholesterol of 3.5 mmol/l or greater should be initiated on statins prior to discharge.

---

\(^8\) This recommendation is from ‘Alteplase for the treatment of acute ischaemic stroke’ (NICE technology appraisal guidance 122).
1.4.7  **Reversal of anticoagulation in people with haemorrhagic stroke**

1.4.7.1 People admitted with a primary intracerebral haemorrhage and who are receiving anticoagulation therapy should have their clotting levels returned to normal as soon as possible, by reversing the effects of the anticoagulation treatment.

1.4.8  **Anticoagulation for other comorbidities in people with acute stroke**

1.4.8.1 People admitted with disabling ischaemic stroke who are in atrial fibrillation should be treated with aspirin 150–300 mg for the first 2 weeks before considering anticoagulation.

1.4.8.2 People with prosthetic valves who have disabling cerebral infarction and who are at significant risk of haemorrhagic transformation should have their anticoagulation treatment stopped for 14 days and aspirin 150–300 mg substituted.

1.4.8.3 People with ischaemic stroke and symptomatic deep vein thrombosis (DVTs) or pulmonary emboli (PEs) should receive anticoagulation in preference to treatment with aspirin unless there are other contraindications.

1.4.8.4 People with haemorrhagic stroke and symptomatic DVTs or PEs should have treatment to prevent further PE using either anticoagulation or caval filter.

1.5  **Maintenance or restoration of homeostasis**

1.5.1  **Supplemental oxygen therapy**

1.5.1.1 In people with acute stroke who are not hypoxic, the routine use of supplemental oxygen is not recommended. People who have had a stroke should receive supplemental oxygen only if their oxygen saturation drops below 95%.
1.5.2 **Blood sugar control**

1.5.2.1 People with acute stroke should be treated to maintain a blood glucose concentration between 4 and 11 mmol/litre.

1.5.2.2 Optimal insulin therapy, which can be achieved by the use of intravenous insulin and glucose, should be provided to all adults with diabetes who have threatened or actual myocardial infarction or stroke. Critical care and emergency departments should have a protocol for such management.9

1.5.3 **Blood pressure control**

1.5.3.1 Blood pressure manipulation in people with acute stroke is not recommended except where there is a hypertensive emergency or any of the following serious concomitant medical issues:

- hypertensive encephalopathy
- hypertensive nephropathy
- hypertensive cardiac failure/myocardial infarction
- aortic dissection
- pre-eclampsia/eclampsia
- intracerebral haemorrhage with systolic blood pressure >200 mmHg.

1.6 **Hydration and nutrition**

1.6.1 **Oral nutritional supplementation**

Recommendations 1.6.1.1 to 1.6.1.3 are from ‘Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition’ (NICE clinical guideline 32).

1.6.1.1 All hospital inpatients on admission and all outpatients at their first clinic appointment should be screened for malnutrition and the risk

---

9 This recommendation is from ‘Type 1 diabetes: diagnosis and management of type 1 diabetes in children, young people and adults’ (NICE clinical guideline 15).
of malnutrition. Screening should be repeated weekly for inpatients and when there is clinical concern for outpatients.

1.6.1.2 Screening should assess body mass index (BMI) and percentage unintentional weight loss and should also consider the time over which nutrient intake has been unintentionally reduced and/or the likelihood of future impaired nutrient intake. The Malnutrition Universal Screening Tool (MUST), for example, may be used to do this.

1.6.1.3 Screening for malnutrition and the risk of malnutrition should be carried out by healthcare professionals with appropriate skills and training.

1.6.1.4 Routine nutritional supplementation is not recommended for people with acute stroke who are adequately nourished on admission.

1.6.2 Assessment of swallowing function

1.6.2.1 On admission, people with acute stroke should have their swallowing screened by an appropriately trained healthcare professional before being given any oral foods, fluid or medication.

1.6.2.2 People with acute stroke for whom the admission screen indicates problems with swallowing should have a specialist assessment of swallowing early\(^\text{10}\) after stroke.

