



# SUBARACHNOID HAEMORRHAGE STUDY

National Confidential Enquiry into Patient Outcome and Death (NCEPOD)

## CLINICIAN QUESTIONNAIRE- TERTIARY CARE\* CLINICIAN

**CONFIDENTIAL**

NHS number of patient:

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### DETAILS OF THE CLINICIAN COMPLETING THIS QUESTIONNAIRE:

Grade: \_\_\_\_\_

Specialty: \_\_\_\_\_

#### What is this study about?

#### How to complete the form:

The aim of this study is to explore remediable factors in the process of care of patients admitted with the diagnosis of subarachnoid haemorrhage, looking both at patients that underwent an interventional procedure and those managed conservatively

This form will be electronically scanned. Please use a black or blue pen. Please complete all questions with either block capitals or a bold cross inside the boxes provided, e.g.

#### Specific inclusions/exclusions:

Did the patient undergo an intervention?

All patients (aged 16+) admitted to hospital during the time period: 01/07/2011- 30/09/2011 with a diagnosis of aneurysmal subarachnoid haemorrhage will be included in the study.

Yes     No     Unknown

Patients with confirmed non-aneurysmal SAH and paediatric patients (aged <16) will be excluded. For patients that are transferred to a neurosurgical centre, data will be collected from both the referring and receiving hospitals.

If you make a mistake, please "black-out" the incorrect box and re-enter the correct information, e.g.

Yes     No     Unknown

**If you receive more than 2 questionnaires for this study, it is acceptable to pass additional questionnaires to your trainees to complete, provided that you can sign off that you are satisfied with their accurate completion.**

**Unless indicated, please mark only one box per question.**

A list of definitions is provided on the back page of the questionnaire.

#### CPD Accreditation:

**Please return the completed questionnaire to NCEPOD in the SAE provided.**

Clinicians who complete NCEPOD questionnaires make a valuable contribution to the investigation of patient care. Completion of questionnaires also provides an opportunity for clinicians to review their clinical management and undertake a period of personal reflection. These activities have a continuing medical and professional development value for individual clinicians. Consequently, NCEPOD recommends that clinicians who complete NCEPOD questionnaires keep a record of this activity which can be included as evidence of internal/ self directed Continuous Professional Development in their appraisal portfolio.

A copy MUST NOT be kept in the patient's notes

If you (the clinician completing the questionnaire) would like email confirmation of the completion of this questionnaire for your records, please clearly supply your email address below.

#### Questions or help?

Further information can be found on our website <http://www.ncepod.org.uk/sah.htm>

If you have any queries about the study or this questionnaire, please contact NCEPOD on: 020 7600 1893 or

[sah@ncepod.org.uk](mailto:sah@ncepod.org.uk)

**Thank you for taking the time to complete this questionnaire. The findings of the full study will be published in Autumn 2013.**

*\*Please see definitions on back page.*

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**FOR NCEPOD USE ONLY**

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0 4 4 8 3 0 1 8 4 4 2 6 6



10. Please select the patient's admission pathway to the neurosurgical centre:

- Transfer directly from this hospital's emergency department
- Transfer from this hospital's acute admissions (or equivalent) unit
- Transfer from another ward in this hospital (please specify)
- Transfer from another hospital (Emergency Department)
- Transfer from another hospital (Other ward, please specify)
- Transfer from another neurosurgical centre
- Direct admission to the neurosurgical centre from primary care
- Direct admission to the neurosurgical centre from an outpatient clinic
- Other Pathway (Please specify)

**D. PATIENT HISTORY SUMMARY**

11. Please complete the patient history summary for all appropriate events

Event	Time 00:00 hours	Date dd/mm/yy	Day SAH = 0
SAH onset	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<b>0 0</b>
First hospital admission following SAH	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Diagnosis confirmed (CT scan or LP)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Admission to neurosurgical unit	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Emergency haematoma evacuation	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
First CSF diversion	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Diagnostic angiography (DSA or CTA)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Primary intervention (coiling or clipping)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Re-bleeding (pre- or post-intervention)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Ventriculo-peritoneal shunting	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Onset of delayed cerebral ischaemia	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Discharge	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Death in Neurosurgical Unit	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>





## E. PATIENTS TRANSFERRED WITHIN THIS HOSPITAL

Please complete this section if the patient was transferred to the neurosurgical unit from a department WITHIN THIS HOSPITAL. If the patient was not transferred from a department within this hospital please proceed directly to Section F (question 16).

