

## Joint Committee on Intercollegiate Examinations

# Intercollegiate Specialty Examination in Neurosurgery

## Syllabus Blueprint 2023

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## Principles for Blueprinting Assessment to the Curriculum in Surgical Specialties

1. Standard educational practice requires a curriculum to include an indication of how each aspect of the syllabus is to be assessed. This “blueprinting” process also shows how each aspect relates to Good Medical Practice.
2. Each specialty syllabus has been mapped to a range of assessments:
  - a. CEX
  - b. CBD
  - c. DOPS
  - d. PBA
  - e. MSF
  - f. Section 1 Intercollegiate Specialty Board (ISB) Examination - written section
  - g. Section 2 Intercollegiate Specialty Board (ISB) Examination - clinical and oral section
3. This does not imply that the indicated assessments must be used.
4. The indications are not exclusive, and it is possible that other types of assessment which have not been indicated may also be used to assess individual items.
5. In general:
  - a. Knowledge will be assessed by Section 1 and Section 2 ISB Examination and by CBD.
  - b. Clinical skills will be assessed by CEX and Section 2 ISB Examination.
  - c. The use of scenarios within Section 2 ISB Examination allows a wide range of clinical skills to be assessed.
  - d. Technical skills will be assessed by DOPS and PBA
  - e. Professional skills will be assessed by MSF
6. The blueprinting indicates which assessments may be used for each item at any stage through training.
7. The Good Medical Practice domains are:
  1. Knowledge, skills and performance
  2. Safety and quality
  3. Communication, partnership and teamwork
  4. Maintaining trust
8. All aspects of the curriculum are assessed using one or more of the described components of the assessment system. Some curriculum content can be assessed in more than one component but the emphasis will differ between assessments so that testing is not excessive in any one area. The key assessment is the Multiple Consultant Report (MCR) through which trainees are assessed on the high-level outcomes of the curriculum; the Capabilities in Practice (CiPs) and Generic Professional Capabilities (GPCs).

High-level outcomes	Assessment Framework											
	Capabilities in Practice											
		CiP/GPC self-assessment	MCR	MSF	CEX	CBD	PBA	DOPS	AoA	OoT	ISB Section 1	ISB Section 2
	1. Manages an out-patient clinic	X	X	X	X	X						X
	2. Manages the unselected emergency take	X	X	X	X	X	X	X				X
	3. Manages ward rounds and the on-going care of in-patients	X	X	X	X	X						X
	4. Manging an operating list	X	X	X			X	X				
	5. Managing multi-disciplinary working	X	X	X		X						

High-level outcomes	Generic Professional Capabilities											
		CiP/GPC self-assessment	MCR	MSF	CEX	CBD	PBA	DOPS	AoA	OoT	ISB Section 1	ISB Section 2
	Domain 1: Professional values and behaviours	X	X	X	X	X	X	X	X	X		X
	Domain 2: Professional Skills	X	X	X	X	X	X	X		X		X
	Domain 3: Professional knowledge	X	X	X	X	X	X	X	X	X	X	X
	Domain 4: Capabilitiesin health promotion and illness prevention	X	X		X	X					X	
	Domain 5: Capabilities in leadership and team working	X	X	X		X	X	X	X	X	X	
	Domain 6: Capabilities in patient safety and quality improvement	X	X			X			X		X	
	Domain 7: Capabilities in safeguarding vulnerable groups	X	X		X	X	X	X			X	
	Domain 8: Capabilities in education and training	X	X							X		
	Domain 9: Capabilities in research and scholarship	X	X									

Syllabus													
			CiP/GPC self-assessment	MCR	MSF	CEX	CBD	PBA	DOPS	AoA	OoT	ISB Section 1	ISB Section 2
	Knowledge		X	X	X	X	X	X	X	X	X	X	X
	Clinical skills	Clinical skills (general)	X	X	X	X	X						X
		Critical conditions (mandated CEX/CBD)	X	X	X	X	X						X
	Technical skills	Technical skills (general)	X	X				X	X				
		Index procedures (mandated PBA/DOPS)	X	X				X	X				

EMRYOLOGY AND MALDEVELOPMENT	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand basic neuroembryology and its relevance to clinical practice								
<b>KNOWLEDGE</b>								
Embryogenesis of the brain and spinal cord		X				X	X	1
Embryogenesis of supporting structures - skull and vertebral column		X				X	X	1
Common anatomical variations and developmental abnormalities		X				X	X	1
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								

ANATOMY OF THE SKULL	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand the anatomy of the skull								
<b>KNOWLEDGE</b>								
Structure, blood supply, innervation, surface and three-dimensional relationships of the: scalp, skull, meninges, orbit, cranial fossae, cranial foraminae, cranial nerves		X				X	X	1
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								

ANATOMY OF THE BRAIN	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand the structural anatomy of the brain								
<b>KNOWLEDGE</b>								
Cortical topography		X				X	X	1
Projection and association tracts		X				X	X	1
Organisation of the basal ganglia		X				X	X	1
Structure, organisation and connections of the cerebellum, pons and brainstem		X				X	X	1
Cranial nerves and their relationships		X				X	X	1
Visual and auditory pathways		X				X	X	1
Ventricular system and choroid plexus		X				X	X	1
Subarachnoid space and cisterns		X				X	X	1
Circle of Willis and principle regional and segmental blood supply		X				X	X	1
Venous drainage and dural sinuses		X				X	X	1
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								

ANATOMY OF THE SPINE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand the anatomy of the spine								
<b>KNOWLEDGE</b>								
Structure, blood supply, innervation, surface and three-dimensional relationships of the: vertebral column, spinal cord: ascending and descending tracts, spinal nerve roots, cauda equina		X				X	X	1
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								

ANATOMY OF THE AUTONOMIC AND PERIPHERAL NERVOUS SYSTEM	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand the anatomy of the autonomic and peripheral nervous system								
<b>KNOWLEDGE</b>								
4 Sympathetic and parasympathetic pathways		X				X	X	1
4 Visceral and pelvic innervation: control of sphincter function		X				X	X	1
4 Brachial plexus		X				X	X	1
4 Lumbosacral plexus		X				X	X	1
4 Course, distribution and innervation of the major peripheral nerves		X				X	X	1
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								

FUNCTIONAL NEUROPHYSIOLOGY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand the functional organisation and integration of the central nervous system								
<b>KNOWLEDGE</b>								
Structure and function of neurones and glial cells		X				X	X	1
Synaptic function, action potentials and axonal conduction		X				X	X	1
Higher cerebral functions		X				X	X	1
Sleep and coma		X				X	X	1
Memory and disorders of the limbic system		X				X	X	1
Control of motor function: ascending and descending pathways, basal ganglia and cerebellar function		X				X	X	1
The special senses		X				X	X	1
Functions of the autonomic nervous system		X				X	X	1
Hypothalamic-pituitary function		X				X	X	1
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								

PRINCIPLES OF CLINICAL NEUROPHYSIOLOGY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the basic principles of clinical neurophysiology								
KNOWLEDGE								
Principles of electroencephalography		X				X	X	1
Principles of somatosensory, motor and brainstem evoked potential monitoring		X				X	X	1
Peripheral neuropathies and entrapment neuropathies including: structure and function of peripheral nerves, use of nerve conduction studies		X				X	X	1
Disorders of the neuromuscular junction including: structure and function of smooth and striated muscle, use of electromyographic studies		X				X	X	1
CLINICAL SKILLS								
Interpretation of the results of EEG, EMG and NC studies								
TECHNICAL SKILLS AND PROCEDURES								
None specified								

PATHOPHYSIOLOGY OF INTRACRANIAL DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the pathophysiology of intracranial disorders								
KNOWLEDGE								
Cerebral blood flow and metabolism		X				X	X	1
Cerebral autoregulation and vasospasm		X				X	X	1
Blood brain barrier and cerebral odema		X				X	X	1
Intracranial pressure dynamics		X				X	X	1
Cerebral ischaemia and neuroprotection		X				X	X	1
CSF hydrodynamics - production and absorption		X				X	X	1
CLINICAL SKILLS								
N/A								
TECHNICAL SKILLS AND PROCEDURES								
N/A								

PRINCIPLES OF NEUROPHARMACOLOGY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the principles of neuropharmacology								
KNOWLEDGE								
Receptor and ion channel function		X				X	X	1
4 Neuropeptides and neurotransmitters		X				X	X	1
4 Principles of pharmacological neuroprotection		X				X	X	1
4 The pharmacology of anaesthetic agents, muscle relaxants, barbiturates, anticonvulsants and corticosteroids including: mechanisms of action, pharmacodynamics, interactions		X				X	X	1
CLINICAL SKILLS								
N/A								
TECHNICAL SKILLS AND PROCEDURES								
N/A								

