Anaesthesia for Neurosurgery

Stage 3 SIA learning outcomes

- *Provides safe perioperative anaesthetic care for a wide variety of complex neurosurgical and neuroradiological procedures independently*
- *Is capable of leading the delivery of care in this area of anaesthetic practice, to the benefit of both patients and the organisation*

Key capabilities

A	Deliver safe perioperative care to adults requiring elective intracranial surgery both supratentorial and infratentorial including craniotomies for vascular lesions, pituitary surgery
B	Delivers safe peri-operative anaesthetic care to adults for emergency intracranial surgery, CSF diversions, spinal surgery and endovascular thrombectomy
C	Deliver safe perioperative care to adults requiring complex spinal surgery
D	Describes and implements an anaesthetic plan for the complex endocrine and electrolyte disorders that accompany intracranial pathology
E	Analyses the risks and benefits of available anaesthetic techniques for differing neuroscience procedures including TIVA, processed EEG, neurophysiological monitoring, awake testing, and the implications of patient positioning
F	Delivers safe anaesthetic care for neuro-radiological investigations and interventions such as coiling, embolisation and endovascular thrombectomy

Examples of evidence

Experience and logbook:

- preoperative clinic experience and the assessment and optimisation of patients presenting for elective neurosurgical procedures
- a wide range of elective cases, which may include simple and complex spinal procedures, neurovascular procedures (surgical and interventional neuro-radiological), other neuroimaging eg MRI, trans-sphenoidal cases, neuro-oncology, functional neurosurgery, paediatric neurosurgery and may include awake craniotomies
- Perioperative management of emergency neurosurgical presentations which may include decompressive craniectomy, emergency craniotomies, CSF diversion procedures, emergency spinal surgery, urgent neuro-radiological procedures such as aneurysm coiling or mechanical thrombectomy, and management of the patient with traumatic brain or spinal injury
- experience may also include neuro-critical care, and the resuscitation and transfer of patients with neurological injury or pathology.

Supervised Learning Events (SLEs) can be used to demonstrate:

- management of any of the above cases
- effective list management of an elective or emergency neurosurgical or neuroradiology session
- pre-operative assessment and optimisation of patients with complex neurological needs, for example patients with movement disorders, complex epilepsy, endocrine sequelae of pituitary disease, or with medical comorbidities, which may complicate neurosurgery eg conditions requiring anticoagulation
- appreciation of the balance between risks and benefits of neurosurgery and anaesthesia in complex or frail patients and ability to work with patients, their families and multidisciplinary colleagues to plan best care
- ability to safely position patients in a variety of positions for surgery and with different equipment, eg prone or park bench positioning, use of Allan table or stereotactic or robotic head-frames
- advanced airway management skills relevant to neuro-anaesthesia eg awake intubation techniques, video-laryngoscopy
- ability to adapt anaesthetic technique to facilitate neurophysiological monitoring, eg TIVA anaesthesia and intraoperative neuro-monitoring, awake cranial procedures, intra-operative EEG monitoring.

Personal Activities and Personal Reflections may include:

- national and international meetings related to neuro-anaesthesia
- presentation at relevant meeting eg abstract or free paper
- development of neuro-anaesthetic or neuro-critical care guidelines and policies
- leadership of QI projects related to neuro-anaesthesia
- attendance at neurosurgical or neuro-radiological MDT meetings
- eLearning relevant to neuro-anaesthesia and neurological conditions
- sessions with radiology learning interpretation of neuroimaging
- participation and leadership in local/regional/national neuro-anaesthesia teaching
- simulation in neuro-anaesthesia and related emergencies.

Other evidence:

- satisfactory MSF.

Suggested supervision level

- 4 - should be able to manage independently with no supervisor involvement (although should inform consultant supervisor as appropriate to local protocols).

Cross links with other domains and capabilities

- all non-clinical domains of learning
- *Perioperative Medicine and Health Promotion*
- *General Anaesthesia*
- *Intensive Care*