



## Subarachnoid Haemorrhage: scope workshop discussions

Date: 13/08/2018

Scope details	Questions for discussion	Stakeholder responses
	key areas in diagnosis?	<p>diagnosis.</p> <ul style="list-style-type: none"> <li>• What are the positive/negative predictive values of a thunderclap headache?</li> </ul> <p><i>Diagnostic strategy:</i></p> <ul style="list-style-type: none"> <li>• There were questions about the best referral pathway including who would be best to make a diagnosis in terms of physician experience and centre. It was explained that the evidence shows that the pick-up rate of SAH varies across centres depending on where the patient presents to. At what stage should a neurosurgical opinion be sought? What support should be offered from a neurosurgical centre? It was also asked if there should be formalised clinical networks for SAH.</li> <li>• The challenges of timing regarding required tests, for example, a lumbar puncture required laboratory services and experienced staff to be available. The timing of such tests are influenced by weekend staffing and hospital services available as well as drug therapies the person might already be on e.g. anticoagulants.</li> <li>• The group discussed needing evidence around the timing of transfer to a neuro centre? Timing must also be defined – is it from ictus; admission to District General or Admission to a Neuro science centre.</li> <li>• What are the most appropriate pathways and timing for tests - Is CT then lumbar puncture (traditional pathway) best? How does the timing of tests affect diagnosis? Which tests are most effective (e.g. CT perfusion)? Are there alternatives to lumbar puncture?</li> <li>• Where should computed tomography angiography (CTA) be done and who should report/interpret the CT?</li> <li>• A proportion of patients need addition investigation beyond CT (i.e. structural imaging) what should this consist of?</li> <li>• Are there more tests to look into for Cerebrospinal fluid (CSF) e.g. xanthochromia / spectrophotometry?</li> </ul>

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<ul style="list-style-type: none"> <li>• Management of SAH               <ul style="list-style-type: none"> <li>○ Types of intervention (e.g. clipping and coiling)</li> </ul> </li> </ul>	<p>What are the key interventions in the management of SAH that we should include?</p>	<ul style="list-style-type: none"> <li>• What is the pathway for heterogeneous presentations of SAH e.g. delayed presentation, minor atypical symptoms of SAH for example, for people who are taking antithrombotic drugs, lumbar puncture is an issue.</li> <li>• Which is the optimal scoring system to stratify severity of disease and influence timing of transfer e.g. patient GCS; WFNS; Fischer scale; pre SAH quality of life/health.</li> <li>• Management of AVMs although the level of evidence available was questioned.</li> <li>• Evidence around lumbar puncture is important as clinicians are often reluctant to perform them, and scans often give false positive diagnoses because they don't show if the aneurysm is related to the headache or not. Consideration of the evidence for safety of lumbar puncture was also raised.</li> </ul> <p><i>Management</i></p> <ul style="list-style-type: none"> <li>• What is the optimal management of SAH pre and post intervention? For example, pre-intervention; what environment (such as the type of ward); and what efforts should be made to transfer to a neuro centre.</li> <li>• Should patients be admitted to a ward or to a level 1/2 facility before intervention? This may be a question on specialist vs non specialist care?</li> <li>• What is the evidence of poor outcomes for good grade patients in general hospital vs specialist centre who have re-bleed before treatment</li> <li>• How quickly should the intervention be provided – within 48 hrs (suggestion of no intervention between 4 and 10 days)</li> <li>• Do we need to review traumatic SAH management? Consensus amongst practitioners was not to include this.</li> <li>• Securing aneurysm: coiling and clipping are most common (90% by coiling, clipping if not thought suitable)</li> <li>• Other interventions to also include: Wrapping; Stents (not used)</li> </ul>

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<ul style="list-style-type: none"> <li>○ Timing of interventions</li> </ul>	<p>Should we have a question on the medical treatment to reduce the risk of re-bleeding while patients are waiting for clipping/coiling?</p> <p>Is the timing of interventions a priority area?</p> <p>Do we need to review traumatic SAH management? Is this treated differently?</p>	<p>routinely), stent assisted coiling and flow diverters (which were considered to only be suitable as a last resort in an acute aneurysm).</p> <ul style="list-style-type: none"> <li>● What is the best general homeostatic management, including blood pressure targets, cerebral salt wasting, nimodipine, statins etc.</li> <li>● Should have a question on nimodipine particularly the timing of and as a medical treatment). Current issues are with it being given too late.</li> <li>● What percentage of patients with aneurysms need additional treatment?</li> <li>● What is the evidence for 4C and Venus angiograms (these look at the whole process of an SAH)?</li> <li>● Cerebral vasospasm (delayed neurological deficit)</li> </ul> <p><i>Timing</i></p> <ul style="list-style-type: none"> <li>● Suggestion of variation of practice for coiling and the timing of when you get the intervention.</li> <li>● How closely should a patient be monitored following SAH and what is appropriate acute follow up? What should be the frequency of and type of observations /neurological-observations. Should patients have arterial line monitoring? In order to recognise vasospasm symptoms, should a patient be in HDU and for how long?</li> <li>● When should the patient be transferred rapidly to a neuro-specialist centre?</li> <li>● We need guidance on time window for coiling surgery, and consistency re surgery for grade 5 SAHs (some centres do not treat grade 5 cases).</li> </ul>