12a. Does your unit maintain a referral log?  Yes  No  Unknown

From the referral log if available, or from the patient's records, please confirm the following:

12c. Date and time of referral

D	D	M	M	Y	Y	Y	Y	h	h	m	m

Unknown  Unknown

12d. Grade of the referring clinician (please use grade codes listed on the back page)  Unknown

12e. Specialty of the referring clinician (please use national specialty codes listed on the back page)  Unknown

12f. Grade of the clinician in the neurosurgical unit that received the referral (please use grade codes listed on the back page)  Unknown

13a. Is there any evidence that the referral to the neurosurgical unit was delayed?  Yes  No

13b. If YES, please indicate the reason(s) below:

- |  |  |
|--|--|
| <input type="checkbox"/> Delay in making differential diagnosis of SAH<br><input type="checkbox"/> Delay in obtaining CT scan<br><input type="checkbox"/> Inaccurate interpretation/ reporting of CT scan<br><input type="checkbox"/> Delay in performing LP | <input type="checkbox"/> Difficulty in contacting neurosurgical staff<br><input type="checkbox"/> Other (please state) |
|--|--|
- 

14a. Was the patient immediately accepted for transfer to the neurosurgical unit on receipt of the referral?  Yes  No  Unknown

14b. If NO, why was acceptance delayed?

- |  |  |
|--|--|
| <input type="checkbox"/> Receiving clinician sought senior advice<br><input type="checkbox"/> Other (please state) | <input type="checkbox"/> No ITU/HDU beds in neurosurgical unit<br><input type="checkbox"/> Patient initially considered too poor grade |
|--|--|

15a. Is there any evidence that the patient's condition deteriorated whilst awaiting transfer?  Yes  No  Unknown

15b. If YES, please give details



## F. PATIENTS TRANSFERRED FROM ANOTHER HOSPITAL

**Please complete this section if the patient was transferred to the neurosurgical unit from another hospital. If the patient was not transferred from another hospital please go to question 24.**

- 16.** Please state what category of hospital the patient was transferred from:  Small DGH ( $\leq 500$  beds)  Large DGH ( $>500$  beds)
- University Teaching hospital  Private hospital  Single Specialty Hospital
- Other Neurosurgical Centre  Other Hospital Type (please state)
- 17a.** Does your unit usually receive acute SAH referrals from the hospital that referred the patient?  Yes  No  Unknown
- 17b.** If NO, why was this SAH patient referred to this neurosurgical unit? Was it because the regional neurosurgical unit normally serving the referring hospital lacked: (please mark all that apply)
- ITU/HDU beds  Neurovascular surgeon  Interventional radiologist  Unknown
- Other reason (please specify)
- 17c.** If this hospital is not the regional neurosurgical unit normally serving the referring hospital, in your opinion, did referral to your unit delay the patient's admission to neurosurgical care?  Yes  No
- 17d.** If YES, please estimate the delay that occurred:  Days  Hours  Unknown
- 18a.** Does your unit maintain a referral log?  Yes  No  Unknown
- From the referral log if available, or from the patient's records, please confirm the following:
- 18b.** Date and time of referral 

D	D	M	M	Y	Y	Y	Y	h	h	m	m
<input style="width: 20px; height: 20px;" type="text"/>											

 Unknown
- 18c.** Grade of the referring clinician *please use grade codes listed on the back page*   Unknown
- 18d.** Specialty of the referring clinician *please use specialty codes listed on the back page*   Unknown
- 18e.** Grade of the clinician in the neurosurgical unit that received the referral (please use grade codes listed on the back page) *please use grade codes listed on the back page*   Unknown
- 19a.** Is there any evidence that the referral to the neurosurgical unit was delayed?  Yes  No  Unknown
- 19b.** If YES, please indicate the reason(s) below (answers may be multiple):
- Delay in making differential diagnosis of SAH  Delay in performing LP
- Delay in obtaining CT scan  Failed /mis-performed LP
- Delay in reporting/receiving report of CT scan  Difficulty in contacting neurosurgical staff
- Inaccurate interpretation/ reporting of CT scan
- Other (please state)





20a. Was the patient immediately accepted for transfer to the neurosurgical unit on receipt of the referral?  Yes  No  Unknown

20b. If NO, why was acceptance delayed?