PRINCIPLES OF NEUROPATHOLOGY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the neuropathology of infection, inflammation, ischaemia, neoplasia and trauma affecting the nervous system								
KNOWLEDGE								
Acute and chronic inflammatory processes in the CNS including demyelination		X				X	X	1
Bacterial, fungal and parasitic meningitis, encephalitis and abscess formation		X				X	X	1
Viral encephalitis		X				X	X	1
Slow viruses, CJD and vCJD		X				X	X	1
HIV associated infections, tumours and leucoencehalopathies		X				X	X	1
Cytopathology of neurones and glial in response to ischaemia, hypoxia and trauma		X				X	X	1
Diffuse axonal injury		X				X	X	1
Macroscopic brain and spinal cord injury including effects of brain shift, herniation and raised ICP		X				X	X	1
Classification, epidemiology and pathology of CNS tumours		X				X	X	1
Tumour biology, cell kinetics, tumour markers, immunocytochemistry		X				X	X	1
CLINICAL SKILLS								
N/A								
TECHNICAL SKILLS AND PROCEDURES								
None specified								

PRINCIPLES OF NEURORADIOLOGY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the principles of neuroradiological imaging of the structure and function of the nervous system								
KNOWLEDGE								
Interpretation of plain radiographs of the skull and spine		X				X	X	1
Principles of computerised tomography of the brain, skull and spine		X				X	X	1
Interpretation of CT scans with particular reference to acute spinal disorders, cranial trauma, hydrocephalus, intracranial tumours and spontaneous intracranial haemorrhage		X				X	X	1
Principles of basic magnetic resonance imaging		X				X	X	1
Interpretation of MRI scans with particular reference to acute spinal disorders, cranial trauma, hydrocephalus and intracranial tumours		X				X	X	1
Principles of advance magnetic resonance imaging including fMRI, DWI and spectroscopy		X				X	X	1
Interpretation of angiographic images: CTA, MRA and DSA		X				X	X	1
CLINICAL SKILLS								
N/A								
TECHNICAL SKILLS AND PROCEDURES								
N/A								

PRINCPLS OF NEUROPSYCHOLOGY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the principles of neuropsychological assessment, application of the Mental Health Act								
KNOWLEDGE								
The principles of neuropsychological assessment		X				X	X	1
Common neuropsychological problems associated with head injury, subarachnoid haemorrhage, hydrocephalus, structural lesions of the frontal and temporal lobes and disorders of the limbic system		X				X	X	1

<b>CLINICAL SKILLS</b>								
Ability to undertake bed-side assessment of cognition and memory	X						X	1,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None								

<b>PRINCIPLES OF NEUROLOGICAL REHABILITATION</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the principles of neurological rehabilitation								
<b>KNOWLEDGE</b>								
The principles of neurological rehabilitation including strategies to optimise the recovery of cognition, communication, continence, selective movement, gait, self-care, psychological stability, social adjustment and employment						X	X	1,2,3
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								

<b>MEDICAL ETHICS</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the ethical issues that commonly arise in the management of patients with neurological disorders								
<b>KNOWLEDGE</b>								
Criteria for the diagnosis of brainstem death		X				X	X	1
Diagnosis and management of persistent vegetative states		X				X	X	1
Prognosis in chronic progressive neurological disorders		X				X	X	1
Professional and statutory framework governing living directives and end-of-life decisions		X				X	X	1
<b>CLINICAL SKILLS</b>								
Ability to empathise with and support patients and carers	X						X	1,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

<b>PRINCIPLES OF NEUROGENETICS</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the principles of neurogenetic studies and their relevance to clinical practice								
<b>KNOWLEDGE</b>								
Inherited neurological disorders		1				X	X	1
Genetic control of neural connectivity		1				X	X	1
Inborn errors of metabolism		1				X	X	1
Molecular genetics of CNS tumours		1				X	X	1
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								

<b>IMPAIRED CONSCIOUSNESS AND NON-TRAUMATIC COMA</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with impaired consciousness and non-traumatic coma								
<b>KNOWLEDGE</b>								
The aetiology, pathophysiology and differential diagnosis of altered consciousness and coma due to: meningitis, encephalitis, intracranial haemorrhage, acutely raised ICP, hydrocephalus, hypoxaemia and ischaemia, cardiogenic shock, hypoglycaemia, epilepsy, metabolic encephalopathies, drugs and toxins		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurological assessment and initial resuscitation of patients in coma or with impaired consciousness	X	X					X	1
Indications for intubation and ventilation	X	X					X	1
Treatment of seizures	X	X				X	X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning and interpreting scans and other investigations	X	X				X	X	1
Presentation and summary of cases	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Maintenance of airway			X	X				1
Endotracheal intubation			X	X				1
Central venous cannulation			X	X				1
Lumbar puncture			X	X				1

<b>HEADACHE - ACUTE AND CHRONIC</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with acute and chronic headache								
<b>KNOWLEDGE</b>								
The aetiology and differential diagnosis of acute and chronic headache including headache associated with: benign headache syndromes, migraine, cluster headache and related syndromes, space occupying lesions, meningitic disorders, intracranial haemorrhage, trigeminal neuralgia, atypical craniofacial pain syndrome		X				X	X	1
Indications for investigation including scanning, lumbar puncture and angiography		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurological history taking	X						X	1
Neurological examination	X						X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning investigation	X	X					X	1
Interpretation of scans and other investigations		X				X	X	
Presentation and summary of cases	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Lumbar puncture			X					1

<b>WEAKNESS AND PARALYSIS</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with weakness and paralysis								

<b>KNOWLEDGE</b>								
Common causes of ocular, cranial nerve, limb, trunk and respiratory muscle weakness		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurological history taking	X	X					X	1
Neurological examination	X	X					X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning investigation	X	X					X	1
Interpretation of scans and other investigations		X				X	X	1
Presentation and summary of cases	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

<b>DIZZINESS, UNSTEADINESS AND FALLS</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with dizziness, unsteadiness and falls								
<b>KNOWLEDGE</b>								
Common causes of cerebellar, vestibular, extrapyramidal and autonomic dysfunction		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurological history taking	X	X					X	1
Neurological examination	X	X					X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning investigation	X	X					X	1
Interpretation of scans and other investigations		X				X	X	1
Presentation and summary of cases	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

<b>PAIN AND SENSORY LOSS</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with pain and sensory loss								
<b>KNOWLEDGE</b>								
Common causes of musculoskeletal, neurogenic and neuropathic pain and sensory loss		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurological history taking	X	X					X	1
Neurological examination	X	X					X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning investigation	X	X					X	1
Interpretation of scans and other investigations		X				X	X	1
Presentation and summary of cases	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

<b>HEARING DISORDER</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with hearing loss								
<b>KNOWLEDGE</b>								
Common causes of conductive and sensorineural hearing loss		X				X	X	1
Principles of audiological assessment		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurological history taking	X	X					X	1
Neurological examination	X	X					X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning investigation	X	X					X	1
Interpretation of scans	X	X				X	X	1
Interpretation of pure tone audiograms and auditory evoked potentials		X				X	X	1
Presentation and summary of cases	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

<b>VISUAL DISORDER</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with visual disorders								
<b>KNOWLEDGE</b>								
Patterns of visual loss in relation to common bulbar, retrobulbar, sellar, parasellar and optic pathway disorders		X				X	X	1
Analysis of diplopia and nystagmus in relation to common cranial nerve and brainstem disorders		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurological history taking	X	X					X	1
Neurological examination	X	X					X	1
Use of computerised visual field assessment	X	X						1
Detailed fundoscopy	X	X					X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning investigation	X	X					X	1
Interpretation of scans and other investigations		X				X	X	1
Presentation and summary of cases	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

<b>LANGUAGE AND SPEECH DISTURBANCE</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with disturbances of language and speech								



KNOWLEDGE								
Classification, causes and presentations of dysphasias, speech dyspraxia and dyslexia		X				X	X	1
Classification, causes and presentations of dysarthria		X				X	X	1
Role of speech and language therapists in assessment and treatment		X				X		1
CLINICAL SKILLS								
Neurological history taking	X	X					X	1
4 Neurological examination with assessment of dysphasia and dysarthria	X	X					X	1
4 Establishing a neurological differential diagnosis	X	X					X	1
4 Planning investigation	X	X					X	1
4 Interpretation of scans and other investigations		X				X	X	1
4 Presentation and summary of cases	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
N/A								

SWALLOWING DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with swallowing disorders								
KNOWLEDGE								
Neurological causes of dysphagia		X				X	X	1
Indications for laryngoscopy, videofluoroscopy, nasogastric and percutaneous gastric feeding		X				X	X	1
CLINICAL SKILLS								
Neurological history taking	X	X					X	1
4 Neurological examination	X	X					X	1
4 Establishing a neurological differential diagnosis	X	X					X	1
4 Planning investigation	X	X					X	1
4 Interpretation of scans and other investigations		X				X	X	1
4 Presentation and summary of cases	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
None specified								

DISORDERS OF THE SPHINCTERIC AND SEXUAL FUNCTION	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with sphincteric disorders								
KNOWLEDGE								
Common causes of sphincteric and sexual dysfunction		X				X	X	1
Interpretation of urodynamic studies		X				X	X	1
CLINICAL SKILLS								
Neurological history taking	X	X					X	1
4 Neurological examination	X	X					X	1
4 Establishing a neurological differential diagnosis	X	X					X	1
4 Planning investigation	X	X					X	1
4 Interpretation of scans and other investigations		X				X	X	1
4 Presentation and summary of cases	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
None specified								