1.6.2.3 People with suspected aspiration on specialist assessment or who require tube feeding or dietary modification for 3 days should then be re-assessed and be considered for instrumental examination.

---

\(^{10}\) The GDG felt that early was defined as preferably within 24 hours of, and no more than 72 hours after, admission.
1.6.3 **Timing of feeding by nasogastric and percutaneous endoscopic gastrostomy/jejunostomy tubes**

1.6.3.1 People with acute stroke who are unable to take adequate nutrition and fluids orally should receive early\(^{11}\) tube feeding with a nasogastric tube.

1.7 **Mobilisation**

1.7.1 **Early mobilisation and optimum positioning in people with acute stroke**

1.7.1.1 People with acute stroke should be mobilised as soon as possible following an assessment (e.g. sitting balance and falls risk) by an appropriately trained healthcare professional with access to appropriate equipment.

1.8 **Avoidance of complications**

1.8.1 **Aspiration pneumonia**

1.8.1.1 No recommendations were made by the group.

1.9 **Surgery for people with acute stroke**

1.9.1 **Surgical referral for acute intracerebral haemorrhage**

1.9.1.1 Stroke services should agree protocols for monitoring, referral and transfer of people to regional neurosurgical centres for the management of symptomatic hydrocephalus.

1.9.1.2 People with intracranial haemorrhage should be monitored by specialists in neurosurgical or stroke care for deterioration in function and referred immediately for brain imaging when necessary.

1.9.1.3 Previously fit people should be considered for surgical intervention following primary intracranial haemorrhage if they:

---

\(^{11}\) The GDG felt that early was defined as within 24 hours of admission.
• have a lobar haemorrhage with hydrocephalus or
• are deteriorating neurologically.

1.9.1.4 People with any of the following rarely require surgical intervention and should receive medical treatment initially:

• small deep haemorrhages
• lobar haemorrhage without hydrocephalus or rapid neurological deterioration
• a large haemorrhage and significant prior comorbidities
• a GCS of less than 8.

1.9.2 Surgical referral for decompressive craniectomy

1.9.2.1 People with middle cerebral artery (MCA) infarction who meet all of the criteria defined below should be considered for decompressive hemicraniectomy. They should be referred within 24 hours of onset of symptoms and treated within a maximum of 48 hours.

• Aged up to 60 years.
• Clinical deficits suggestive of infarction in the territory of the MCA with a score on the National Institute of Health Stroke Scale (NIHSS) of above 15.
• Decrease in the level of consciousness to a score of 1 or more on item 1a of the NIHSS
• Signs on CT of an infarct of at least 50% of the MCA territory, with or without additional infarction in the territory of the anterior or posterior cerebral artery on the same side, or infarct volume greater than 145 cm$^3$ as shown on MR with DWI.

1.9.2.2 People who are referred for decompressive hemicraniectomy should be monitored by appropriately trained professionals skilled in neurological assessment.
2 Notes on the scope of the guidance

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover. The scope of this guideline is available from www.nice.org.uk/guidance/index.jsp?action=download&o=34392

Groups that are covered

a) People with transient ischaemic attacks (TIAs) or completed strokes; that is, an acute neurological event presumed to be vascular in origin and causing cerebral ischaemia, cerebral infarction or cerebral haemorrhage. This includes:

- first and recurrent events
- thrombotic and embolic events
- primary intracerebral haemorrhage of any cause, including venous thrombosis.

Groups that are not covered

a) Specific issues relating to the general management of underlying conditions will not be considered, but the immediate management to reduce the extent of brain damage will be included.

b) People with subarachnoid haemorrhage.

c) Children (16 and under).

How this guideline was developed

NICE commissioned the National Collaborating Centre for Chronic Conditions to develop this guideline. The Centre established a Guideline Development Group (see appendix A), which reviewed the evidence and developed the recommendations. An independent Guideline Review Panel oversaw the development of the guideline (see appendix B).