- Delay/ difficulty reviewing referring hospital CT scan
- Receiving clinician sought senior advice
- Patient initially considered too poor grade
- Patient too medically unstable for immediate transfer
- No ITU/HDU beds in neurosurgical unit
- Other (please state)

20c. If acceptance of this patient was delayed, please confirm the time and date that the patient was subsequently accepted:  Unknown

D	D	M	M	Y	Y	Y	Y	h	h	m	m
<input type="text"/>											

21a. Once accepted, was there any delay in the transfer of the patient to this neurosurgical unit?  Yes  No  Unknown

21b. If YES, please indicate the reasons:

22. Was the patient intubated and ventilated for transfer?  Yes  No  Unknown

23a. Is there any evidence that the patient's condition deteriorated whilst awaiting or during the transfer?  Yes  No  Unknown

23b. If YES, please give details

## G. ADMISSION

24. To what level of neurosurgical care\* was the patient first admitted ? \*Please see definitions on back page.
- Level 0/1: Normal ward care in an acute hospital       Level 2: HDU       Level 3: ICU
25. What was the grade of the most senior clinician who reviewed the patient immediately following admission to the neurosurgical unit?  Please use the grade codes listed on the back page  Unknown
26. How soon after admission to the neurosurgical unit, is there a record of the patient having been reviewed by a consultant neurosurgeon?
- Less than 6 hours       12-24 hours
- 6-12 hours       24-48 hours       Unknown

## H. CLINICAL PRESENTATION AND PAST MEDICAL HISTORY

- 27a. Is there any evidence that the patient suffered a 'warning' haemorrhage before this SAH?  Yes  No  Unknown
- 27b. If YES, please indicate the number of days between the warning haemorrhage and admission to this unit:





**28a.** Is there any evidence that the diagnosis of SAH was overlooked in primary care?  Yes  No  Unknown

**28b.** If YES, please provide details:

**29a.** Is there any evidence that the diagnosis of SAH was overlooked in secondary care?  Yes  No  Unknown

**29b.** If YES, please provide details:

**30.** Did the patient have any of the following co-morbidities?  Diabetes  Ischaemic Stroke  Hypertension

*Answers may be multiple (please mak all that apply)*

Angina, myocardial infarction, arrhythmia

Renal impairment requiring dialysis

COPD

None of the above

Other (please state)

**31a.** Had the patient previously undergone treatment for a ruptured intracranial aneurysm?  Yes  No  Unknown

**31b.** If YES, please give date (month & year):

 

m m

   

y y y y

Unknown

**31c.** If YES, what treatment did they receive?

Surgical clipping

Endovascular therapy

Other (please state)

Conservative treatment

Unknown

**32.** What was the patient's functional status prior to this SAH?

No symptoms at all

Unknown

No significant disability despite symptoms: Able to carry out all usual activities

Slight disability

Moderate disability: Requiring some help but able to walk without assistance

Moderate to severe disability: Unable to walk without assistance and unable to attend to own bodily needs without assistance

Severe disability: Bedridden, incontinent and requiring constant nursing care and attention

**33.** What was the patient's first documented Glasgow Coma Score on admission to this neurosurgical centre? Please record the separate components of the score. If the patient was intubated and ventilated, please give the best recorded motor score if available.

Best Motor Response (1-6)

Best Verbal response(1-5)

Not assessable (patient intubated/ventilated)

Best Eye Response (1-4)

Total score (3-15)

Not recorded

**34.** What were the pupil responses?

Bilaterally reacting

Unilateral reaction only

Bilaterally unreacting

Both fixed and dilated

Unknown



35a. Did the patient have a motor deficit on admission to the neurosurgical unit?  Yes  No  Unknown

35b. If YES please give details:

35c. Please indicate any other neurological deficits the patient had on admission to the neurosurgical centre?  Cranial nerve palsy  Dysphasia  None  
 Other (please state):

36. What was the patient's best estimated WFNS\* score on admission to the neurosurgical unit?  
 I  II  III  IV  V \*Please see definitions on back page.

## I. INVESTIGATIONS

37a. Was the diagnosis of SAH confirmed before admission to the neurosurgical unit?  Yes  No  Unknown

37b. If YES, how was the diagnosis made?  CT Scan  Lumbar Puncture  Both CT and Lumbar Puncture

38a. If Lumbar puncture was performed, did it yield a definitive diagnosis?  Yes  No  N/A not performed

38b. If NO, why was the lumbar puncture not diagnostic?

39a. Was CTA\* performed before admission to the neurosurgical unit? \*Please see definitions on back page.  Yes  No  Unknown

39b. If YES, did the CTA confirm presence of an aneurysm?  Yes  No  Unknown

40a. Was a CT scan repeated on admission to the neurosurgical unit?  Yes  No  Unknown

40b. If YES, what was the reason for repeating the scan? and what were the findings?