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<ul style="list-style-type: none"> <li>○ Complications of SAH               <ul style="list-style-type: none"> <li>▪ Cerebral vasospasm</li> <li>▪ Hydrocephalus</li> <li>▪ Intracranial hypertension</li> </ul> </li>   <li>● Follow up               <ul style="list-style-type: none"> <li>○ Risk factors for subsequent haemorrhage</li> <li>○ Long term medication (e.g. hypertension)</li> <li>○ Patient information and advice</li> </ul> </li> </ul>	<p>Are these the key complications of SAH to focus on?</p> <p>What particular area of the management of cerebral vasospasm should we focus on?</p> <p>What particular area of the management of Hydrocephalus should we focus on?</p> <p>What particular area of the management of intracranial hypertension should we focus on?</p> <p>We propose to focus on:</p> <ul style="list-style-type: none"> <li>● risk factors for subsequent SAH</li> <li>● management of non-culprit aneurysms</li> <li>● the effectiveness of long term medication to reduce the risk of subsequent SAH such as anti-hypertensives</li> <li>● long term medication to manage the consequences of SAH such as anti-epileptics.</li> </ul> <p>Do these cover the key areas in the follow-up of patients?</p> <p>What aspects of patient information and advice should be covered by the guideline?</p> <p>Should we include lifestyle advice? Are the excluded areas appropriate?</p>	<p><i>Complications</i></p> <ul style="list-style-type: none"> <li>● Add seizures to complications</li> <li>● Break down to also include the diagnosis of vasospasm</li> <li>● Should screening be done for cerebral vasospasm?</li> <li>● There is a question missing on care in ICU after treatment, to avoid these complications from happening</li> <li>● Should we add epilepsy and metabolic consequences to the list of complications of SAH?</li> </ul> <p><b>Follow up</b></p> <ul style="list-style-type: none"> <li>● The group proposed that there needed to be more guidance around the rehabilitation specifics of SAH. It was thought that SAH patients would need extra neuro-psychological/emotional support as the prognosis and subsequent risks of SAH are different from Stroke.</li> <li>● What is the optimal follow up strategy?</li> <li>● How often should it happen?</li> <li>● What should the duration of entire follow up period be?</li> <li>● When considering risk factors, include patients with non-culprit aneurysms where the decision is made not to treat</li> <li>● Smoking could be considered in a separate question e.g. should smokers be given separate advice? Cross refer to smoking cessation guideline as smoking is an important factor in subsequent SAH</li> <li>● Imaging for follow up should be a question. Question should look at how to follow up (catheter angiography or MRA), as well as how often.</li> <li>● We are not good at stopping medication. When patients return</li> </ul>

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<p><b>Areas that will not be covered:</b></p> <ul style="list-style-type: none"> <li>• Presentation and initial assessment of traumatic SAH</li> </ul>		<p>for follow up they are still taking drugs they should have stopped taking by then. Include monitoring of medication.</p> <ul style="list-style-type: none"> <li>• Consider Chinese medicine: ‘Woodyreyer Fungus’</li> <li>• When to treat hydrocephalus as it doesn’t always cause hypertension? Do we treat it if not symptomatic?</li> <li>• We need guidance on lumbar fluid drainage: do we drain continuously or intermittently?</li> <li>• Guidance is needed on seizures during acute treatment and metabolic complications.</li> <li>• Metabolic changes post SAH causes specific endocrinology challenges. This increase with the length of time the aneurysm is left untreated. There needs to be agreement (between neuro teams and endocrine teams) on whether fluid restriction is needed</li> <li>• Is further risk indicated by raised blood pressure?</li> </ul> <ul style="list-style-type: none"> <li>• There was a question whether there was already an approved national leaflet for patient information?</li> <li>• Patients often want information on how to tell if future headaches are ‘suspicious’ or ‘normal’?</li> <li>• Patients want to know if clips/coils will ever need changing.</li> </ul>
<p><b>1.4 Economic Aspects</b></p>	<p>Which practices will have the most</p>	<ul style="list-style-type: none"> <li>• New technologies for SAH Interventions: 1. flow diversity stent</li> </ul>

