

Benchmark No. 10. Subarachnoid Haemorrhage

(2nd edition)



**British Association of
Neuroscience Nurses**



Neuroscience Safe Staffing Benchmark Statement

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History

The Neuroscience Nursing Benchmarking Group (NNBG) was established in the 1990`s as a result of increasing concerns over inconsistencies in practices as part of a subsidiary of BANN. The group aims to improve on the quality of care by comparing and sharing practice with each other and set explicit standards for comparison of current practice against the ideal standard. The group is committed to searching for the best evidence related to specific areas of neuroscience practice. Membership of the group consists of representatives from neuroscience units within the UK and Ireland, together with educational colleagues from both the NHS/HSC and Higher Educational Institutes.

NNBG works collaboratively with BANN and further information about NNBG can be found on the BANN website www.BANN.org.uk .

BANN would like to acknowledge the leadership and significant contribution made by the NNBG, and all its contributors, to neuroscience nursing over the years

Benchmark No. 10

Subarachnoid Haemorrhage

(2nd Edition)

Key points

- Unless stated otherwise, this benchmark relates to pre / peri- and post-treatment aspects of the care of the patient following a subarachnoid haemorrhage (SAH).
- The positioning of the patient in bed is determined by patient preference in order to manage pain and optimise haemodynamic stability (bathroom privileges may be deemed appropriate according to the patient's clinical condition), however, this must be negotiated with the medical team.
- A fluid balance of intake and output is always recorded and reviewed at least four hrly with the aim of maintaining euvoemia, ensuring optimal hydration to support blood pressure and cerebral perfusion.
- Nimodipine is commenced following diagnosis (within 4 days of ictus) and continues for 21 days.
- Full blood biochemistry is performed at least daily to ensure electrolyte homeostasis.
- Blood pressure is managed within prescribed perimeters by the medical staff.
- The patient's temperature is monitored with the aim of maintaining normothermia.
- A venous thromboembolism (VTE) assessment is completed both pre and post-treatment.
- Nicotine replacement therapy should be considered (as per individual need).
- Patients displaying symptoms of dysphagia are screened by a competent practitioner using a validated tool.
- Mobilisation following treatment is promoted, dependent on the patient's clinical condition.
- Staff receive training on promoting lifestyle choices with special reference to reducing hypertension and smoking cessation.
- Patients should have access to a vascular Clinical Nurse Specialist to offer support throughout their treatment and on-going support following discharge.
- Patients are given information to facilitate access to psychological support following discharge.

Benchmark Number: 10: Subarachnoid Haemorrhage

Date Completed: Feb 2023

Date Reviewed: Feb 2025

FACTOR 1 – Documentation – assessment and implementation of care

Statement of Best Practice		Evidence & References	Achieved	Not Achieved	Variables
1.0	On admission the following information is documented: <ul style="list-style-type: none"> • Baseline neurological observations • Comprehensive past medical history • Grade of SAH 	NCEPOD (2013) NICE (2021) Claassen (2022)			
1.1	Following confirmed diagnosis of SAH, symptoms are graded and documented according to a recognised grading system e.g., WFNS.	NCEPOD (2013) NICE (2021)			
1.2	Prior to any clinical interventions, a clear management plan has been documented by the medical team to guide nursing practice.	RCP (2016)			
1.3	A nursing care plan is available that details all aspects of care as per protocol (<i>Factor 2</i>).	AANN (2018)			
1.4	Following treatment there is clear documentation to support verbal handover following interventional radiology nurse. This should include: <ul style="list-style-type: none"> • The intervention carried out. • The type of device used. • Any complications occurring peri-treatment. • Medication administered – Sedation, Anti-coagulants. • Fluid balance post procedure • Haemodynamic targets 	AANN (2018) Kirkpatrick <i>et al</i> (2014) Loan <i>et al</i> (2022)			
1.5	Following a negative CT angiogram/digital subtraction angiography (DSA) result; patients continue to be supported by the specialist vascular nurse/medical team.	NICE (2021) Galea <i>et al</i> (2017)			

1.6	<p>Post-treatment, the following is documented as per protocol:</p> <ul style="list-style-type: none"> • Neurological observations • Pain score targets • Groin / Radial site observations • Pedal pulse observations • Post-operative instructions from radiologists/neurosurgeons • Fluid balance • Target levels for Oxygen saturation • Cardiovascular parameters • Mobilisation • Glycaemic monitoring • Surgical wound observations 	<p>AANN (2018)</p> <p>Karic <i>et al</i> (2016).</p> <p>Oddo et al (2018)</p> <p>RCN (2022)</p>			
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FACTOR 2 – Protocol

