

## Assessment and Management of Subarachnoid Haemorrhage at Dorset County Hospital

**Background** Subarachnoid haemorrhage (SAH) is an uncommon form of stroke that is usually due to rupture of a saccular aneurysm and occurs in a generally younger population than ischaemic stroke<sup>1</sup>.

**Outcome** Untreated is often poor: around half die within 1 month of the haemorrhage, and of those who survive the first month, half remain dependent for help with activities of daily living. However, survival improves to 85% in patients with confirmed SAH admitted to a neurosurgical unit<sup>2</sup>.

**National guidelines** for SAH management do not exist in isolation, instead embedded in national stroke<sup>3,4</sup> and headache<sup>5</sup> management guidelines.

**NICE Stroke 2008 guidelines**<sup>4</sup> recommend for presentation of sudden severe headache + altered GCS 'immediate' CT brain and, if normal, LP after 12h-14d.

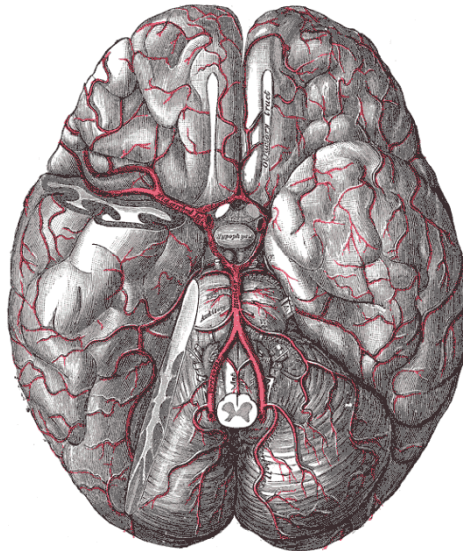
Once SAH diagnosed:

- refer immediately to a tertiary neuroscience centre
- start on oral nimodipine 60 mg 4 hourly unless CI
- don't give anti-fibrinolytics or steroids

In the specialist service the patient should have:

- CT angiography to identify the site of bleeding
- specific treatment by endovascular embolisation or surgical clipping if appropriate...within 48 hours of ictus, especially for 'good grade' patients.

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**The National Confidential Enquiry into Patient Outcome and Death (NCEPOD)** began a study in 2012<sup>6</sup> aimed at exploring "remediable factors in the process of care of patients admitted with the diagnosis of [SAH]" which reviewed case notes of patients diagnosed with SAH in a 12-month period.

**Our study** Our aim was to review the current management of SAH at DCH focussing on initial assessment, time to CT and use of nimodipine to control for vasospasm.

**Method** Medical records were retrospectively reviewed of all patients coded for SAH in the 32 month period Jan 2010 – Aug 2013.

**Results** 19 patients were found, 8 excluded (incomplete notes, onset at another hospital / after admission, traumatic) leaving 11 for analysis.

Table of audit standards and compliance

Standard	n	Compliance
100% of patients with a diagnosis of subarachnoid haemorrhage (SAH) should have had a documented GCS on initial assessment	9/11	82%
100% of patients with a diagnosis of SAH should have had a documented examination of pupils on initial assessment	9/11	82%
100% of patients admitted with a diagnosis of SAH should have had a documented examination of motor function on initial assessment	7/11	64%
100% of patients with a diagnosis of SAH should have a CT head within 12 hours of admission	10/10	100%
100% of patients with a diagnosis of SAH should have had nimodipine prior to transfer to a tertiary centre.	2/6	33%

### Therapy in subarachnoid haemorrhage



**Medical** Nimodipine is a calcium channel blocker used to prevent vasospasm, which is a common complication of SAH. It may present as new neurological symptoms and signs and lead to delayed ischaemia, with poor outcome. Nimodipine is the only medication shown to improve outcome in SAH<sup>7</sup>.

**Surgical** Endovascular coiling involves insertion of a catheter via the femoral vein and passage of a detachable, usually platinum, wire into the aneurysm until it is filled. Using this method, a relative risk reduction of 7.4% has been demonstrated over traditional craniotomy and clipping<sup>8</sup>; the aim is to reduce high risk rebleeds.

**Conclusions** The assessment and documentation of patients with SAH can be improved, especially with regard to neurological deficit. Use of nimodipine can also be improved.

Ongoing improvement projects include teaching sessions in the Emergency Department and production of hospital guidelines and information posters.

**References:** <sup>1</sup>van Gijn, J & Rinkel, GJE. Subarachnoid haemorrhage: diagnosis, causes and management *Brain* (2001) 124 (2): 249-278 doi:10.1093/brain/124.2.249; <sup>2</sup>Society of British Neurosurgeons 2006; <sup>3</sup>National Clinical Guideline for Stroke, Stroke Working Party 2008; <sup>4</sup>NICE clinical guideline 68 Stroke: Diagnosis and initial management of acute stroke and transient ischaemic attack (TIA); <sup>5</sup>College of Emergency Medicine 2008 Guideline for the Lone Severe Headache; <sup>6</sup>National Confidential Enquiry into Patient Outcome and Death (2013) *Managing the Flow? A review of the care received by patients who were diagnosed with an aneurysmal subarachnoid haemorrhage*; <sup>7</sup>S Barker & C Dgilvey (1996) Efficacy of prophylactic nimodipine for delayed ischemic deficit after subarachnoid hemorrhage: a metaanalysis. *Journal of Neurosurgery* 84 (3) 405-414 <sup>8</sup>Molyneux et al (2005) International Subarachnoid Aneurysm Trial (ISAT) of neurosurgical clipping versus endovascular coiling in 2143 patients with ruptured intracranial aneurysms: a randomised trial. *Lancet* 366: 809-817