41. What was the Fisher Grade\* of the first diagnostic CT scan? \*Please see definitions on back page.  
 No haemorrhage evident  Subarachnoid haemorrhage more than 1mm thick  
 Subarachnoid haemorrhage less than 1mm thick  Subarachnoid haemorrhage of any thickness with intra-ventricular haemorrhage (IVH) or parenchymal extension

42a. Was a CTA performed on admission to the neurosurgical unit?  Yes  No  Unknown

42b. If NO, please confirm why a CTA was not performed? (select from the options below) \*Please see definitions on back page.  
 Already available from referring hospital  Patient proceeded directly to cerebral DSA\*  Patient died before further investigation  
 Other

43a. If CTA was performed at this neurosurgical centre, please state the date and time:  
Date 

D	D	M	M	Y	Y	Y	Y

 Time 

h	h	m	m





**43b.** If CTA was performed (either at the referring hospital or the neurosurgical centre), what were the findings of the CTA?  N/A

**44a.** Was diagnostic cerebral DSA performed (either as part of treatment or as an isolated test)?  Yes  No  Unknown

**44b.** If NO, please confirm why it was not performed:

- Patient did not survive     
  Patient remained too poor grade for further investigation     
  Treatment decision based on CTA alone     
  Unknown  
 Other (please specify)

**44c.** If cerebral DSA was performed at this neurosurgical centre, please state the date and time:  Unknown

D D M M Y Y Y Y      h h m m  
            

**45.** Was a diagnosis of aneurysmal SAH confirmed?  Yes  No  Unknown

**46.** Please confirm the site and size of the target aneurysm thought responsible for the SAH and report any other aneurysms:  N/A

Site	Size of aneurysm (mm)	Target aneurysm (ruptured)	Other aneurysm (considered unruptured)
ACoA	<input type="text"/> <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other ACA	<input type="text"/> <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICA	<input type="text"/> <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
MCA	<input type="text"/> <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCoA	<input type="text"/> <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
PICA	<input type="text"/> <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
Basilar termination	<input type="text"/> <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other posterior circulation (please state)	<input type="text"/> <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input style="width: 100%; height: 20px;" type="text"/>			

**47a.** Did the patient have an abnormality on ECG on admission to the neurosurgical centre?  Yes  No  Unknown

**47b.** If YES state describe abnormality



## J. INITIAL MANAGEMENT

48. How was the patient monitored on admission to the neurosurgical centre?

*Answers may be multiple, please mark all that apply*

- Pulse oximetry       CVP       Transcranial Doppler  
 Non-invasive BP       Cardiac output       Intra-arterial BP  
 Other (please state)

49. Was the patient receiving intravenous fluids on admission?       Yes       No       Unknown

50. Was the patient receiving nimodipine on admission?       Yes       No       Unknown

51a. Was the patient intubated and ventilated on admission to the Neurosurgical Unit?       Yes       No       Unknown

51b. If YES, what was the indication for intubation and ventilation? *Answers may be multiple, please mark all that apply*

- Neurological support       Respiratory support       Cardiovascular support

51c. If YES, what was the maximum FiO<sub>2</sub> required during the first 24 hours of admission?

      Unknown

51d. If YES, was ionotropic support required during the first 24 hours of admission?       Yes       No       Unknown

52a. Was there any evidence that the patient deteriorated following admission and prior to definitive treatment of a ruptured aneurysm?       Yes       No       Unknown

52b. If YES, please give details:

53a. Did the patient undergo any emergency (within 24 hours) interventions on admission to the neurosurgical unit?       Yes       No       Unknown

53b. If YES, please select all those that apply:

- External ventricular drainage       Lumbar drainage       Evacuation of intracerebral haemnatoma  
 Evacuation of intracerbral haematoma and aneurysm clipping       Emergency coiling and evacuation of intracerebral haematoma  
 Other (please state)

53c. Please confirm the time and date of the intervention (if multiple interventions please enter date and time for the first intervention)

D D M M Y Y Y Y      h h      m m       Unknown  
                   

53d. Was there any evidence that the emergency intervention was delayed?       Yes       No       Unknown

53e. If YES, please give details:





- 53f. What was the grade of the most senior surgeon present at the intervention?    Unknown  
(please use the grade codes listed on the back page)
- 53g. What was the grade of the most senior anaesthetist present at the intervention?    Unknown  
(please use the grade codes listed on the back page)

## K. DECISION MAKING

- 54a. Was the decision on how to treat the ruptured aneurysm made at an MDT meeting?  Yes  No  Unknown
- 54b. If YES, did the MDT include the following: (please indicate all that were present)  Consultant neurosurgeon(s)  Consultant neuroradiologist(s)  Unknown
- 54c. Was the decision on how to treat the ruptured aneurysm recorded in the hospital records?  Yes  No
- 54d. If the decision was not made at an MDT, what was the grade and specialty of the clinician that made the decision on how to treat this patient?  
(please use the grade codes listed on the back page)   (please use the national specialty codes listed on the back page)
55. Did this patient undergo a surgical or radiological intervention for a ruptured aneurysm?  Yes  No