Statement of best practice		Evidence & References	Achieved	Not Achieved	Variables
2.0	Consideration is given to optimise haemodynamic stability, cerebral perfusion and patient comfort. Bathroom privileges may be considered if the medical team consents and the patient's clinical condition permits.	AANN (2018)			
2.1	Environmental noise is minimised: - <ul style="list-style-type: none"> • Sensory overload is actively reduced - ear plugs, eye masks. • Level of stimulation is managed – advice to relatives / friends. 	Hussein (2017)			
2.2	A comprehensive continence assessment is completed on admission with specific reference to: <ul style="list-style-type: none"> • Maintenance of the patient's normal bowel regime including use of medications where appropriate. • Minimising risk associated with urinary catheter associated infections. 	RCP (2016) AANN (2018) RCN (2022)			
2.3	An accurate balance of fluid intake and output is maintained and is continuously re-evaluated with the aim of maintaining euvolemia (unless contraindicated by clinical condition). If IV fluids are required crystalloid fluids are recommended.	Oddo <i>et al</i> (2018) Kissoon <i>et al</i> (2015)			
2.4	Any signs of a developing hyper/hypovolemia (biochemistry or clinical symptoms) are promptly escalated to the medical team. Polyuria (urine output >30 mL/kg body weight or >200 mL/h for 2 h consecutively) regardless of overall balance is escalated to the clinical team).	Oddo <i>et al</i> (2018)			
2.5	A validated pain tool is used to assess the patient's level of pain both pre and post-administration of analgesia. Any escalation of pain (despite administration of analgesia) is reported to the medical team.	RCP (2016) AANN (2018)			

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FACTOR 2 – Protocol (cont....)

Statement of Best Practice		Evidence & References	Achieved	Not Achieved	Variables
2.6	Nimodipine is commenced and administered following confirmation of diagnosis, within 4 days of ictus, and continued at a dose of 60mg administered 4hrly for 21 days.	RCP (2016) Oddo <i>et al</i> (2018)			
2.7	Anti-emetics are prescribed for regular and/or PRN administration.	RCP (2016) AANN (2018)			
2.8	Nicotine replacement therapy is considered based on pre-morbid history and consultant preference.	RCP (2016)			
2.9	The patient's blood biochemistry profile is regularly reviewed.	Oddo <i>et al</i> (2018)			
2.10	Target levels for blood pressure control have been prescribed by the medical team with the aim of optimising cerebral perfusion pressure (CPP), cerebral blood flow and oxygenation.	Le Roux <i>et al</i> (2014)			
2.11	The patient's temperature is monitored with the aim of maintaining normothermia.	Nichols <i>et al</i> (2013)			
2.12	Pyrexia is treated with anti-pyretic medication. <ul style="list-style-type: none"> Monitor for signs and symptoms of developing hospital acquired infections (HAI). 	Abulhasan <i>et al</i> (2018)			
2.14	A VTE assessment is completed on admission and regularly reviewed.				
2.15	Supplemental oxygen is prescribed and titrated against the patient's SpO ₂ and clinical requirements.	British Thoracic Society (2017)			
2.16	Patients receiving anti-epileptic medication for seizure control during their acute admission are reviewed by medical staff prior to discharge and in follow-up clinics.				

2.17	Patients displaying symptoms of dysphagia are screened by a competent practitioner using a validated tool.	RCP (2016)			
2.18	Low molecular weight heparin is administered 24 hours post treatment (unless contraindicated).	RCP (2016)			
2.19	Wound care:- <ul style="list-style-type: none"> • The wound site is checked with every set of observations. • The femoral / Radial artery puncture site is checked with every set of observations. • Pedal pulses are checked with every set of observations. 	Abdulhasan <i>et al</i> (2018).			
2.20	A protocol/guidance is available for the management of patients presenting with delayed neurological deficit (DND)	Cook (2004)			
2.21	People can access support from a Clinical Nurse Specialist throughout their patient journey.	NCEPOD (2013)			