There is more information in the booklet: ‘The guideline development process: an overview for stakeholders, the public and the NHS’ (third edition, published
3 Implementation

The Healthcare Commission assesses the performance of NHS organisations in meeting core and developmental standards set by the Department of Health in ‘Standards for better health’, issued in July 2004. Implementation of clinical guidelines forms part of the developmental standard D2. Core standard C5 says that national agreed guidance should be taken into account when NHS organisations are planning and delivering care.

NICE has developed tools to help organisations implement this guidance (listed below). These are available on our website (www.nice.org.uk/CGXXX).

[NICE to amend list as needed at time of publication]

- Slides highlighting key messages for local discussion.
- Costing tools:
  - costing report to estimate the national savings and costs associated with implementation
  - costing template to estimate the local costs and savings involved.
- Implementation advice on how to put the guidance into practice and national initiatives that support this locally.
- Audit support for monitoring local practice.

4 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future.

4.1 Aspiration pneumonia

Does free access to water vs. withdrawal or oral modification of liquids prevent aspiration pneumonia following an acute stroke?
**Why this is important**

Patients with dysphagia following an acute stroke are at higher risk of aspiration pneumonia. The GDG considered how best to reduce the likelihood of patients with acute stroke developing aspiration pneumonia, but there was insufficient evidence on which to base a recommendation. Current clinical practice dictates that those patients with clinical evidence of aspiration are put "nil by mouth" or given modified (thickened) oral fluids. However, there is little evidence to suggest that withdrawal or modification of fluids reduces the incidence of pneumonia. Oral hygiene is impaired by withdrawal of oral fluids, and aspirated saliva (up to 2 litres/day) may be infected as a result. Oral medications are not administered and patients may be distressed by the withholding of oral fluids. The research question is whether allowing patients with evidence of aspiration free access to water vs withdrawal or modification of oral fluids affects outcome.

### 4.2 Aspirin treatment and anticoagulant treatment in acute ischaemic stroke

RCT to compare aspirin with other antiplatelet agents (e.g. modified-release dipyridamole, clopidogrel) in acute ischaemic stroke

**Why this is important**

Aspirin administered within 48 hours of acute ischaemic stroke improves outcome compared with no treatment or early anticoagulation. In the secondary prevention of stroke, the combination of modified-release dipyridamole with aspirin improves outcome compared with aspirin alone. Clopidogrel, administered with aspirin, improves outcome after myocardial infarction. It is not known whether antiplatelet agents other than aspirin (alone or in combination) may be more effective than aspirin alone in the acute phase of ischaemic stroke. The research question to be addressed is whether early administration of modified-release dipyridamole or clopidogrel with aspirin improves outcome compared to aspirin alone when administered early after acute ischaemic stroke.
4.3 Aspirin treatment in acute ischaemic stroke

RCT to compare maintaining the same dose of aspirin in patients who have a stroke whilst on aspirin, versus increasing the dose.

Why this is important
Many people take aspirin routinely for the secondary or primary prevention of vascular disease. When a patient has a stroke or TIA on 75 mg aspirin, there is no evidence to guide clinicians as to whether to maintain or increase the dose. The research question to be addressed is whether, when a patient already on aspirin has a stroke or TIA, they should be offered the same or an increased dose of aspirin.

4.4 Mobilisation

What is the safety and efficacy of very early mobilisation after stroke delivered by appropriately trained professionals?

Why this is important
Most patients with acute stroke are nursed in bed for at least the first day or so of their admission to the stroke unit. The severity of limb weakness or incoordination and reduced awareness or impaired conscious level may make mobilisation potentially hazardous. There are concerns about the effect of very early mobilisation on blood pressure and cerebral perfusion pressure. However, early mobilisation may have beneficial effects on oxygenation and lead to a reduction in complications such as venous thrombo-embolism and hypostatic pneumonia. There could be benefits in terms of motor and sensory recovery, and patient motivation. The research question to be addressed is whether very early mobilisation delivered by appropriately trained professionals is safe and improves outcome compared to standard care.