MOVEMENT DISORDER	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with movement disorders								
KNOWLEDGE								
Parkinson's disease		X				X	X	1
Iatrogenic movement disorders		X				X	X	1
Dystonic syndromes		X				X	X	1
Choreiform syndromes		X				X	X	1
The aetiology and pathophysiology of movement disorders		X				X	X	1
Indications for medical, minimally-invasive and surgical management		X				X	X	1
Complications of surgery and their management		X				X	X	1
CLINICAL SKILLS								
Neurological history taking	X	X					X	1
Neurological examination	X	X					X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning investigation	X	X					X	1
Interpretation of scans and other investigations		X				X	X	1
Presentation and summary of cases		X					X	1
Surgical aspects of the multi-disciplinary assessment of patients with movement disorders	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
None specified								

MEMORY AND COGNITIVE DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with disorders of memory and cognition								
KNOWLEDGE								
Disorders of memory and cognition associated with head injury, subarachnoid haemorrhage, hydrocephalus, structural lesions of the frontal and temporal lobes and disorders of the limbic system		X				X	X	1
CLINICAL SKILLS								
Neurological history taking	X	X					X	1
Neurological examination	X	X					X	1
Establishing a neurological differential diagnosis	X	X					X	1
Planning investigation	X	X					X	1
Interpretation of scans and other investigations		X				X	X	1
Presentation and summary of cases	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
None specified								



BEHAVIOURAL DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand the aetiology, differential diagnosis, investigation and initial management of patients presenting with behavioural disorders								
<b>KNOWLEDGE</b>								
The common acute and chronic presentations of organic and psychiatric behavioural disorders relating to alcohol and drug abuse, encephalitis, organic dementia, and psychosis		X				X	X	1,3
<b>CLINICAL SKILLS</b>								
Neurological history taking	X	X	X				X	1,2,3
4 Neurological examination	X	X	X				X	1,2,3
4 Establishing a neurological differential diagnosis	X	X					X	1,2,3
4 Planning investigation	X	X					X	1,2,3
4 Interpretation of scans and other investigations		X				X	X	1,2,3
4 Presentation and summary of cases	X	X		X			X	1,2,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

GENERAL MANAGEMENT OF THE HEAD INJURED PATIENT	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the general management of head-injured patients								
<b>KNOWLEDGE</b>								
Pathophysiology of head injury and of multiple trauma including an understanding of: Cerebral perfusion and oxygenation, Raised intracranial pressure, Impaired intracranial compliance, Intracranial herniation		X				X	X	1,2
Medical management of acutely raised intracranial pressure		X				X	X	1,2
Indications for operation intervention including the use of pressure monitoring		X				X	X	1,2
Principles, diagnosis and confirmation of brain death		X				X	X	1,2
Principles of intensive care of head injured patients		X				X	X	1,2
Principles of spinal stabilisation and radiological assessment in head injured patients		X				X	X	1,2
Natural history of recovery from head injury including neurological, cognitive and behavioural disability and post- traumatic epilepsy		X				X	X	1,2
Role of neurological rehabilitation		X				X	X	1
Pathophysiology of head injury and of multiple trauma		X				X	X	1,2
Prevention of secondary insults		X				X	X	1,2
Indications for operative intervention		X		X		X	X	1,2
<b>CLINICAL SKILLS</b>								
Clinical assessment of the multiply-injured patient.	X	X					X	1,2
Neurological assessment of the head-injured patient including: Assessment and categorisation of impaired consciousness, Recognition and interpretation of focal neurological deficits	X	X					X	1,2
Prioritisation of clinical risk		X					X	1,2
Interpretation of CT scans and plain radiology		X				X	X	1,2
Clinical assessment of the head-injured and multiply-injured patient	X	X					X	1,2
Interpretation of multi-modality cerebral monitoring		X					X	1
Ability to assess and advise on the transfer of head-injured patient using image-transfer and telemedicine		X					X	1,2,3,4
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
No procedures specified								

INSERTION OF ICP MONITOR	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the insertion of subdural and intraparenchymal ICP monitors								
<b>KNOWLEDGE</b>								
Indications for ICP monitoring		X				X	X	1,2
Applied anatomy of the skull vault		X				X	X	1,2
Calibration, zeroing and interpretation of ICP traces		X					X	1,2
Potential complications of the procedure		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Non specified								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Insertion of frontal subdural and intraparenchymal ICP monitors using a standard frontal burr hole and/or twist drill craniostomy.			X	X				1,2

BURR HOLE EVACUATION OF CHRONIC SUBDURAL HAEMATOMA	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in burr hole evacuation of chronic subdural haematomas								
<b>KNOWLEDGE</b>								
Pathophysiology of chronic subdural haematomas		X				X	X	1,2
Applied anatomy of the skull vault and subdural space		X				X	X	1,2
Indications for surgery		X				X	X	1,2
Surgical options		X				X	X	1,2
Complications of surgery		X				X	X	1,2
Management of anti-platelet and anti-coagulant medication		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Neurological assessment of patients with a CSDH	X	X					X	1,2
3 Interpretation of CT scans		X				X	X	1,2
4 Obtaining informed consent	X	X					X	1,2,3,4
4 Post-operative assessment and management	X	X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Performance of single and multiple frontal and parietal burrhole evacuation of CSDHs			X	X			X	1,2

MANAGEMENT OF SOFT TISSUE TRAUMA	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the management of cranial soft tissue trauma								
<b>KNOWLEDGE</b>								
Anatomy and blood supply of the scalp		X				X	X	1
Indications for primary and secondary closure of wounds		X				X	X	1
Indications for antibiotic prophylaxis		X				X	X	1
<b>CLINICAL SKILLS</b>								
Assessment of tissue perfusion and viability	X	X					X	1,2

TECHNICAL SKILLS AND PROCEDURES								
Wound exploration under local and general anaesthesia			X	X				1,2
3 Wound debridement			X	X				1,2
4 Arrest of scalp haemorrhage			X	X				1,2
4 Layered closure of the scalp without tension			X	X				1,2
3 Suturing technique			X	X				1,2
4 Wound drainage and head bandaging			X	X				1,2

GENERAL MANAGEMENT OF SUBARACHNOID HAEMORRHAGE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the general management of subarachnoid haemorrhage (SAH)								
KNOWLEDGE								
Aetiology of SAH		X				X	X	1,2
Pathophysiology of SAH		X				X	X	1,2
WFNS grading of SAH		X				X	X	1,2
Principles of resuscitation and timing of interventions		X				X	X	1,2
Indications for CT scanning, diagnostic lumbar puncture, CT angiography and digital subtraction angiography		X				X	X	1,2
Principles of management of post-haemorrhagic hydrocephalus		X				X	X	1,2
Indications for endovascular and surgical intervention		X				X	X	1,2
CLINICAL SKILLS								
Interpretation of CT scans including assessment of intracranial blood load, haematomas and hydrocephalus		X				X	X	1,2
Basic interpretation of cerebral angiography		X				X	X	1,2
TECHNICAL SKILLS AND PROCEDURES								
Lumbar puncture			X	X				1,2

DIAGNOSTIC LUMBAR PUNCTURE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To recognise and manage delayed cerebral ischaemia following subarachnoid haemorrhage								
KNOWLEDGE								
Pathophysiology of delayed cerebral ischaemia including the impact of secondary insults		X				X	X	1,2
Principles governing the augmentation of cerebral blood flow		X				X	X	1
CLINICAL SKILLS								
Assessment of a deteriorating patient	X	X					X	1,2
Recognition and management of secondary insults		X					X	1,2
Interpretation of CT scans		X				X	X	1,2
Management of hypervolaemic hypertension		X					X	1,2
TECHNICAL SKILLS AND PROCEDURES								
Insertion of central venous catheter			X	X				1,2
Insertion of lumbar drain			X	X				1,2
Insertion of external ventricular drain			X	X				1,2

MANAGEMENT OF POST-HAEMORRHAGIC HYDROCEPHALUS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the management of post-haemorrhagic hydrocephalus								
KNOWLEDGE								
Pathophysiology of hydrocephalus		X				X	X	1,2
Indications for external ventricular drainage and lumbar subarachnoid drainage		X				X	X	1,2
Applied anatomy of the skull vault, subdural space and ventricular system		X				X	X	1,2
Complications of surgery		X				X	X	1,2
CLINICAL SKILLS								
Assessment of the unconscious and deteriorating SAH patient	X	X					X	1,2
Interpretation of CT scans		X				X	X	1,2
TECHNICAL SKILLS AND PROCEDURES								
Insertion of lumbar drain			X	X				1,2
Insertion of external ventricular drain			X	X				1,2