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Factor 3 – Education

Statement of Best Practice	Evidence & References	Achieved	Not Achieved	Variables
<p>3.0 Staff education and training packages must include information on the following:</p> <ul style="list-style-type: none"> • Anatomy and physiology of the neurovascular and CSF systems • SAH grading system • Treatment options for SAH including surgery, coiling and flow-diverting stents • Signs, symptoms and management of vasospasm • Signs of neurological deterioration and escalation process • Signs, symptoms and treatment of associated conditions including: <ul style="list-style-type: none"> ○ SIADH, cerebral salt wasting, hydrocephalus, ventriculitis ○ Negative angiography ○ Sub-clinical seizure activity in patients with no identifiable reason for neurological deterioration. • Care and management of a patient with an EVD or Lumbar drain. • Recognition of the impact of prolonged bed rest on maintaining normal bladder and bowel function. • Recognition of the impact of cardiac damage following SAH • Methods of reducing overstimulation • An awareness of the long-term complications resulting from SAH and the effects on health and wellbeing, occupation and family. 	<p>RCP (2016)</p> <p>Cook (2004)</p> <p>Mutoh <i>et al</i> (2014)</p>			
<p>3.1 Staff have training on 'sign-posting' to alternative lifestyle choices, with specific reference to managing hypertension and smoking cessation</p>	<p>RCP (2016)</p>			

FACTOR 4 – Patient Information

Statement of Best Practice		Evidence & References	Achieved	Not Achieved	Variables
4.0	<p>Patients receive information on the following:</p> <ul style="list-style-type: none"> • Contact information • Impact of over stimulation e.g., visitors, quiet times • Smoking cessation • Nimodipine administration at home • Pain control options. • Recognition and escalation of change in symptoms including: <ul style="list-style-type: none"> ○ New neurological deficit ○ Change in consciousness. ○ Seizures ○ Increased headaches ○ Wound concerns • Psychological support (reinforcing escalation and sign posting following discharge). • Resumption of normal activity including returning to work, sexual activity. 				
4.1	Patients receive follow up support from a Clinical Nurse specialist on discharge.				
4.2	Patient are provided with appropriate advice regarding driving (DVLA)				

References and additional reading

- Aoun SG, Stutzman SE, Vo PN, El Ahmadi TY, Osman M, Neeley O, Plitt A, Caruso JP, Aiyagari V, Atem F, Welch BG, White JA, Batjer HH, Olson DM (2019). [Detection of delayed cerebral ischemia using objective pupillometry in patients with aneurysmal subarachnoid hemorrhage.](#) *J Neurosurg.* Jan 11;132(1):27-32
- Abdulhasan, YB, Alabdulraheem, N, Schiller, I, Rachel, S P, Dendukuri, N, Angle, MR, Frenette, C. (2018). Health Care-Associated Infections after Subarachnoid Hemorrhage. *World Neurosurgery.* 115. Available at: [https://linkinghub.elsevier.com/retrieve/pii/S1878-8750\(18\)30777-0](https://linkinghub.elsevier.com/retrieve/pii/S1878-8750(18)30777-0)
- American Association of Neuroscience Nurses (AANN) (2012). *Clinical Practice Guidelines for the Management of Subarachnoid Haemorrhage.* Available at: http://aann.org/uploads/AANN_Aneurysmal_Subarachnoid_Hemorrhage.pdf AANN 2012
- British Thoracic Society (2017). BTS guideline for oxygen use In adults in healthcare and Emergency settings. British Thoracic Society Emergency Oxygen Guideline Development GroupThorax, Volume 72 Supplement 1. <https://www.brit-thoracic.org.uk/document-library/clinical-information/oxygen/2017-emergency-oxygen-guideline/bts-guideline-for-oxygen-use-in-adults-in-healthcare-and-emergency-settings/>
- Claassen J, Park S, (2022). Spontaneous Subarachnoid Haemorrhage. *The Lancet.* Vol. 400. Issue. 10355. Pp 846-862
- Cook NF (2004). Subarachnoid Haemorrhage and vasospasm: using physiological theory to generate nursing interventions. *Intensive and Critical care Nursing.* 20(3), 163-173.
- Le Roux P, Menon DK, Citerio G, Vespa P, Bader MK, Brophy GM, Diringner MN, Stocchetti N, Videtta W, Armonda R, Badjatia N, Böesel J, Chesnut R, Chou S, Claassen J, Czosnyka M, De Georgia M, Figaji A, Fugate J, Helbok R, Horowitz D, Hutchinson P, Kumar M, McNett M, Miller C, Naidech A, Oddo M, Olson D, O'Phelan K, Provencio JJ, Puppo C, Riker R, Robertson C, Schmidt M, Taccone F; (2014). Consensus summary statement of the International Multidisciplinary Consensus Conference on Multimodality Monitoring in Neurocritical Care : a statement for healthcare professionals from the Neurocritical Care Society and the European Society of Intensive Care Medicine. *Neurocritical Care Society; European Society of Intensive Care Medicine. Intensive Care Med.* 40(9): 1189-209
- Galea JP, Dulhanty L, Patel HC; (2017). UK and Ireland Subarachnoid Hemorrhage Database Collaborators. Predictors of outcome in aneurysmal subarachnoid hemorrhage patients: observations from a multicenter data set. *Stroke* 48:2958–63.
- Hussein, MT, Zettel, S, Suykens, AM (2017) The ABCs of managing increased intracranial pressure. *Journal of Nursing Education and Practice.* 7 (4). www.sciedu.ca/journal/index.php/jnep/article/download/9788/6437
- Kissoon, J, Mandrekar, N, Fugate, JE, Lanzino, G, Wijdicks, FM, Rabinstein, AR. (2015). Positive Fluid Balance Is Associated With Poor Outcomes in Subarachnoid Hemorrhage. *Journal of Stroke and Cerebrovascular Disease.* 24. (10) Page: 2245-2251. Available at: <https://www.sciencedirect.com.ezproxy.bcu.ac.uk/science/article/pii/S1052305715003006>
- Kirkpatrick PJ, Turner CL, Smith C, Hutchinson PJ, Murray GD. Simvastatin in aneurysmal subarachnoid haemorrhage (STASH): a multicentre randomised phase 3 trial. *Lancet Neurol.* 2014;13:666–675.
- Karic, T, Roe, C, Nordenmark TH, Becker, F, Sorteberg, A (2016). Impact of early mobilisation and rehabilitation on global functional outcome one year after aneurysmal subarachnoid haemorrhage. *J. Rehabilitation Med.* 48: 676-682.