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<p>An economic plan will be developed that states for each review question/key area in the scope, the relevance of economic considerations, and if so, whether this area should be prioritised for economic modelling and analysis.</p>	<p>marked/<b>biggest cost</b> implications for the NHS?</p> <p>Are there any <b>new practices</b> that might <b>save the NHS money</b> compared to existing practice?</p> <p>Do you have any further comments on economics?</p>	<p>and 2. Endovascular devices. Comparator: Coils</p> <ul style="list-style-type: none"> <li>• These new interventions are high cost (e.g. endovascular devices cost £10,000-£12,000 each whilst coils cost £400-900 each). Trial evidence exists for these but not RCTs.</li> <li>• Imaging follow up would be a good area for modelling; what is the most cost-effective strategy? When to discharge people? How often should follow up happen?</li> <li>• Costs for cooling mechanism/temperature. This is expensive and can vary based on device used.</li> <li>• How does cost-effectiveness change based on the grade of SAH?</li> <li>• Potential for cost savings if nurse specialist is involved</li> <li>• Budget impact based on who provides the CT scan.</li> <li>• Costs of long term care need to be included in economic analysis. (E.g. the carers themselves).</li> <li>• Is treatment of Grade 5 SAH cost effective?</li> </ul>
<p><b>1.5 Key issues and questions</b></p> <p>This section expands upon the areas mentioned in section 1.3. This section should therefore give more of the detail of what the key issues are within that area and what questions will be asked to address those issues.</p>	<p>Do you have any other comments or suggestions about the proposed questions that have not been discussed above?</p>	
<p><b>1.6 Main Outcomes</b></p> <ul style="list-style-type: none"> <li>• Quality of life</li> <li>• Mortality</li> <li>• Length of stay</li> <li>• Adverse events</li> <li>• Resource use</li> <li>• Return to work</li> </ul>	<p>Is the list of outcomes appropriate?</p> <p>Are any key outcomes missing?</p> <p>Please identify the top 3 outcomes.</p>	<ul style="list-style-type: none"> <li>• All outcomes are appropriate but currently broad.</li> <li>• A clinical outcome score needs to be included.</li> <li>• Location of length of stay will have cost implications, for example, if the patient is in an intensive care unit.</li> <li>• Adverse events are split into complications of procedure; of disease; preventable adverse events; hospital re- bleed. These should be specific to the disease pathway.</li> <li>• Clinical outcome score (e.g. MRS, oxford handicap score)</li> </ul>

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		<ul style="list-style-type: none"> <li>• Debate around length of stay: should this be in hospital in general or a specific neuro specialist unit?</li> <li>• Return to work is a good outcome as SAH patients are younger than stroke patients.</li> <li>• Include rehabilitation in length of hospital stay.</li> <li>• Fatigue and PTSD should be outcomes (SAH is a highly traumatic experience)</li> </ul>
<p><b>Committee Membership</b></p> <ul style="list-style-type: none"> <li>• Neurosurgeon</li> <li>• Interventional Neuro-radiologist</li> <li>• Radiologist working in secondary care</li> <li>• Physician working in Neuro-intensive care</li> <li>• Acute/Emergency medicine physician</li> <li>• Physician working in a stroke unit</li> <li>• Nurse specialist with responsibilities for brain injury</li> <li>• GP</li> <li>• Lay member x2</li> <li>• Co-opted Neurosurgeon and interventional radiologist</li> </ul>	<p>Do you have any comments on the proposed membership of the committee?</p>	<ul style="list-style-type: none"> <li>• The group recommended a clinical biochemist as a co-optee.</li> <li>• A number of members also suggested a paramedic be added to the membership</li> <li>• It was explained by a member that an Emergency Medicine physician and acute medicine physician would have very different roles and both should be members of the committee.</li> <li>• It was thought that an interventional radiologist was not needed as was too general</li> <li>• Include an Anaesthetist/ Neuro-anaesthetist</li> <li>• Include a Clinical psychologist</li> <li>• Neurosurgeon should have vascular interest and ideally has treated aneurysms.</li> <li>• Include a Pharmacist</li> <li>• Include secondary care physicians</li> <li>• Lay member must be SAH survivor, not a generic stroke survivor.</li> </ul>

**Further questions:**

**Stakeholder responses**

