Cambridge Neuroanaesthesia Training

Addenbrooke's Hospital

2021 Curriculum Learning Syllabus

STAGE 2, ST4/ST5

(https://rcoa.ac.uk/documents/2021-curriculum-learning-syllabus-stage-2/general-anaesthesia)

➔ Important

If you have **any questions** regarding your training in neuroanaesthesia or how to complete the module documentation, please do not hesitate to contact the **neuroanaesthetic educational supervisor** or one of the **college tutors** for advice. Please do this as soon as possible as it may be difficult to rectify misunderstandings, mistakes and omissions at the end of your training in this module.

Neuroanaesthesia Training for **STAGE 2** falls under the **General Anaesthesia Domain**, incorporating the **KEY CAPABILITIES** M&N (page 97 of the curriculum document).

General Anaesthesia Domain

High-level Learning Outcome (HLO): Provides safe and effective general anaesthesia

STAGE 2 - NEUROANAESTHESIA

Stage learning outcome: Provides safe and effective general anaesthesia with distant supervision for ASA 1 - 3 patients undergoing non-complex elective and emergency surgery within all settings.

KEY CAPABILITIES - NEUROANAESTHESIA

M — Applies relevant anatomical, physiological and pharmacological principles to neurosurgical patients

N — Provides safe anaesthetic care to ASA 1-3 adults for simple elective and emergency intracranial, spinal and neuroradiology procedures under local supervision

Examples of evidence

- SLEs from experience in neurosurgery.

Personal activities and reflections:

- Final FRCA.

Suggested supervision level

- 2a - supervisor in theatre suite, available to guide aspects of activity through monitoring at regular intervals.

Cross links with other domains and capabilities

- *General Anaesthesia*

The Key Capabilities 'M' and 'N' are broad-level expectations that a trainee can achieve during their neuroanaesthetic placement. In order to guide the trainee to obtain a more comprehensive and fuller understanding of neuroanaesthetic practice, the following outline of knowledge and skills will illustrate how best to complete the key capabilities.

'M' - KEY CAPABILITIES

➔ Relevant anatomical, physiological and pharmacological principles for neurosurgical patients:

The key capabilities in the 'M' category outline the basic anatomical, physiological and pharmacological principles that underpin most of our practice of neuroanaesthesia. Knowledge on these topics can be reviewed by completing the e-Learning modules provided at the *camneuro* website (www.camneuro.net). There is a quiz at the end of each module and a passing grade awards a certificate of completion which can be uploaded into your LLP as evidence for the 'Triple C' form. Demonstration of other self-directed learning (textbooks, journals, other on-line sources, etc) on these topics is acceptable provided evidence of learning is available.

- Anatomy of the brain and spinal cord*
- Cerebral blood flow*
- Cerebral metabolism*
- ICP management*
- Brain protection*
- Neurophysiological monitoring*
- Intravenous agents for neuroanaesthesia*
- Use of TIVA in neuroanaesthesia*
- Inhalational agents for neuroanaesthesia*
- Other agents for neuroanaesthesia*
- Neurosurgical positioning*
- Spinal cord injury*
- Basic imaging of the brain and spinal cord
- Spinal cord injury*
- Preoperative assessment of the neurosurgical patient*

*e-Learning module available at www.camneuro.net

'N' - KEY CAPABILITIES

➔ Safe anaesthetic care to ASA 1-3 adults for elective and emergency intracranial, spinal and neuroradiology procedures.

The key capabilities in the 'N' category outline the anaesthetic management needed for ASA 1-3 adults undergoing elective and emergency intracranial, spinal and neuroradiology procedures. Knowledge on these topics can be reviewed by completing the e-Learning modules provided at the *camneuro* website (www.camneuro.net). In addition to the knowledge-base required, there is a need to participate in the anaesthetic management of these cases, such that one can demonstrate an appreciation of the whole range and complexity of neuroanaesthetic practice. Areas to focus on include;

- A full and focused preoperative assessment
- discuss the emergency and elective imaging of the central nervous system
- an understanding of the problems obtaining consent in patients with impaired consciousness and confusion
- optimization of patients presenting for craniotomy or neuro-spinal surgery
- recognition and management of raised ICP and the institution of cerebral protection strategies
- selecting and using appropriate invasive monitoring when indicated
- the safe positioning of patients
- safe Induction, maintenance and reversal of anaesthesia

- manipulating physiological and pharmacological parameters to improve intra-cranial homeostasis in pathological states
- resuscitate, stabilise and transfer safely patients with brain injury
- recognize an unstable cervical spine and explain how it should be managed
- early postoperative care including fluid management and pain control
- the endocrine effects and trans-sphenoidal surgery
- the specific risks of venous thromboembolic disease in neurosurgical patients and how these are managed
- the techniques used for recognition and management of air embolism

Supervised learning events (SLEs), as illustrated by A-CEX, DOPS, CBD, ALMAT and A-QIPAT, **personal activities** (i.e., simulation learning, departmental tutorials, etc) and **reflections** should be used in the clinical setting to facilitate learning and demonstrate progress.