4.5 Blood pressure control

The safety and efficacy of the early manipulation of blood pressure after stroke should be evaluated.
**Why this is important**
Many patients with stroke have pre-existing hypertension, for which they may or may not be on treatment. Following stroke, even apparently small changes in blood pressure may be associated with alterations in cerebral perfusion pressure which may affect the ability of damaged neurones to survive. A sudden drop in blood pressure to an apparently "normal" level for a patient who had lived with elevated blood pressure before the stroke may have very marked effects on the damaged brain. The effect of raised blood pressure may differ between patients with ischaemic and haemorrhagic stroke. It is not known whether a reduction in blood pressure following stroke is beneficial or harmful, and whether elevation of blood pressure under certain circumstances might be associated with better outcome. The research question to be addressed is whether early manipulation of blood pressure following stroke is safe and improves outcome compared to standard care.

**5 Other versions of this guideline**

**5.1 Full guideline**
The full guideline, 'Stroke: diagnosis and initial management of acute stroke and transient ischaemic attack (TIA)', contains details of the methods and evidence used to develop the guideline. It is published by the National Collaborating Centre for Chronic Conditions, and is available from [NCC website details to be added], our website (www.nice.org.uk/CGXXXfullguideline) and the National Library for Health (www.nlh.nhs.uk). [Note: these details will apply to the published full guideline.]

**5.2 Quick reference guide**
A quick reference guide for healthcare professionals is available from www.nice.org.uk/CGXXXquickrefguide

For printed copies, phone the NHS Response Line on 0870 1555 455 (quote reference number N1XXX). [Note: these details will apply when the guideline is published.]
5.3 ‘Understanding NICE guidance’

Information for patients and carers (‘Understanding NICE guidance’) is available from www.nice.org.uk/CGXXXpublicinfo

For printed copies, phone the NHS Response Line on 0870 1555 455 (quote reference number N1XXX). [Note: these details will apply when the guideline is published.]

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

6 Related NICE guidance

Published


7 Updating the guideline

NICE clinical guidelines are updated as needed so that recommendations take into account important new information. We check for new evidence 2 and 4 years after publication, to decide whether all or part of the guideline
should be updated. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations.
Appendix A: The Guideline Development Group

Mr Alan Bowmaster
Patient & Carer representative, Hull

Mrs Katherine Cullen
Health Economist, NCC-CC, and Research Fellow, Queen Mary University of London

Mrs Diana Day
Stroke Specialist Research Nurse, Addenbrooke's Hospital NHS Trust

Professor Gary Ford
Professor of Pharmacology of Old Age, Newcastle Upon Tyne Hospitals NHS Foundation Trust

Mr Steve Hatton
Emergency Care Practitioner, Yorkshire Ambulance Service NHS Trust

Mr Joseph Korner
Patient & Carer representative, London

Dr Richard McManus
Clinical Senior Lecturer in Primary Care and General Practitioner, University of Birmingham

Dr Andrew Molyneux
Consultant Neuroradiologist, Oxford Radcliffe Hospitals NHS Trust

Professor John Potter
Professor in Geriatrics and Stroke Medicine, University of East Anglia

Mrs Alison Richards
Information Scientist, NCC-CC.

Dr Anthony Rudd
GDG Chairman & Consultant Stroke Physician
DRAFT FOR CONSULTATION

Dr Sharon Swain
Health Services Research Fellow in Guideline Development, NCC-CC

Miss Claire Turner
Guideline Development Senior Project Manager, NCC-CC

Dr Pippa Tyrrell
GDG Clinical Advisor & Consultant Stroke Physician

David Wonderling
Senior Health Economist, NCC-CC
Appendix B: The Guideline Review Panel

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring adherence to NICE guideline development processes. In particular, the panel ensures that stakeholder comments have been adequately considered and responded to. The panel includes members from the following perspectives: primary care, secondary care, lay, public health and industry.

[NICE to add]

[Name; style = Unnumbered bold heading]
[job title and location; style = NICE normal]
Appendix C: The algorithms

These algorithms are provided as separate files: algorithm 1 is the TIA algorithm and algorithm 2 is the stroke algorithm.