NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline scope

Subarachnoid haemorrhage caused by a ruptured aneurysm: diagnosis and management

The Department of Health and Social Care in England has asked NICE to develop a guideline on subarachnoid haemorrhage caused by a ruptured aneurysm.

The guideline will be developed using the methods and processes outlined in developing NICE guidelines: the manual.

This guideline may also be used to develop a NICE quality standard for subarachnoid haemorrhage caused by a ruptured aneurysm.

1 Why the guideline is needed

The presentation, diagnosis and initial management of subarachnoid haemorrhage has not changed appreciably in many years. However, specialist management, prevention and treatment of sequelae such as delayed cerebral ischaemia (which may be caused by a constriction of the arteries in the brain that limits blood flow), tools for prognostication and developments in rehabilitation have been introduced to improve outcomes. Much of current practice has been adopted from lessons learned from other types of brain injury. This guideline aims to establish best practice by reviewing the current evidence on diagnosis and management of subarachnoid haemorrhage caused by a rupture of an intracranial aneurysm.

Key facts and figures

Subarachnoid haemorrhage is defined as the presence of blood in the fluid-filled subarachnoid space around the brain and spinal cord. The most common presentation is sudden, severe and novel headache.

Subarachnoid haemorrhage accounts for 5% of all strokes and occurs in 2 to 16 people per 100,000 per year. In around 80% of people the leak of blood arises from the rupture of an intracerebral arterial aneurysm.

Subarachnoid haemorrhage is associated with high mortality and morbidity: 5% of people die before reaching hospital or having brain imaging and around 25% do not survive to hospital discharge. Mortality with conservative care rises to 50 to 60% within a few months and a large proportion of people who survive are severely disabled. Subarachnoid haemorrhage therefore places a substantial economic burden on the NHS, personal social services and wider society.

Current practice

Subarachnoid haemorrhage is suspected in people who present with sudden, severe and unexplained headache.

The diagnosis can be confirmed by a non-contrast CT head scan carried out within 12 hours of the onset of the headache. If the CT scan is normal but subarachnoid haemorrhage is strongly suspected, further investigations, including lumbar puncture and examination of the cerebrospinal fluid, are carried out.

If a subarachnoid haemorrhage is confirmed, it is discussed immediately with a specialist neurosurgical centre.

Treatment depends on the quantity and location of blood in the subarachnoid space, and the type of aneurysm. Treatment options include surgical clipping and endovascular coiling.

Subsequent management is aimed at preventing and treating sequelae, including delayed cerebral ischaemia (often referred to as vasospasm).

2 Who the guideline is for

This guideline is for:

- people with a suspected or confirmed subarachnoid haemorrhage caused by a ruptured aneurysm, and their families and carers
- healthcare professionals
- commissioners and providers of healthcare services for people with a suspected or confirmed subarachnoid haemorrhage caused by a ruptured aneurysm.

NICE guidelines cover health and care in England. Decisions on how they apply in other UK countries are made by ministers in the Welsh Government, Scottish Government, and Northern Ireland Executive.

Equality considerations

NICE has carried out an equality impact assessment during scoping. The assessment:

- lists equality issues identified, and how they have been addressed
- explains why any groups are excluded from the scope

The guideline will look at inequalities relating to communication difficulties.

3 What the guideline will cover

3.1 Who is the focus?

Groups that will be covered

- Adults (16 and older) with a suspected or confirmed subarachnoid haemorrhage caused by a suspected or confirmed ruptured aneurysm.

No specific subgroups of people have been identified as needing specific consideration.

Groups that will not be covered

- Adults with subarachnoid haemorrhage caused by head injury, ischaemic stroke or an arteriovenous malformation.

3.2 Settings

Settings that will be covered

All settings in which NHS-commissioned care is provided.

3.3 Activities, services or aspects of care

Key areas that will be covered

We will look at evidence in the areas below when developing the guideline, but it may not be possible to make recommendations in all the areas.

1 Diagnosis.
   - Symptoms and signs.
   - Accuracy of investigations.
   - Diagnostic strategy.
   - Scoring systems to assess severity.