**If NO, please continue to question 56. If YES, the patient DID undergo a surgical or radiological intervention to secure their aneurysm, please proceed to Q 59.**

56. Please state why the patient did not undergo an intervention?

- Persistently poor neurological grade Please state WFNS grade:
- Rebleeding before treatment possible
- Onset of delayed ischaemia before treatment possible
- Serious co-morbidities (please specify)
- Intervention considered too difficult for technical reasons
- Other (please specify:)

57a. Was the decision to treat the patient conservatively discussed with the patient's next of kin?  Yes  No  Unknown

57b. If YES, what information was given to the next of kin?

58. If the patient did not undergo surgery or interventional therapy for their aneurysm, please provide information on the treatment that was provided: (answers may be multiple)

- Supportive medicine only  End of life care
- Active treatment of medical complications  Active treatment of delayed ischaemia
- Other treatment (please specify)



## L. CONSENT

Please complete the following questions 59-80 if the patient underwent an intervention to secure their aneurysm. If the patient did not undergo an intervention, please proceed to question 81.

59. Who gave consent for treatment of the aneurysm?

Patient

Unable to obtain consent from the patient (form 4 completed)

Unknown- no consent form available

60. Which grade of clinician obtained the consent for treatment of the aneurysm?

Unknown

*(please use the grade codes listed on the back page)*

61. Which specialty of clinician obtained the consent for treatment of the aneurysm?

Unknown

*(please use the specialty codes listed on the back page)*

62a. Were the recognised complications of the procedure documented on the consent form?

Yes

No

Unknown

62b. Was death documented as a potential risk of this procedure on the consent form?

Yes

No

Unknown

63. Was written information about the proposed operation provided to the patient or next of kin?

Yes

No

Unknown

## M. ANEURYSM INTERVENTION

64. What was the patient's WFNS grade prior to treatment?

I

II

III

IV

V

65. What intervention was undertaken?

Aneurysm coiling

Aneurysm clipping

Aneurysm clipping after attempted coiling

Aneurysm coiling after attempted clipping

Other (please state):

66. Please confirm the time and date of the intervention: (please use 24 hour clock)

Date      D D M M Y Y Y Y

Unknown

Time      h h m m

Unknown

67a. Is there any evidence that the intervention was postponed or delayed?

Yes

No

Unknown

67b. If YES, what was the reason for the delay?

Non-availability of neurosurgical or neuroradiological staff

Non-availability of theatres, interventional suite, equipment

Non-availability of HDU/ITU beds

Patient requiring additional treatment/resuscitation

Other reason (please state below)

67c. If YES to any of the above, please give further details



68. Was a WHO checklist completed?  Yes  No  Unknown

69a. What was the grade of the clinician performing the aneurysm intervention?

- Consultant  Senior trainee supervised by consultant (unscrubbed)  Unknown  
 Senior trainee (SpR or fellow) supervised by consultant (scrubbed)  Senior trainee performed alone

69b. Was there a dedicated first assistant?  Yes  No  Unknown

69c. If NO, did the lack of a dedicated first assistant contribute to an adverse outcome/event?  Yes  No  Unknown

70. What was the grade of the most senior anaesthetist present at the aneurysm intervention

- Consultant  Senior trainee (SpR or fellow) supervised by consultant  Senior trainee (unsupervised)

71. If the patient underwent endovascular treatment to secure the aneurysm how was this performed?

- Bare platinum coils  Stent-assisted coiling  Balloon-assisted coiling  
 Treated coils  Stenting only  
 Other (please state)

72. If the patient underwent surgery, what procedure was performed?

- Definitive clipping  Partial or fundal clipping  Aneurysm wrapping  
 Temporary clipping (please state duration (minutes))   
 Other (please state)

73. Which of the following were employed?

- Intraoperative ICG angiography  Intraoperative Doppler studies  Perioperative angiography  None of these  Unknown

74a. Is there any evidence that the outcome of the procedure was prejudiced by deficiencies in either personnel or equipment?  Yes  No  Unknown

74b. If YES, please give details:

## N. PROCEDURAL COMPLICATIONS

75a. Were there any complications associated with the intervention?  Yes  No  Unknown

If YES, please specify

75b. Surgery

- Intra-operative rupture  Branch vessel occlusion  Prolonged temporary occlusion  
 Other (please state)  Post-operative haematoma  Brain swelling