Loan JJM Tominey, S, Baweja, K. Woodfield J. Chambers TG, Haley M, Kundu SS, Tang J. Wiggins AN, Poon, M. Brennan PM (2022). Prospective, multicentre study of screening, investigation and management of hyponatraemia after subarachnoid haemorrhage in the UK and Ireland. *SVN. Stroke and Vascular Neurology*, et al. *Stroke & Vascular Neurology* 2022;0. doi:10.1136/svn-2022-001583

Molyneux, A. Kerr R, Stratton I et al (2012), *International Subarachnoid Aneurysm Trial (ISAT) of neurosurgical clipping versus endovascular coiling in 2143 patients with ruptured intracranial aneurysms: a randomised trial. Volume 360, Issue 9342. 1261-1340. International Subarachnoid Aneurysm Trial (ISAT) Collaborative Group.*

Mutoh T, Kazumata K, Terasaka S, Taki Y, Suzuki A, Ishikawa T. Early intensive versus minimally invasive approach to postoperative hemodynamic management after subarachnoid hemorrhage. *Stroke*. 2014;45:1280–1284

National Confidential Enquiry into Patient Outcome and Death (NCEPOD) (2013) *Managing the Flow*. NCEPOD. Available at:

http://www.ncepod.org.uk/2013report2/downloads/ManagingTheFlow_SummaryReport.pdf

NICE Guideline (2021). Subarachnoid haemorrhage caused by a ruptured aneurysm: diagnosis and management. [draft-guideline \(nice.org.uk\)](https://www.nice.org.uk/guidance/NG114)

Oddo, M, Poole, D, Hlebock, R, Meyfroidt, G, Stocchetti, G, Stocchetti, N, Bouzat, P, Cecconi, M, Geeraets, T, Martin, I, Quintard, H, Silvio, F, Romergryko, G, Hemphill, C, Ichai, C Menon, D Payen, JF, Perner, A, Smith, M Suarez, J Videtta, W, Zaner, E, Ciiterio, J. (2018). Fluid therapy in neurointensive care patients: ESICM consensus and clinical practice Recommendations. *Intensive Care Med* 44:449–463. Available

at:https://www.researchgate.net/publication/323524253_Fluid_therapy_in_neurointensive_care_patients_ESICM_consensus_and_clinical_practice_recommendations

Royal College of Nursing, (2022). Infection Control and Prevention. [Infection Prevention and Control: Subject Guide | Library | Royal College of Nursing \(rcn.org.uk\)](https://www.rcn.org.uk/infection-control)

Subarachnoid Haemorrhage (2018). Brain & Spine Foundation. www.brainandspine.org.uk

Royal College of Physicians (RCP). (2016). *National Clinical Guideline for Stroke*. 5th Ed. RCP. Available at: [https://www.strokeaudit.org/SupportFiles/Documents/Guidelines/2016-National-Clinical-Guideline-for-Stroke-5t-\(1\).aspx](https://www.strokeaudit.org/SupportFiles/Documents/Guidelines/2016-National-Clinical-Guideline-for-Stroke-5t-(1).aspx)