2 Management.
   - Medical management strategies.
   - Imaging strategies.
   - Types of intervention (such as clipping and coiling).
   - Timing of interventions.
   - Detecting and managing delayed cerebral ischaemia.
   - Managing hydrocephalus.
   - Managing intracranial hypertension.

3 Follow-up.
   - Risk of subsequent haemorrhage.
   - Managing non-culprit aneurysms.
   - Imaging strategies.
   - Long-term medicines (such as antihypertensive and antiepileptic medicines). Note that guideline recommendations for medicines will

normally fall within licensed indications; exceptionally, and only if clearly supported by evidence, use outside a licensed indication may be recommended. The guideline will assume that prescribers will use a medicine's summary of product characteristics to inform decisions made with individual patients.

Patient information and advice.

Areas that will not be covered

1. Diagnosis, management and follow-up of subarachnoid haemorrhage caused by head injury, ischaemic stroke or an arteriovenous malformation.
2. Rehabilitation. This guideline will cross refer to the NICE guideline on Stroke rehabilitation in adults.

Related NICE guidance

Published

- Head injury: assessment and early management (2014, updated 2017) NICE guideline CG176
- Stroke rehabilitation in adults (2013) NICE guideline CG162
- Stroke and transient ischaemic attack in over 16s: diagnosis and initial management (2008, updated 2017) NICE guideline CG68
- Coil embolisation of ruptured intracranial aneurysms (2005) NICE interventional procedures guidance 106
- Coil embolisation of unruptured intracranial aneurysms (2005) NICE interventional procedures guidance 105
- Supraorbital minicraniotomy for intracranial aneurysm (2004) NICE interventional procedures guidance 84

In development

- Stroke and transient ischaemic attack in over 16s: diagnosis and initial management (update). NICE guideline. Publication expected May 2019

NICE guidance about the experience of people using NHS services

NICE has produced the following guidance on the experience of people using the NHS. This guideline will not include additional recommendations on these topics unless there are specific issues related to aneurysmal sub arachnoid haemorrhage:

- Medicines optimisation (2015) NICE guideline NG5
- Patient experience in adult NHS services (2012) NICE guideline CG138
- Medicines adherence (2009) NICE guideline CG76

3.4 Economic aspects

We will take economic aspects into account when making recommendations. We will develop an economic plan that states for each review question (or key area in the scope) whether economic considerations are relevant, and if so whether this is an area that should be prioritised for economic modelling and analysis. We will review the economic evidence and carry out economic analyses, using an NHS and personal social services (PSS) perspective, as appropriate.

3.5 Key issues and draft questions

While writing this scope, we have identified the following key issues and draft questions related to them:

1 Diagnosis.

1.1 What symptoms and signs indicate subarachnoid haemorrhage?

1.2 What is the accuracy of investigations for diagnosing subarachnoid haemorrhage, for example a non-contrast CT scan or a lumbar puncture?

1.3 What is the clinical and cost effectiveness of different strategies for diagnosing subarachnoid haemorrhage, including the timing and sequencing of investigations?

1.4 What is the clinical and cost effectiveness of scoring systems to assess the severity of subarachnoid haemorrhage (for example, the World Federation of Neurosurgical Societies grading scale)?

2 Management.

2.1 What is the clinical and cost effectiveness of medical management strategies for people with confirmed subarachnoid haemorrhage (including fluid management, temperature control, blood pressure control, seizure management and nimodipine)?

2.2 What is the clinical and cost effectiveness of different imaging strategies to guide the choice of intervention to prevent rebleeding in people with confirmed subarachnoid haemorrhage?

2.3 What is the clinical and cost effectiveness of interventions to prevent rebleeding (such as clipping and coiling)?

2.4 What is the optimal timing of interventions to prevent rebleeding (such as clipping and coiling)?

2.5 What is the clinical and cost effectiveness of options for detecting delayed cerebral ischaemia?

2.6 What is the clinical and cost effectiveness of options for managing delayed cerebral ischaemia?

2.7 What is the clinical and cost effectiveness of options for managing hydrocephalus?

2.8 What is the clinical and cost effectiveness of options for managing intracranial hypertension?

3 Follow-up

3.1 What is the risk of subsequent subarachnoid haemorrhage in people with confirmed subarachnoid haemorrhage?

3.2 What is the clinical and cost effectiveness of different imaging strategies for follow-up of people with confirmed subarachnoid haemorrhage?