ADULT HYDROCEPHALUS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
The management of hydrocephalus complicating intracranial haemorrhage, head injury and intracranial space occupying lesions; insertion and taping of CSF reservoirs; insertion and maintenance of lumbar and ventricular drains								
KNOWLEDGE								
The pathophysiology of CSF circulation		X				X	X	1,2
Applied surgical anatomy of the ventricular system		X				X	X	1,2
Indications for external ventricular drainage, ventriculoperitoneal shunting, lumbar CSF drainage and shunting, ventriculo-cisternostomy		X				X	X	1,2
Complications of surgery		X				X	X	1,2
Surgical complications and their management		X				X	X	1,2
CLINICAL SKILLS								
None								
The assessment, counselling and pre-operative preparation of patients with hydrocephalus, including interpretation of CT and MRI scans and identification of shunt malfunction	X							
The assessment, counselling and pre-operative preparation of patients with hydrocephalus	X	X					X	1,2,3,4
Interpretation of pressure studies and CSF infusion studies		X					X	1
Interpretation of CT and MRI scans and identification of shunt malfunction		X				X	X	1,2
TECHNICAL SKILLS AND PROCEDURES								
Insertion of ventricular drain/access device			X					1,2
Insertion of VP shunt			X					1,2
Revision of VP shunt			X					1,2
Lumbar subarachnoid drainage			X					1,2
External ventricular drainage			X					1,2
Primary ventriculoperitoneal shunt			X					1,2
Lumbo-peritoneal shunt			X					1,2
Competence in all aspects of primary and revisional shunt surgery including:			X	X				1,2
Use of 3-D image-guidance or ultrasound for difficult ventricular cannulation			X	X				1,2
Intra-operative testing of shunt function			X					1,2
Selection of appropriate shunts		X	X				X	1,2
Management of peri-operative ventricular haemorrhage		X	X				X	1,2

Lumbo-peritoneal shunt			X					1,2
Third ventriculo-cisternostomy			X	X				1,2

ASSESSMENT AND PERI-OPERATIVE MANAGEMENT OF PATIENTS WITH SPACE-OCCUPYING INTRACRANIAL TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the assessment and peri-operative management of patients with intracranial tumours								
<b>KNOWLEDGE</b>								
The neuropathology of primary and secondary intracranial tumours including: classification, epidemiology, natural history		X				X	X	1
Clinical presentations of intracranial tumours		X				X	X	1
Indications for neuroimaging		X				X	X	1,2
Management of raised intracranial pressure		X				X	X	1,2
Principles of operative management		X				X	X	1,2
Detection and management of post-operative complications		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Neurological history taking and examination	X	X					X	1,2
Basic interpretation of CT and MRI scans		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

IMAGE-GUIDED BIOPSY OF INTRACRANIAL TUMOUR	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To undertake image-guided biopsy of an intracranial tumour under supervision								
<b>KNOWLEDGE</b>								
Indications for biopsy of intracranial tumours		X				X	X	1
Risks of biopsy		X				X	X	1
Principles of image-guided surgery		X				X	X	1
<b>CLINICAL SKILLS</b>								
Interpretation of CT and MRI scans and selection of biopsy targets		X				X	X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Image-guided frameless and/or frame-based stereotactic biopsy including: Setting up a computer workstation and importing and interrogating image data, Positioning the patient and applying a cranial fixator, Obtaining and confirming accurate patient registration, Positioning and performing a suitable burr hole, Passage of biopsy probe and biopsy, Preparation of smear histology (when available)			X	X				1,2

ACUTE SPINAL DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the peri-operative management of patients presenting with acute spinal disorders								
<b>KNOWLEDGE</b>								
The assessment and peri-operative management of patients presenting with spinal cord, cauda equina and spinal root compression		X				X	X	1,2
The management of spinal shock		X				X	X	1,2
The ward management of patients with spinal instability		X				X	X	1,2
The detection and initial management of post-operative complications including compressing haematomas, CSF fistula and spinal sepsis		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
None								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None								

SURGICAL MANAGEMENT OF CRANIAL TRAUMA	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the operative management of head-injured patients								
<b>KNOWLEDGE</b>								
Pathophysiology of raised intracranial pressure and space occupying haematomas		X				X	X	1
Applied surgical anatomy		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Indications for surgery and appropriate surgical approaches		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment of the head-injured patient	X	X					X	1,2
Interpretation of trauma CT scans		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Craniotomy for supratentorial traumatic haematoma, in particular:			X					1,2
Planning and siting of craniotomies for evacuation of extradural and subdural haematomas			X					1,2
Handling the "tight" brain				X				1,2
Achieving haemostasis in the coagulopathic patient			X	X				1,2
Achieving haemostasis from the skull base and venous sinuses				X				1,2
Elevation of compound depressed skull fracture with dural repair			X	X				1,2
Delayed cranioplasty of skull vault			X	X				1,2

NEURO-INTENSIVE CARE OF THE HEAD-INJURED PATIENT	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the neurointensive care of head-injured patients								
<b>KNOWLEDGE</b>								
Pathophysiology of head injury		X				X	X	1,2
The management of raised intracranial pressure, impaired intracranial compliance, and cerebral ischaemia		X				X	X	1,2
Prevention and management of secondary insults		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment of the unconscious patient	X	X					X	1,2
Use and interpretation of multimodality monitoring	X	X					X	1,2
Interpretation of CT scans		X				X	X	1,2
Ability to advise on management of secondary complications and further surgical intervention		X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

NEUROLOGICAL REHABILITATION	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand the role of post-traumatic neurological rehabilitation								
<b>KNOWLEDGE</b>								
The natural history of recovery from head injury		X				X	X	1
Understanding of neurological, cognitive and behavioural disabilities following mild and severe head injury		X				X	X	1
Risks of post-traumatic epilepsy and its management		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Ability to contribute to the multi-disciplinary assessment of head injured patients		X					X	1
Ability to advise family and carers regarding prognosis, professional and lay support	X	X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
None specified								

PRIMARY INTRACEREBRAL HAEMATOMAS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the operative management of space-occupying spontaneous intracerebral haematomas								
<b>KNOWLEDGE</b>								
Aetiology of supra and infratentorial intracerebral haemorrhage		X				X	X	1,2
Pathophysiology of spontaneous intracerebral haemorrhage		X				X	X	1,2
Indications for surgical evacuation		X				X	X	1,2
Management strategies to reduce the risk of intra-operative re-bleeding in presence of suspected aneurysm or AVM including partial haematoma evacuation, pre or post-operative embolisation and definitive surgical treatment		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment of patients with intracerebral haematomas and raised intracranial pressure	X	X					X	1,2
Interpretation of CT and MRI scans and identification of probable aetiology		X				X	X	1,2
Indications for pre-operative CT angiography, MRA and digital subtraction angiography		X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Craniotomy for supratentorial haematoma including:			X	X				1,2
3 Planning and siting of craniotomies			X	X				1,2
3 Use of ventricular drainage			X	X				1,2
3 Intracerebral haemostasis in the coagulopathic patient			X	X				1,2

ANEURYSMAL SUBARACHNOID HAEMORRHAGE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the multi-disciplinary management of aneurysmal subarachnoid haemorrhage SAH								
<b>KNOWLEDGE</b>								
Pathophysiology of SAH		X				X	X	1,2
Prevention and management of delayed cerebral ischaemia, cerebral vasospasm and hydrocephalus		X				X	X	1,2
Relative indications for endovascular and surgical interventions		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Clinical assessment of patients with aneurysmal SAH	X	X					X	1,2
Non operative management of patients undergoing endovascular coiling		X					X	1,2
Management of delayed cerebral ischaemia		X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
External ventricular drainage			X					1,2
Lumbar subarachnoid drainage			X					1,2
Ventriculoperitoneal shunting			X	X				1,2
Revision of ventriculoperitoneal shunt			X	X				1,2
Craniotomy for intracerebral haematoma			X	X				1,2

PAEDIATRIC HYDROCEPHALUS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the assessment of children with hydrocephalus. To undertake emergency external ventricular drainage in children with acute hydrocephalus								
<b>KNOWLEDGE</b>								
The pathophysiology of CSF circulation		X				X	X	1,2
Applied surgical anatomy of the ventricular system		X				X	X	1,2
Indications for external ventricular drainage		X				X	X	1,2
Indications for external ventricular drainage, lumbar CSF drainage and shunting, ventriculo-cisternostomy		X				X	X	1,2
4 Indications for VP and VA shunting and		X				X	X	1,2
4 Principles of shunt function and selection		X				X	X	1,2
4 Surgical complications and their management		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment of the ill child with hydrocephalus, impaired consciousness and sepsis	X	X					X	1,2
Differential diagnosis of shunt malfunction		X					X	1,2
Interpretation of CT scans in shunted children		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Taping and draining from an Ommaya reservoir			X					1,2
Taping a shunt			X					1,2
External ventricular drainage			X					1,2
Insertion, tapping and draining from a CSF reservoir			X					1,2
External ventricular drainage including externalisation of VP shunts			X	X				1,2
Ventriculo-peritoneal shunting			X	X				1,2

GENERAL PRINCIPLES OF NEURO-ONCOLOGY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the multi-disciplinary management of patients with intracranial neoplasia								
<b>KNOWLEDGE</b>								
Classification, natural history and pathology of benign and malignant intracranial neoplasia		X				X	X	1
Pathophysiology of raised intracranial pressure associated with space occupying tumours		X				X	X	1,2
Diagnostic imaging of intracranial tumours including the interpretation of CT and MRI scans and the role of MRS		X				X	X	1,2
Principles of fractionated radiotherapy, stereotactic radiotherapy and radiosurgery		X				X	X	1
Role of adjuvant chemotherapy		X				X	X	1
Principles of clinical trials and their application to neuro-oncology		X				X	X	1
Principles of palliative care		X				X	X	1