**75c. Interventional Radiology**

- Failure of device       Thromboembolism       Rupture       Perforation  
 Other (please state)       Groin Haematoma

**O. POST-OPERATIVE CARE**

**76a.** Did the patient recover to their pre-intervention state within 4 hours?       Yes       No       Unknown

**76b.** If NO, what was their post-intervention deficit?

**76c.** If NO, in your opinion, what was the cause of their post-intervention deterioration?

**76c.** How was the deterioration managed?

**77a.** Did the patient undergo a post-procedural CT scan?       Yes       No       Unknown

**77b.** If YES, how long after the completion of the procedure was it before the scan was performed (to the nearest half hour)?       .  hours

**77c.** What were the scan findings?

**78.** Where was the patient managed following the intervention?

- Level 0/1: Normal ward care       Level 2: HDU       Level 3: ICU       N/A e.g patient died in the operating theatre

Other (please state)

**79a.** Is there any evidence that the patient was refused admission to a higher level of care when their condition warranted that admission?       Yes       No       Unknown

**79b.** If YES, please give details:

**80.** Which of the following methods of monitoring were employed following the intervention?

- Pulse oximetry       Non-invasive BP       Intra-arterial BP       CVP measurement  
 Trans-cranial Doppler       Cardiac output       ICP       CFM/EEG  
 Other (please state)



## P. DELAYED CEREBRAL ISCHAEMIA

81. Did this patient develop delayed cerebral ischaemia?  Yes  No

**If YES, please continue to question 82. If NO, please proceed directly to question 94.**

82. When was the diagnosis made? Date D D M M Y Y Y Y Time h h m m

83. What was the patient's GCS at the time of the diagnosis?    Unknown

84a. Did the patient have a focal neurological deficit?

84b. If YES, please specify:  Yes  No  Unknown

85a. Did the patient have an electrolyte deficit?

85b. If YES, please specify:  Yes  No  Unknown

86. How was the diagnosis made?

- |   |                                       |                              |
|---|---------------------------------------|------------------------------|
| <input type="checkbox"/> Clinical grounds       | <input type="checkbox"/> CT perfusion | <input type="checkbox"/> CTA |
| <input type="checkbox"/> DSA                    | <input type="checkbox"/> CT scan      | <input type="checkbox"/> TCD |
| <input type="checkbox"/> Other (please specify) |                                       |                              |

87. Please summarise the imaging findings:

88. What treatment was given? (please indicate all that apply)

- Intravenous crystalloid fluids     Hypertonic saline     Intravenous colloidal fluid

Induced hypertension (please specify)

Induced hypervolaemia (please specify)

Induced haemodilution (please specify)

- Balloon angioplasty     Pharmacological angioplasty     Pharmacological angioplasty

New or additional CSF drainage

Other (please specify)

89. How long after the diagnosis of delayed ischaemia was treatment initiated (to the nearest half hour)?   .   hours

90. How was the patient monitored during the treatment of their delayed ischaemia?

*Answers may be multiple, please mark all that apply*

- Pulse oximetry     Non-invasive BP     Intra-arterial BP     CVP measurement

- Trans-cranial Doppler     Cardiac output     ICP     CFM/EEG

Other (please state)





91. Where was the patient managed during treatment of the delayed ischaemia?

Level 0/1: Normal ward care       Level 2: HDU       Level 3: ICU

Other (please state)

92. What was the patients GCS at the following times after the onset of treatment?

4 hours   Unknown    12 hours   Unknown    24 hours   Unknown

93a. Were there any problems or delays in the treatment for delayed cerebral ischaemia?       Yes       No

93b. If YES, please specify:

## Q. RE-BLEEDING

94a. Did the patient suffer aneurysmal re-bleeding?       Yes       No

**If YES, please continue to question 94b. If NO, please proceed directly to question 99.**

94b. How was the diagnosis made?       Clinical grounds       Haemorrhage in EVD/LD       CT scan  
 Other (please specify)

95. When did the re-bleeding occur?      Date      D D M M Y Y Y Y      Time      h h m m  
       

96. What was the patient's GCS before the re-bleeding?             Unknown

97. What was the patient's GCS after resuscitation?             Unknown

98. What was the outcome of re-bleeding?

Immediate death       Delayed death       Persistent poor grade, no further treatment possible

Improvement and further treatment possible(please specify)

Recovery to pre-rebleed condition   
 Other (please specify)

## R. HYDROCEPHALUS

99. Did the patient undergo early CSF drainage?       Yes       No

**If YES, please continue to question 100. If NO, please proceed directly to question 105.**

100. Please indicate which of the following the patient underwent:       Lumbar drain       EVD

Other (please state)