3.3 What is the clinical and cost effectiveness of different options for managing non-culprit aneurysms?

3.4 What is the clinical and cost effectiveness of long-term medicines for reducing the risk of subsequent subarachnoid haemorrhage, such as antihypertensive medicines, in people with confirmed subarachnoid haemorrhage?

3.5 What is the clinical and cost effectiveness of long-term medicines for managing the consequences of subarachnoid haemorrhage, such as antiepileptic medicines?

3.6 What lifestyle advice should be given to people who have had a subarachnoid haemorrhage?

The key issues and draft questions will be used to develop more detailed review questions, which guide the systematic review of the literature.

3.6 Main outcomes

The main outcomes that may be considered when searching for and assessing the evidence are:

1. Diagnostic accuracy.
2. Mortality.
3. Degree of disability or dependence in daily activities, for example Modified Rankin Scale and patient-reported outcome measures.
4. Quality of life (both health- and social-related quality).
5. Return to work.
6. Risk of subsequent subarachnoid haemorrhage.

4 NICE Pathways

NICE Pathways bring together everything we have said on a topic in an interactive flowchart. When this guideline is published, the recommendations will be included in the NICE Pathway on subarachnoid haemorrhage caused by a ruptured aneurysm (in development). It will include links to the NICE Pathway on stroke.

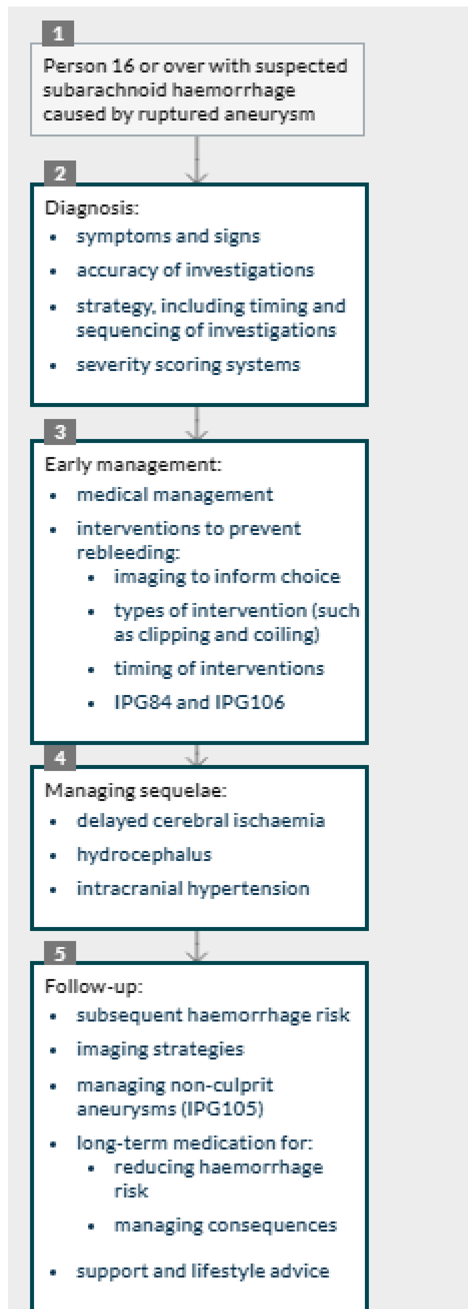
Other relevant guidance will also be added, including:

- Coil embolisation of ruptured intracranial aneurysms (2005) NICE interventional procedures guidance 106

- Coil embolisation of unruptured intracranial aneurysms (2005) NICE interventional procedures guidance 105

1 • Supraorbital minicraniotomy for intracranial aneurysm (2004) NICE
2 interventional procedures guidance 84

3 An outline based on this scope is included below. It will be adapted and more
4 detail added as the recommendations are written during guideline
5 development.



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1 ## 5 Further information

This is the draft scope for consultation with registered stakeholders. The consultation dates are 22 August to 20 September 2018.

The guideline is expected to be published in September 2020.

You can follow progress of the guideline. Our website has information about how NICE guidelines are developed.

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