CLINICAL SKILLS								
Clinical assessment of patients with raised intracranial pressure and space occupying lesions	X	X					X	1,2,3
Ability to contribute to the multi-disciplinary management of patients with intracranial neoplasia		X					X	1,2,3
Empathetic communication with patients and families	X	X					X	1,2,3,4
TECHNICAL SKILLS AND PROCEDURES								
None specified								

PRINCIPLES OF IMAGE-GUIDED SURGERY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in image-guided surgery applied to the management of patients with intracranial tumours								
KNOWLEDGE								
An understanding of the principles and practice of frameless image-guided surgery and the principles of frame-based stereotactic surgery		X				X	X	1,2
CLINICAL SKILLS								
Interpretation of CT and MRI scans		X				X	X	1,2
TECHNICAL SKILLS AND PROCEDURES								
Image-guided biopsy of supratentorial intrinsic tumour			X					1
Ability to import, check and interrogate image data sets on a standard work station			X					1,2
Setting up an image-guidance system and obtaining satisfactory intra-operative registration			X					1,2
Planning and siting burr holes and craniotomy flaps using image-guidance			X	X				1,2
Identification of an intra-cranial tumour and its margins using image-guidance			X	X				1,2

SUPRA-TENTORIAL INTRINSIC TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the operative management of supra-tentorial intrinsic tumours								
KNOWLEDGE								
Indications for surgery		X				X	X	1
Applied surgical anatomy		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Complications of surgery		X				X	X	1,2
CLINICAL SKILLS								
The assessment, counselling and pre-operative preparation of patients with supratentorial intrinsic tumours	X	X					X	1,2
TECHNICAL SKILLS AND PROCEDURES								
Craniotomy for superficial, lobar supratentorial intrinsic tumour				X				1,2
In particular:								
safe patient positioning			X	X				1,2
planning and siting of craniotomy with and without image-guidance			X	X				1,2
intra-operative management of raised ICP				X				1,2
appropriate exposure of the tumour, using operating microscope as necessary				X				1,2
safe use of fixed retractors				X				1,2
precise use of suction, electo-coagulation and ultrasonic aspiration				X				1,2
intracranial haemostasis				X				1,2

CONVEXITY MENINGIOMA	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the operative management of a convexity menginiomas								
KNOWLEDGE								
Indications for surgery		X				X	X	1,2
Applied surgical anatomy		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Complications of surgery		X				X	X	1,2
CLINICAL SKILLS								
The assessment, counselling and pre-operative preparation of patients with convexity meningiomas	X	X					X	1,2
TECHNICAL SKILLS AND PROCEDURES								
Resection of a convexity meningioma, in particular:				X				1,2
safe patient positioning			X	X				1,2
planning and siting of craniotomy with and without image-guidance			X	X				1,2
intra-operative management of raised ICP				X				1,2
appropriate exposure of the tumour				X				1,2
precise use of suction, electo-coagulation and ultrasonic aspiration				X				1,2
use of internal tumour decompression				X				1,2
dissection in the subarachnoid plane using the operating microscope as necessary				X				1,2
intracranial haemostasis				X				1,2
use of duraplasty and cranioplasty				X				1,2

GENERAL MICROBIOLOGICAL PRINCIPLES	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the general management of CNS infections including ventriculitis, cerebral abscess, subdural empyema and spinal epidural abscess								
KNOWLEDGE								
The pathophysiology of intracranial and spinal sepsis		X				X	X	1
Principles of anti-microbial chemotherapy		X				X	X	1
Indications for operative intervention		X				X	X	1
CLINICAL SKILLS								
Clinical assessment of patients with CNS infections	X	X						1
Interpretation of CT and MRI scans		X				X	X	1
TECHNICAL SKILLS AND PROCEDURES								
None specified								

MANAGEMENT OF INTRACEREBRAL ABSCESS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the operative management of cerebral abscess using burr hole aspiration								
KNOWLEDGE								
Indications for surgery		X				X	X	1
Applied surgical anatomy		X				X	X	1
Principles of peri-operative care		X		X		X	X	1
Complications of surgery		X		X		X		1

CLINICAL SKILLS								
The assessment and pre-operative preparation of patients with a cerebral abscess	X	X		X				1
TECHNICAL SKILLS AND PROCEDURES								
Burr hole aspiration of a cerebral abscess with and without image-guidance			X	X				1

MANAGEMENT OF THE SPINAL INJURY PATIENT	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in all aspects of the non-operative management of spinal injury patients								
KNOWLEDGE								
Pathophysiology of spinal cord injury		X				X	X	1
Classification of spinal fracture dislocations		X				X	X	1
Biomechanics of spinal instability		X				X	X	1
Indications for halo traction and external stabilisation		X				X	X	1
Indications for and principles of open reduction and stabilisation		X				X	X	1
CLINICAL SKILLS								
Clinical assessment of the spinal injury patient	X	X					X	1
Management of spinal shock		X					X	1
Interpretation of plain radiology, CT and MRI scans		X				X	X	1
Liaison with spinal injury units	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Use of external mobilisation including cervical collars and spinal boards			X	X				1
Application of halo traction			X	X				1
Application of a halo-body jacket			X	X				1

MALIGNANT SPINAL CORD COMPRESSION	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the general management of patients with malignant spinal cord compression								
KNOWLEDGE								
The pathophysiology of spinal cord compression		X				X	X	1
The classification, aetiology and natural history of vertebral metastases		X				X	X	1
Spinal instability associated with vertebral malignancy		X				X	X	1
Indications for surgical intervention		X				X	X	1
Role of primary radiotherapy and adjuvant radiotherapy or chemotherapy		X				X	X	1
Indications for percutaneous and open spinal biopsy		X				X	X	1
Indications for spinal decompression with and without instrumented spinal stabilisation		X				X	X	1
CLINICAL SKILLS								
Clinical assessment of patients with malignant spinal cord compression	X	X					X	1
Interpretation of plain radiology, CT and MRI scans		X				X	X	1
Liaison with medical oncologists and radiotherapist	X	X						1
Counselling and pre-operative preparation of patients with malignant spinal cord compression	X	X		X				1
TECHNICAL SKILLS AND PROCEDURES								
Decompressive thoracic and lumbar laminectomy with extradural tumour resection			X	X				1
Posterior pedicle screw stabilisation			X	X				1
Anterior cervical corpectomy with anterior column re-construction and anterior cervical plating			X	X				1

SURGICAL MANAGEMENT OF THORACO-LUMBAR METASTASES	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the basic surgical management of patients with malignant spinal cord compression								
KNOWLEDGE								
Indications for surgery		X				X	X	1
The principles of operative spinal decompression and stabilisation of patients with spinal cord metastases		X				X	X	1
Applied surgical anatomy		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery		X		X		X	X	1
CLINICAL SKILLS								
The assessment, counselling and pre-operative preparation of patients with malignant spinal cord compression	X	X		X			X	1
TECHNICAL SKILLS AND PROCEDURES								
Extradural spinal biopsy and decompression by laminectomy in selected patients without segmental instability			X	X				1
2 Instrumented posterior spinal stabilisation			X	X				1

LUMBAR RADICULOPATHIES	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the surgical management of lumbar compressive radiculopathies by lumbar microdiscectomies and associated microsurgical decompressions								
KNOWLEDGE								
Indications for operative management of lumbar radiculopathies		X				X	X	1
Applied surgical anatomy of the lumbar spine with particular reference to degenerative neural compression and morphological variations in vertebral anatomy		X				X	X	1
Selection of minimally-invasive approaches		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery		X				X	X	1
CLINICAL SKILLS								
The assessment, counselling and pre-operative preparation of patients with lumbar radiculopathies	X	X					X	1
Interpretation of plain radiographs, CT scan, MRI scans and CT myelograms		X				X	X	1
TECHNICAL SKILLS AND PROCEDURES								
Primary lumbar microdiscectomy			X	X				1
Primary posterior decompression (laminotomy, hemilaminectomy etc): including Identification of spinal level by pre and intra-operative fluoroscopy, Achieving safe access to the spinal canal by micro-surgical fenestration, Achieving full decompression of the spinal canal, lateral recess and foramen by appropriate bone and soft tissue resection, Protection and safe retraction of neural tissues			X	X				1
Lumbar microdiscectomy			X	X				1
Microsurgical lateral recess decompression			X	X				1
Posterior decompression (laminotomy, hemilaminectomy, etc.)			X	X				1
Revisional lumbar microsurgical discectomy with and without decompression			X	X				1
Microsurgical lumbar discectomy for central disc protrusion with cauda equina compression			X	X				1



COMPRESSIVE CERVICAL MYEORADICULOPATHIES	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the surgical management of compressive cervical myeloradiculopathies								
<b>KNOWLEDGE</b>								
Indications for operative management of cervical myeloradiculopathies		X				X	X	1
Applied surgical anatomy of the cervical spinal column with particular reference to the relationships between the bony elements, spinal cord, nerve roots and vertebral arteries		X				X	X	1
Selection of surgical approaches		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with cervical myeloradiculopathies	X	X					X	1
Interpretation of plain radiographs, CT scan, MRI scans and CT myelograms		X				X	X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Single level anterior cervical discectomy with and without fusion			X	X				1
In particular:								
Standard anterolateral approach to the cervical spine			X	X				1
Use of fluoroscopy or plain radiographs to confirm spinal level			X	X				1
Radical and subtotal excision of the cervical disc, PLL, central and unco-vertebral osteophytes			X	X				1
Protection and full decompression of the spinal cord and spinal nerve roots			X	X				1
Interbody fusion using autologous bone with or without interbody cages			X	X				1