**101a.** Were there any complications of the CSF drainage?  Yes  No  Unknown

**101b.** If YES, please specify:

**102.** Did the patient require ventriculo-peritoneal shunting following early CSF drainage?  Yes  No  Unknown

**103a.** Were there any complications of the ventriculo-peritoneal shunting?  Yes  No  Unknown

**103b.** If YES, please specify:

**104a.** Did this patient undergo any other neurosurgical operations or radiological interventions (in addition to treatment of the aneurysm) during the same admission?  Yes  No  Unknown

**104b.** If YES, please specify:

**104c.** On what date and at what time was this performed? (please use 24 hour clock)

Date 

D	D	M	M	Y	Y	Y	Y

 Time 

h	h	m	m

 Unknown

**S. END OF LIFE CARE**

**105a.** Was treatment withdrawn at any time?  Yes  No  Unknown

**105b.** If YES was this because of:

- Irreversible brain injury  Cardiac failure  Respiratory failure  
 Other reason (please state)

**105c.** Who made the decision to withdraw treatment? *Answers may be multiple, please mark all that apply*

- The patient's named consultant neurosurgeon  Another consultant neurosurgeon  A consultant in neurocritical care  Unknown  
 Other clinician, please state:-

Grade: *Please use the grade codes listed on the back page of the questionnaire*

<input type="checkbox"/> Unknown	

Specialty: *Please use the National Specialty codes listed on the back page of the questionnaire*

<input type="checkbox"/> Unknown		



106. Was the patient on a standard end of life care pathway (e.g. LCP)  Yes  No  Unknown
107. Was the patient for DNA-CPR?  Yes  No  Unknown

## T. DISCHARGE DETAILS

108. What was the date of discharge or death?          
D D M M Y Y Y Y

109. Was the patient:  Discharged to previous place of residence  Discharged to a rehabilitation unit
- Discharged to another neurosurgical unit for further treatment (not rehabilitation)
- Discharged to another non-specialist hospital for further treatment (not rehabilitation)
- Other (please state)
- Not applicable, patient died during this admission (please go straight to question 113)  Discharge destination unknown

**If the patient was discharged alive, please complete questions 110-113**

110. What was the patient's functional status at discharge/transfer?
- No symptoms at all
  - No significant disability despite symptoms: Able to carry out all usual activities.
  - Slight disability
  - Moderate disability: Requiring some help but able to walk without assistance
  - Moderate to severe disability: Unable to walk without assistance and unable to attend to own bodily needs without assistance
  - Severe disability: Bedridden, incontinent and requiring constant nursing care and attention
  - Unknown

111a. Was this patient transferred to specialist neurological rehabilitation services:  Yes  No  Unknown

111b. If YES, were there any delays?  Yes  No  Unknown

111c. If YES, please give details:

112a. Was the patient followed up by the neurosurgical unit?  Yes  No  Unknown

112b. If YES, what was the date of the first follow-up?          Unknown

112c. If YES what was their functional status at this follow-up? D D M M Y Y Y Y

- No symptoms at all
- No significant disability despite symptoms: Able to carry out all usual activities.
- Slight disability
- Moderate disability: Requiring some help but able to walk without assistance
- Moderate to severe disability: Unable to walk without assistance and unable to attend to own bodily needs without assistance
- Severe disability: Bedridden, incontinent and requiring constant nursing care and attention
- Unknown



## U. DEATH

If the patient died during this admission, please complete questions 113-117, if the patient was discharged alive, please proceed to question 118.

113. Was a post-mortem performed?  Yes  No  Unknown

114. What was the cause of death entered on the death certificate?

115a. Was this death discussed at a morbidity and mortality meeting?  Yes  No  Unknown

115b. If NO, why not?

116a. In your opinion was this patient's death inevitable?  Yes  No  Unknown

116b. Please give details:

117a. Was this patient potentially suitable for organ donation?  Yes  No  Unknown

117b. If YES to 117a, was this discussed with the next of kin?  Yes  No  Unknown

117c. If YES to 117a did organ donation occur?  Yes  No  Unknown

117d. If NO, why not?

## V. SUMMARY & COMMENTS

118. Please use this section to provide a brief summary of this case, adding any comments or information you feel relevant. You may also type on a separate sheet. NCEPOD attaches great importance to this summary. Please give as much information as possible about the care of this patient.