When you are allocated to a neuro-list with a Consultant, the opportunity arises to complete an SLE. However, any list with a Consultant will provide you with rare and valuable neuroanaesthetic experience that should be recorded in your personal activities and reflections. When you need to evidence your experience in the management of neuroanaesthetic practice, an SLE should be completed. This activity should be planned on your part as you will know your theatre allocation in advance. It should involve, prior to the list, a review of the case/s including the theoretical knowledge and management plan on which these cases are usually based. Reviewing the radiological images, completing the e-Learning module and reading around the subject matter will make for a more interactive and productive SLE with the consultant.

A small number of SLEs (say 5) should be completed from the categories below to show a fuller understanding of what is required to deliver excellence in neuroanaesthesia. In addition, it is mandatory that the total number of e-Learning modules (24) will be completed and certificates uploaded to the LLP to form part of the evidence for the 'Triple C' form.

Intracranial Cases

There is often some overlap in the management of intracranial cases. An SLE for these cases should involve an exploration of the subject matter and discussion of the following broad groupings.

Group 1

- Anaesthesia for supratentorial surgery & intracranial haematomas*
- Anaesthesia for posterior fossa surgery*
- Anaesthesia for neurovascular surgery*

Group 2

- Anaesthesia for neuroendocrine surgery*
- Anaesthesia for CSF diversion procedures
- Anaesthesia for trigeminal neuralgia, functional & awake neurosurgery*

Group 3

- Anaesthesia for traumatic brain injury with polytrauma*
- Safe transfer of patients with brain injury and polytrauma

Spinal Cases

- Anaesthesia for spinal surgery*

Neuroradiology Cases

- Anaesthesia for interventional neuroradiology procedures*

*e-Learning module available at www.camneuro.net

Other Key Capabilities In The General Anaesthesia Domain
For Optional Completion During Neuroanaesthesia Placement

STAGE 2 TRAINING - GENERAL ANAESTHESIA (INCLUDING NEUROANAESTHESIA)

Key Capability A
Explains the specific factors in providing safe anaesthetic care for patients at extremes of age, including neonates, children and older people with frailty, and implements these in practice.

Key capability C
Describes the principles of intra-operative haemostasis and manages major haemorrhage.

Key capability D
Provides safe care for ASA 1-3 adult patients with multiple injuries from arrival in hospital to post-operative care and seeks help appropriately.

Key capability F
Applies physiological & pharmacological principles to reduce the risk of secondary brain injury in patients presenting with a severe head injury.

Key capability G
Recognises, mitigates against risks and manages complications relating to patient positioning during surgery, including reference to the obese patient.

Key capability H
Applies a sound understanding of anatomy, physiology, biochemistry, pharmacology, physics and clinical measurement to anaesthetic practice.

Key capability I
Safely manages patients with complex airways including the ability to perform video-laryngoscopy with local supervision.

Key capability L
Provides safe general anaesthesia for diagnostic and therapeutic procedures in the non-theatre environment but within the hospital setting for ASA 1-3 adult patients independently, recognising when this is inappropriate.

Key capability X
Uses total intravenous anaesthesia safely in all areas of clinical anaesthetic practice

COMPLETION OF CAPABILITY CLUSTER ('TRIPLE C') FORM

To complete your 3-month Stage 2 Neuroanaesthesia placement, you will need to submit the 'Triple C' form to the neuromodule training supervisor for sign-off. This form can be thought of as a mini-CUT form which will help support the overall sign off of the General Anaesthesia Domain (HALO) for the stage of training.