MANAGEMENT OF HEAD-INJURED PATIENTS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in all aspects of the advanced operative management of head-injured patients								
<b>KNOWLEDGE</b>								
Pathophysiology of raised intracranial pressure and space occupying haematomas		X				X	X	1
Applied surgical anatomy		X				X	X	1
Principles of peri-operative care		X				X	X	1
Indications for surgery and appropriate surgical approaches		X				X	X	1
Indications for open and endoscopic closure of traumatic CSF fistulae		X				X	X	1
Complications of surgery and their management		X				X	X	1
<b>CLINICAL SKILLS</b>								
Competence in all aspects of peri-operative management of head-injured patients	X	X		X			X	1
Ability to diagnose and confirm brain death	X	X		X			X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Craniotomy for supra and infratentorial extradural, subdural and intracerebral haematomas			X	X				1
4 Lobectomy for haemorrhagic contusion				X				1
4 Vault cranioplasty using in-situ or preformed prostheses				X				1
3 Decompressive bifrontal craniotomy with extensive durotomy				X				1
3 Subfrontal extradural or subdural repair of anterior fossa fractures				X				1
3 Combined craniofacial repair of fronto-orbito-maxillary injuries (fellowship)				X				1

ANTERIOR AND MIDDLE FOSSA SKULL BASE TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the surgical management of patients with anterior and middle fossa tumours								
<b>KNOWLEDGE</b>								
Indications for selected approaches in relation to pathology and surgical goals		X				X	X	1
Applied microsurgical anatomy of the anterior and middle cranial fossae		X				X	X	1
Principles of intra-operative management of patients undergoing resection of anterior and middle fossa tumours including olfactory groove, planum sphenoidale, parasellar and sphenoid wing and falcine meningiomas		X				X	X	1
Complications of surgery and their management		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with anterior and middle fossa tumours	X	X					X	1
Interpretation of CT and MRI scans		X				X	X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Standard pterional and subfrontal approaches including: Pterional resection and basal drilling, Subfrontal approach to the optic nerve, chiasm and internal carotid arteries, Sylvian fissure splitting and exposure of the MCA bifurcation, CSF drainage by chiasmatic cisternal suction, intra-operative ventricular puncture and lamina terminalis fenestration			X	X				1
Bi-Frontal/Frontal and panietal parafalcine approaches			X	X				1
Microsurgical resection of superficial skull base meningioma				X				1
Anterior interhemispheric, fronto-orbital, zygomatic and temporo-zygomatic approaches			X	X				1

TRANSPHENOIDAL SURGERY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in transphenoidal approaches to the pituitary fossa and resection of pituitary adenomas								
<b>KNOWLEDGE</b>								
Pathophysiology of the hypothalamic-pituitary axis		X				X	X	1
Indications for surgery		X				X	X	1
Selection of surgical approaches: sublabial, transnasal and endoscopic		X					X	1
Applied surgical anatomy of the skull base		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery and their management		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with pituitary, sellar and parasellar tumours	X	X					X	1
Interpretation of CT and MRI scans		X				X	X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Microsurgical transphenoidal approach			X	X				1
Transphenoidal resection of non-functioning macroadenoma			X	X				1

MIDLINE TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the surgical management of superficial, hemispheric and midline intrinsic posterior fossa tumours and metastases								
<b>KNOWLEDGE</b>								
Indications for surgery		X				X	X	1
Selection of surgical approaches		X				X	X	1

Applied surgical anatomy		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery and their management		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with posterior fossa malignant tumours	X	X					X	1
Interpretation of CT and MRI scans		X				X	X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Competence in midline, paramedian and retrosigmoid posterior fossa craniotomies including: safe patient positioning in the prone and semi-prone positions, exposure of the lateral and sigmoid sinuses, exposure and decompression of the foramen magnum, use of cisternal CSF drainage, safe use of fixed retractors, exposure and resection of superficial, lateral and mid-line intrinsic cerebellar tumours and metastases				X				1

MAILIGNANT POSTERIOR FOSSA TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the surgical management of superficial, hemispheric and midline intrinsic posterior fossa tumours and metastases								
<b>KNOWLEDGE</b>								
Indications for surgery		X				X	X	1
Selection of surgical approaches		X				X	X	1
Applied surgical anatomy		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery and their management		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with posterior fossa malignant tumours	X	X					X	1
Interpretation of CT and MRI scans		X				X	X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Competence in midline, paramedian and retrosigmoid posterior fossa craniotomies including: safe patient positioning in the prone and semi-prone positions, exposure of the lateral and sigmoid sinuses, exposure and decompression of the foramen magnum, use of cisternal CSF drainage, safe use of fixed retractors, exposure and resection of superficial, lateral and mid-line intrinsic cerebellar tumours and metastases				X				1

CEREBELLOPONTINE ANGLE TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the management of patients with cerebellopontine angle tumours								
<b>KNOWLEDGE</b>								
Relative indications for surgery, radiosurgery and conservative management		X				X	X	1
Principles of intra-operative management of patients undergoing resection of CP angle tumours including vestibular schwannomas and menignomas		X				X	X	1
Principles and application of cranial nerve and brainstem monitoring		X						1
Applied microsurgical anatomy of the CP angle, brainstem and lower cranial nerves		X				X	X	1
Relative indications for retrosigmoid, middle fossa, and translabyrinthine approaches with respect to hearing preservation, tumour size and position		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with CP angle tumours	X	X					X	1
Interpretation of CT and MR scans		X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Retrosigmoid approach				X				1
Subarachnoid dissection and exposure of the tumour and lower cranial nerves				X				1
Subtotal microsurgical resection of acoustic neuroma				X				1

INTRACEREBRAL ABSCESS AND SUBDURAL EMPYEMA	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the management of patients with CNS infections including ventriculitis, cerebral abscess and subdural empyema								
<b>KNOWLEDGE</b>								
The aetiology and pathophysiology of intracranial sepsis		X				X	X	1
Indications for burr hole drainage, ventricular drainage and craniotomy in the management of intracranial sepsis		X				X	X	1
Indications for combined otorhinological procedures		X				X	X	1
Applied surgical anatomy		X				X	X	1
Principles of peri-operative care		X				X	X	1
Surgical complications		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with intracranial sepsis	X	X					X	1
Interpretation of CT and MRI scans		X				X	X	1
Management of anti-microbial therapy		X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Burr hole drainage of intracerebral abscess			X	X				1
4 Ventricular drainage			X	X				1
4 Craniotomy for subdural empyema, including frontal and parietal parafalcine approaches				X				1
4 Craniotomy and resection of frontal, temporal and cerebellar abscess				X				1
3 Anterior and middle fossa extradural and subdural duroplasty				X				1

INTRACRANIAL ANEURYSMS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the multi-disciplinary management of ruptured and unruptured intracranial aneurysms								
<b>KNOWLEDGE</b>								
Aetiology, epidemiology and natural history of unruptured and ruptured intracranial aneurysms		X				X	X	1
Pathophysiology and general management of subarachnoid haemorrhage		X				X	X	1
Angiographic and microsurgical anatomy of the cerebral circulation		X				X	X	1
Indications for surgical management of intracranial aneurysms by clipping, trapping, microsurgical reconstruction and microvascular bypass		X				X	X	1
Complications of surgery and their management		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with ruptured and unruptured aneurysms	X	X					X	1
Interpretation of CT, MR and catheter angiography		X				X	X	1

TECHNICAL SKILLS AND PROCEDURES								
Standard pterional and subfrontal approaches			X	X				1
Clipping of anterior circulation aneurysm				X				1

INTRACRANIAL VASCULAR MALFORMATIONS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the surgical aspects of the multi-disciplinary management of intracranial vascular malformations								
KNOWLEDGE								
Pathogenesis, aetiology, epidemiology and natural history of intracranial vascular malformations including AVMs, A-V fistula, cavernomas and venous malformations		X				X	X	1
Pathophysiology and general management of intracranial haemorrhage		X				X	X	1
Angiographic and microsurgical anatomy of the cerebral circulation		X				X	X	1
Indications for embolisation and radiosurgery		X				X	X	1
Indications for surgical management of malformations		X				X	X	1
Complications of surgery and their management, including hyperperfusion syndromes								
CLINICAL SKILLS								
The assessment, counselling and pre-operative preparation of patients with vascular malformations	X	X					X	1
Interpretation of CT, MR and catheter angiography		X				X	X	1
TECHNICAL SKILLS AND PROCEDURES								
Image-guided craniotomy and exposure of supratentorial AVM				X				1
Microsurgical resection of superficial gyral or sulcal AVM				X				1