Thank you for taking the time to complete this questionnaire, your contribution to our study is greatly appreciated

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## CODES FOR GRADE

<b>01 - Consultant</b> <b>02 - Staff grade / Associate specialist</b> <b>03 - Trainee with CCT</b> <b>04 - Senior Specialist Trainee (ST3+ or equivalent)</b>	<b>05 - Junior Specialist Trainee (ST1 &amp; ST2 or CT or equivalent)</b> <b>06 - Basic grade (HO/ FY1 or SHO/FY2 or equivalent)</b> <b>07 - Other</b>
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## CODES FOR SPECIALTY

### SURGICAL SPECIALTIES

100 = General Surgery	107 = Vascular Surgery	161 = Burns Care
101 = Urology	110 = Trauma & Orthopaedics	170 = Cardiothoracic Surgery
103 = Breast Surgery	120 = Ear, Nose & Throat (ENT)	172 = Cardiac Surgery
104 = Colorectal Surgery	130 = Ophthalmology	173 = Thoracic Surgery
105 = Hepatobiliary & Pancreatic Surgery	145 = Maxillo-Facial Surgery	180 = Accident & Emergency
106 = Upper Gastrointestinal Surgery	140 = Oral Surgery	190 = Anaesthetics
	150 = Neurosurgery	192 = Critical/Intensive Care Medicine
	160 = Plastic Surgery	

### MEDICAL SPECIALTIES

300 = General Medicine	320 = Cardiology	400 = Neurology
301 = Gastroenterology	326 = Acute internal medicine	410 = Rheumatology
302 = Endocrinology	330 = Dermatology	430 = Geriatric Medicine
303 = Clinical Haematology	340 = Respiratory Medicine	500 = Obstetrics & Gynaecology
306 = Hepatology	350 = Infectious Diseases	501 = Obstetrics
307 = Diabetic Medicine	352 = Tropical Medicine	502 = Gynaecology
314 = Rehabilitation	360 = Genito-Urinary Medicine	800 = Clinical Oncology
315 = Palliative Medicine	361 = Nephrology	810 = Radiology
	370 = Medical Oncology	823 = Haematology

## DEFINITIONS

**CTA:** Computerized tomographic angiography, also called CT angiography (CTA), is a radiological test that combines the technology of a conventional CT scan with that of traditional angiography to create detailed images of the blood vessels

**DSA:** Digital subtraction angiography (DSA) is a type of fluoroscopy technique used in interventional radiology to clearly visualize blood vessels in a bony or dense soft tissue environment

**Fisher Grade:** The Fisher Grade classifies the appearance of subarachnoid hemorrhage on CT scan.

**Grade 1:** None evident; **Grade 2:** Less than 1 mm thick; **Grade 3:** More than 1 mm thick; **Grade 4:** Diffuse or none with intraventricular hemorrhage or parenchymal extension

**Level of ward care:** **LEVEL 0:** Patients whose needs can be met through normal ward care in an acute hospital. **LEVEL 1:** Patients at risk of their condition deteriorating, or those recently relocated from higher levels of care whose needs can be met on an acute ward with additional advice and support from the critical care team. **LEVEL 2:** (e.g. HDU) Patients requiring more detailed observation or intervention including support for a single failing organ system or post operative care, and those stepping down from higher levels of care. (NB: When Basic Respiratory and Basic Cardiovascular support are provided at the same time during the same critical care spell and no other organ support is required, the care is considered to be Level 2 care). **LEVEL 3:** (e.g. ICU) Patients requiring advanced respiratory support alone or basic respiratory support together with support of at least two organs. This level includes all complex patients requiring support for multi-organ failure. (NB: Basic Respiratory and Basic Cardiovascular do not count as 2 organs if they occur simultaneously (see above under Level 2 care), but will count as Level 3 if another organ is supported at the same time).

**Primary Care:** Defined by the World Health Organisation as “essential health care; based on practical, scientifically sound, and socially acceptable method and technology; universally accessible to all in the community through their full participation; at an affordable cost; and geared toward self-reliance and self-determination.” In the UK this typically refers to care provided by General Practitioners.

**Secondary Care:** Medical care provided by specialists (consultants) in a particular field of medicine, whether in a hospital or community setting. Patients are referred to these specialists by another doctor, commonly a General Practitioner (GP).

**Tertiary Care:** More specialised medical centres offering specialist care in a particular field, in a centre with special facilities for investigation and treatment and often covering a much wider area than primary or secondary care services.

**WFNS grade**The World Federation of Neurosurgeons (WFNS) classification uses Glasgow coma score (GCS) and focal neurological deficit to gauge severity of symptoms : **Grade 1:** GCS 15 FND= Absent; **Grade 2:** GCS 13–14, FND= Absent; **Grade 3:** GCS 13–14, FND=Present; **Grade 4:** GCS 7–12, FND=Present or absent; **Grade 5:** GCS <7 , FND=Present or absent