The anaesthetist in training will need to demonstrate the following to complete the 'Triple C' form for neuroanaesthesia:

- Attainment **of the specific Key Capabilities** (evidenced by **SLEs, Personal Activities & Reflections**) that relate to neuroanaesthesia clinical practice
- Appropriate **clinical experience in neuroanaesthesia (logbook of cases)**
- Successful completion of a **Multiple Trainer Report (MTR)**

The 'Triple C' form facilitates assessment of the specific Key Capabilities for neuroanaesthetic practice across more than one domain of the new curriculum. The completed 'Triple C' form will then be viewable within the LLP to support completion of the General Anaesthesia and Perioperative Medicine and Health Promotion domains by the local Assessment Faculty member with responsibility for completion of the respective HALO.

EVIDENCE OF SUFFICIENT NEUROANAESTHETIC CLINICAL PRACTICE AND ATTAINMENT OF THE KEY CAPABILITIES

1. Supervised Learning Events (SLEs)

Throughout the training time in neuroanaesthesia, supervised learning events (SLEs), as illustrated by **A-CEX, DOPS, CBD and ALMAT**, should be used to facilitate learning and demonstrate progress.

(1) SLEs as illustrated by A-CEX, CBD, DOPS should be completed regularly as a formative way of gaining the knowledge and understanding of neuroanaesthetic clinical practice.
(2) Whenever you are with a trainer there are opportunities for learning. Use the SLEs to record the reflective conversation that you have had with your trainer.
(3) Constructive feedback from your trainer should help you understand developments required to progress to the next levels of supervision/entrustment.
(4) SLEs can also provide evidence of capability to detect and report high risk patients to supervisors.
(5) 5 SLEs should be selected from the intracranial, spinal and neuroradiology categories for completion of the 'N' key capabilities.

2. Personal Activities

Additional learning activities such as **e-Learning** or **simulation courses** should be undertaken away from the workplace to underpin the experiential learning. You should record this learning activity in the Lifelong Learning platform (LLP) together with a **logbook of cases**. Demonstration of self-directed learning may include:

(1) Simulation
(2) e-Learning
(3) Departmental teaching
(4) Journal article reading
(5) Textbook reading

3. Reflections

You should be able to reflect on clinical experience and other educational activities. SLEs can be used to reflect on learning in the clinical setting. You can also add reflections on courses attended, teaching sessions, personal reading etc.

4. Logbook of Cases

Logbooks will demonstrate the range of anaesthetic techniques undertaken and the caseload experienced during the period of training in neuroanaesthesia. Adequate logbook evidence usually includes **50-70 cases** covering areas of elective and emergency work for cranial, spinal and neurointerventional practice. The module supervisor will advise and be the final arbiter of the acceptable range and total number of neuroanaesthesia cases achieved during the

neuroanaesthesia placement. It is advisable to review your logbook regularly throughout your neuroanaesthetic module to ensure that you have experience in a sufficient number of cases spread appropriately over the three main areas of neuroanaesthetic practice, namely, intracranial, spinal and neurointerventional procedures.

5. Multiple Trainer Reports (MTR)

This is an assessment of your progress for your stage of training. The report covers generic professional capabilities and knowledge and understanding of neuroanaesthetic practice. This will be used to support the entrustment decision by the trainer faculty. This report is mandatory for a 'Triple C' sign-off.

The MTR replaces the existing consultant feedback mechanism and reflects the greater emphasis on the professional judgement of the trainer as part of your assessment. The MTR is a mandatory requirement to support progression at critical progression points of the new curriculum. The MTR will be **triggered and collated by the College Tutor or Educational Supervisor** and the results discussed with the anaesthetist in training and their educational supervisor. A satisfactory MTR is an essential requirement in order to support the completion of each HALO for each of the Domains of Learning. Trainers will have the opportunity to report on the progress of the anaesthetist in training, including areas of excellence and areas for further development. Such feedback should encompass both specialty specific and generic professional aspects of the curriculum.

6. Multi-source Feedback (MSF)

This should be initiated by the trainee on the LLP. One MSF per training year is required.

At the end of the period of training in neuroanaesthesia, you will be able to show that you have progressed to the required level of supervision and that your trainers entrust you to perform the activities. The entrustment decisions by trainers will be based on the following sources; (1) SLEs, (2) Logbook of cases, (3) Personal activities, (4) Reflections and (5) Multiple trainer reports.

SUMMARY

The following evidence is required to complete the Triple C' form for neuroanaesthesia:

1. Supervised Learning Events (SLE) (5-8)
2. Personal activities:
    a. Neuro Anaesthesia E-Learning – mandatory
    b. Certificate of neurosimulation attendance – highly desirable but not mandatory
3. Reflections
4. Logbook of Cases
5. Multiple Trainer Reports (MTR)
6. QI project as appropriate

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