OCCLUSIVE CEREBROVASCULAR DISEASE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the clinical management of occlusive cerebrovascular disease								
KNOWLEDGE								
The epidemiology, natural history and pathophysiology of extra- and intracranial atherosclerotic occlusive disease		X				X	X	1
The epidemiology, natural history and pathophysiology of non-atherosclerotic occlusive diseases		X				X	X	1
Optimal medical management of occlusive and thrombo-embolic cerebrovascular disease		X				X	X	1
Imaging of the acutely ischaemic brain using CT and MRI		X				X	X	1
Principles of non-invasive and invasive imaging of the extra and intracranial vasculature using CT, MRI and catheter angiography		X				X	X	1
Principles of regional cerebral blood flow and metabolism measurement and imaging using CT and MRI perfusion techniques; SPECT and PET scanning		X				X	X	1
Indications for carotid endarterectomy		X				X	X	1
Indications for endovascular intervention including intra-arterial thrombolysis; carotid angioplasty and stenting; intracranial angioplasty		X				X	X	1
Principles of cerebral revascularisation by indirect synangiosis, low-flow EC-IC anastomosis and high flow EC-IC bypass grafting		X				X	X	1
CLINICAL SKILLS								
The assessment, counselling and pre-operative preparation of patients undergoing surgery for occlusive cerebrovascular disease with ruptured and unruptured aneurysms	X	X					X	1
Interpretation of CT, MR and catheter angiography		X				X	X	1
TECHNICAL SKILLS AND PROCEDURES								
None								

CHRONIC PAIN	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the surgical aspects of the multi-disciplinary management of patients with trigeminal neuralgia								
KNOWLEDGE								
Aetiology, epidemiology and natural history of trigeminal neuralgia		X				X	X	1
Differential diagnosis and management of related cranio-facial pain syndromes		X				X	X	1
Medical management of cranio-facial pain		X				X	X	1
Surface anatomy of the trigemminal nerve and microsurgical anatomy of the CP angle		X				X	X	1
Indications for surgical management of trigeminal neuralgia by peripheral neurectomy, percutaneous rhizotomy, radiofrequency rhizotomy, microvascular decompression		X				X	X	1
Complications of surgery and their management		X				X	X	1
CLINICAL SKILLS								
The assessment, counselling and pre-operative preparation of patients with trigeminal neuralgia	X	X					X	1
Interpretation of posterior fossa CT and MRI scans	X	X				X	X	1
TECHNICAL SKILLS AND PROCEDURES								
Retrosigmoid microsurgical approach to the CP angle and trigeminal nerve				X				1
Trigeminal microvascular decompression				X				1
Percutaneous trigeminal rhizotomy				X				1

EPILEPSY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To understand the management of patients with idiopathic and lesional epilepsy								
KNOWLEDGE								
The aetiology and pathophysiology of idiopathic and lesional epilepsy		X				X	X	1
Indications for medical and surgical management		X				X	X	1
CLINICAL SKILLS								
Surgical aspects of the multi-disciplinary assessment of epilepsy patients	X	X					X	1
Interpretation of CT, MRI and SPECT scans		X				X	X	1
Pre-operative counselling and preparation	X	X						1
TECHNICAL SKILLS AND PROCEDURES								
Image-guided resection of cortical lesions				X				1
Vagal nerve stimulation				X				1

CERVICAL SPINE FRACTURE-SUBLUXATION	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
OBJECTIVE								
To achieve competence in the general management of fracture-sUBLuxations of the cervical spine								
KNOWLEDGE								
Pathophysiology of spinal cord injury		X				X	X	1
Classification of cervical spinal fracture dislocations		X				X	X	1,2

Biomechanics of spinal instability		X				X	X	1,2
Indications for halo traction and external stabilisation		X				X	X	1
Indications for and principles of open reduction and stabilisation		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Clinical assessment of the spinal injury patient	X	X					X	1
Management of spinal shock		X					X	1,2
Interpretation of plain radiology, CT and MRI scans		X				X	X	1,2
Liaison with spinal injury units	X	X					X	1
Counselling and pre-operative preparation of spinal injury patients	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Application of cranial-cervical traction			X	X				1

THORACO-LUMBAR FRACTURES	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the general management of thoracolumbar fractures								
<b>KNOWLEDGE</b>								
Pathophysiology of spinal cord injury		X				X	X	1
Classification of thoracolumbar fracture dislocations		X				X	X	1,2
Biomechanics of spinal instability		X				X	X	1,2
Indications for open reduction and stabilisation		X				X	X	1,2
<b>CLINICAL SKILLS</b>								1,2
Clinical assessment of the spinal injury patient	X	X					X	1,2
Management of spinal shock		X					X	1,2
Interpretation of plain radiology, CT and MRI scans		X				X	X	1,2
Liaison with spinal injury units	X	X					X	1,2
Counselling and pre-operative preparation of spinal injury patients	X	X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Posterior reduction of thoracolumbar fractures by pedicle screw instrumentation and ligamentotaxis				X				

INTRADURAL EXTRAMEDULLARY TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the management of patients with intradural extramedullary tumours including scwannomas, neurofibromas and meningiomas								
<b>KNOWLEDGE</b>								
Classification, natural history and basic molecular biology of intradural spinal tumours		X				X	X	1
Pathophysiology of spinal cord compression		X				X	X	1,2
Indications for surgery		X				X	X	1,2
Selection of surgical approaches		X				X	X	1,2
Applied surgical anatomy		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Complications of surgery and their management		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment, counselling and pre-operative preparation of patients with intradural spinal tumours	X	X					X	1,2,3
Interpretation of spinal MRI scans		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Microsurgical excision of posterior and postero-lateral intradural extramedullary tumours				X				1,2
Microsurgical excision of anterior intradural extramedullary tumours				X				1,2

INTRAMEDULLARY SPINAL CORD TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the management of patients with intramedullary spinal cord tumours								
<b>KNOWLEDGE</b>								
Classification, natural history and pathology of intramedullary spinal cord tumours		X				X	X	1,2
Indications for biopsy, subtotal and radical excision		X				X	X	1,2
Role of adjuvant treatment		X				X	X	1,2
Applied surgical anatomy of spine and spinal cord		X				X	X	1,2
Selection of surgical approaches		X				X	X	1,2
Principles of intra-operative management of patients undergoing resection of intramedullary tumours		X				X	X	1,2
Complications of surgery and their management		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment, counselling and pre-operative preparation of patients with intramedullary spinal cord tumours	X	X					X	1,2,3
Interpretation of spinal MRI scans		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Microsurgical biopsy of intramedullary spinal cord tumour				X				1,2
Subtotal microsurgical resection of intramedullary tumour				X				1,2
Duroplasty			X	X				1,2

CERVICAL MYELORADICULOPATHY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the management of cervical radiculopathy								
<b>KNOWLEDGE</b>								
Indications for operative management of cervical radiculopathies		X				X	X	1,2
Applied surgical anatomy of the cervical spinal column, spinal cord, nerve roots and vertebral arteries		X				X	X	1,2
Selection of surgical approaches		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Complications of surgery		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with cervical myeloradiculopathies	X	X					X	1,2
Interpretation of plain radiographs, CT scan, MRI scans and CT myelograms		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Single and multi-level anterior cervical discectomy with and without fusion				X				1,2
Anterior cervical plating				X				1,2
Posterior cervical microforaminotomy and microdiscectomy				X				1,2
Posterior cervical decompression (laminotomy, hemilaminectomy etc				X				1,2



RHEUMATOID DISEASE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To understand the management of rheumatoid patients with atlanto-axial subluxation, cranial settling and related disorders								
<b>KNOWLEDGE</b>								
The pathology and natural history of rheumatoid spondylopathy		X				X	X	1,2
Indications for operative management of atlanto-axial subluxation, cranial settling and related disorders		X				X	X	1,2
Applied surgical anatomy of the craniocervical junction		X				X	X	1,2
Selection of surgical approaches		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Complications of surgery		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with cervical myeloradiculopathies	X	X					X	1,2,3
Interpretation of plain radiographs, CT scan, MRI scans and CT myelograms and 3D spinal reconstructions		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Atlanto-axial wiring for reducible atlanto-axial subluxation				X				

HINDBRAIN HERNIATION	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the management of craniocervical stenosis and hindbrain herniation								
<b>KNOWLEDGE</b>								
The pathogenesis and natural history of hindbrain herniation, cranicervical stenosis, syringomyelia and syringobulbia		X				X	X	1,2
Indications for foramen magnum decompression		X				X	X	1,2
Applied surgical anatomy of the craniocervical junction		X				X	X	1,2
Selection of surgical approaches		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Complications of surgery		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with hind brain anomalies	X	X					X	1,2
Interpretation of plain radiographs, CT scan, MRI scans and CT myelograms and 3D spinal reconstructions		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Foramen magnum decompression				X				

SPINAL EPIDURAL ABSCESS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the operative management of spinal epidural abscess								
<b>KNOWLEDGE</b>								
The aetiology and pathophysiology of spinal sepsis		X				X	X	1,2
Indications for drainage of spinal epidural abscess by laminectomy and multiple laminotomies		X				X	X	1,2
Applied surgical anatomy		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Surgical complications and their management		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with spinal sepsis	X	X					X	1,2,3
Interpretation of spinal CT and MRI scans		X				X	X	1,2
Management of anti-microbial therapy		X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Drainage of spinal epidural abscess by laminectomy and/or multiple laminotomies			X	X				1,2

VERTEBRAL OSTEOMYELITIS AND DISCITIS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the operative management of vertebral osteomyelitis and discitis								
<b>KNOWLEDGE</b>								
The aetiology and pathophysiology of vertebral osteomyelitis and discitis, including pyogenic, tuberculous and atypical infections		X				X	X	1,2
Indications for percutaneous and open biopsy		X				X	X	1,2
Indications for spinal stabilisation		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Surgical complications and their management		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with spinal sepsis	X	X					X	1,2,3
Interpretation of spinal CT and MRI scans		X				X	X	1,2
Management of anti-microbial therapy		X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Transpedicular and open vertebral and disc biopsy			X	X				1,2

CARPAL TUNNEL COMPRESSION	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in carpal tunnel decompression								
<b>KNOWLEDGE</b>								
Presentation, differential diagnosis and management of carpal tunnel syndrome		X				X	X	1
Interpretation of nerve conduction studies		X				X	X	1
Indications for surgery		X				X	X	1
Applied surgical anatomy		X				X	X	1
<b>CLINICAL SKILLS</b>								
Assessment and counselling of patients with carpal tunnel syndrome	X	X					X	1,2,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Carpal tunnel decompression			X	X				1,2

ULNAR NEUROPATHY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the management of ulnar neuropathy								
<b>KNOWLEDGE</b>								
Presentation, differential diagnosis and management of ulnar neuropathies		X				X	X	1
Interpretation of nerve conduction studies		X				X	X	1
Indications for surgery		X				X	X	1
Applied surgical anatomy		X				X	X	1

CLINICAL SKILLS								
Assessment and counselling of patients with an ulnar neuropathy	X	X					X	1,2,3
TECHNICAL SKILLS AND PROCEDURES								
Cubital ulnar nerve decompression with and without transposition			X	X				1,2

PERIPHERAL NERVE SHEATH TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the resection of major and minor peripheral nerve tumours								
<b>KNOWLEDGE</b>								
Pathology of peripheral nerve sheath tumours		X				X	X	1
Indications for complete and subtotal resection of tumours		X				X	X	1
Applied surgical anatomy of the major peripheral nerves		X				X	X	1
<b>CLINICAL SKILLS</b>								
Assessment and counselling of patients with peripheral nerve sheath tumours	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Microsurgical excision of peripheral nerve sheath tumour				X				1,2

PAEDIATRIC HEAD AND SPINAL INJURY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence the management of accidental and non-accidental paediatric head and spinal injuries								
<b>KNOWLEDGE</b>								
Pathophysiology of raised intracranial pressure in children following head injury		X				X	X	1,2
Prevention and treatment of secondary insults relating to transfer and emergency surgery in head-injured children		X				X	X	1,2
Medical management and intensive care in paediatric head injury		X				X	X	1,2
Pathophysiology, legal and social aspects of non-accidental injury in children		X				X	X	1,2
Management of perinatal trauma, growing fractures and penetrating injuries in children		X				X	X	1,2
Indications for decompressive craniectomy in management of intractable increases in ICP		X				X	X	1,2
Rehabilitation after mild, moderate and severe head injuries		X				X	X	1
Diagnosis and certification of brain death in children		X				X	X	1,2
Classification, assessment, investigation and management of paediatric spinal injuries (including SCIWORA)		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment and clinical management of children with head and spinal injuries	X	X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Insertion of ICP monitor				X				1,2
Insertion of ventriculostomy				X				1,2
Craniotomy for traumatic intracranial haematoma				X				1,2
Repair of depressed skull fracture				X				1,2

INTRACRANIAL VASCULAR DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
<b>OBJECTIVE</b>								
To achieve competence in the emergency neurosurgical management of children presenting with intracranial vascular disorders								
<b>KNOWLEDGE</b>								
Epidemiology, natural history, pathophysiology and clinical features of subarachnoid haemorrhage, haemorrhagic stroke and ischaemia stroke in children secondary to intracranial aneurysms, arteriovenous malformations and fistulae, cavernomas, arterial dissection, moya-moya disease and venous sinus thrombosis		X				X	X	1,2
Surgical and endovascular strategies for the management of acute intracranial vascular disorders in children		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
The assessment and clinical management of children presenting with spontaneous intracranial haemorrhage and acute cerebral ischaemia	X	X					X	1,2,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Emergency operative management of spontaneous intracerebral haemorrhage				X				1,2



PAEDIATRIC NEURO-ONCOLOGY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Paediatric neurosurgery								
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the multi-disciplinary management of children with tumours of the brain and spinal cord								
<b>KNOWLEDGE</b>								
Epidemiology, natural history and pathology of tumours of the central nervous system in children including medulloblastoma, pilocytic astrocytoma, high grade gliomas, supratentorial PNET, pineal region tumours, brain stem tumours and intramedullary spinal cord tumours		X				X	X	1,2
Imaging of paediatric CNS tumours		X				X	X	1,2
Radiological and biochemical staging of tumours		X				X	X	1
Indications for surgery, radiotherapy, primary and adjuvant chemotherapy		X				X	X	1,2
Goals of surgery		X				X	X	1,2
Long-term effects of treatment on cognition, hypothalamic-pituitary function and quality of life		X				X	X	1
Availability of clinical (CCLG) trials		X				X	X	1
Management of delayed spinal deformity associated with treatment of spinal cord tumours		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment and clinical management of children with tumours of the central nervous system	X	X				X	X	1,2
Multidisciplinary approach to treating patients with paediatric brain tumours		X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Emergency operative management of a deteriorating child with an intracranial haemorrhage and/or hydrocephalus secondary to tumour				X				1,2
Use of CT, MRI, electromagnetic and ultrasound guided localisation of tumours of the brain and spine				X				1,2
Stereotactic, image-guided and endoscopic biopsy of intracranial tumours				X				1,2
Supratentorial craniotomy for hemispheric tumour				X				1,2
Approaches to the suprasellar region: pterional, orbitozygomatic and subfrontal				X				1,2
Approaches to the third ventricle: transcortical-transventricular, transcallosal				X				1,2
Approaches to the pineal region: endoscopic, supracerebellar, suboccipital transtentorial				X				1,2
Midline posterior fossa craniotomy for tumour				X				1,2
Retrosigmoid approach to tumour presenting in the CP angle				X				1,2
Laminoplasty approach to spine cord tumours				X				1,2
<b>PROFESSIONAL SKILLS</b>								
Consent issues in children	X	X				X	X	1,3,4
Recognition of importance of mentorship in dealing with unfamiliar or complicated exposures and procedures		X						1,2

PAEDIATRIC HEAD AND SPINAL INJURY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Paediatric neurosurgery								
<b>OBJECTIVE</b>								
To achieve competence in all aspects of the management of accidental and non-accidental paediatric head and spinal injuries.								
<b>KNOWLEDGE</b>								
Pathophysiology of raised intracranial pressure in children following head injury		X				X	X	1,2
Prevention and treatment of secondary insults relating to transfer and emergency surgery in head-injured children		X				X	X	1,2
Medical management and intensive care in paediatric head injury		X				X	X	1,2
Pathophysiology, legal and social aspects of non-accidental injury in children		X				X	X	1,2
Management of perinatal trauma, growing fractures and penetrating injuries in children		X				X	X	1,2
Indications for decompressive craniectomy in management of intractable increases in ICP		X				X	X	1,2
Rehabilitation after mild, moderate and severe head injuries		X				X	X	1,2
Diagnosis and certification of brain death in children		X				X	X	1,2
Classification, assessment, investigation and management of paediatric spinal injuries (including SCIWORA)		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment and clinical management of children with head and spinal injury	X							1,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Insertion of ICP monitor			X					1,2
Insertion of ventriculostomy				X				1,2
Craniotomy for traumatic intracranial haematoma				X				1,2
Repair of depressed skull fracture				X				1,2
Anterior skull base repair				X				1,2
<b>PROFESSIONAL SKILLS</b>								
Understanding of the legal issues surrounding non-accidental injury		X				X	X	1,2
Understanding of multi-disciplinary approach to non- accidental injury		X					X	1,2

HYDROCEPHALUS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Paediatric neurosurgery								
<b>OBJECTIVE</b>								
To achieve competence in all aspects of the management (operative and non-operative) of paediatric patients with hydrocephalus								
<b>KNOWLEDGE</b>								
Pathophysiology and investigation of abnormal CSF dynamics in hydrocephalus and BIH		X				X	X	1,2
Indications for third ventriculostomy and for shunt insertion		X				X	X	1,2
Principles of shunt design and function		X				X	X	1,2
Antenatal diagnosis of hydrocephalus and its prognosis		X				X	X	1,2
Medical and ophthalmological treatment options for BIH		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Assessment and clinical management of neonates and children presenting with hydrocephalus	X	X					X	1,2
Assessment and clinical management of neonates and children presenting with shunt malfunction including obstruction, over-drainage and slit ventricle syndrome	X	X					X	1,2
Interpretation of CT, MRI scans and ultrasound scans		X				X	X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Insertion of intracranial pressure monitor			X	X				
Insertion of ventricular access device in neonates				X				1,2
Insertion and revision of ventriculoperitoneal shunt/subduroperitoneal shunt				X				1,2
Insertion and revision of ventriculoatrial /ventriculopleural shunt				X				1,2
Insertion and revision of lumboperitoneal shunt				X				1,2
Endoscopic third ventriculostomy				X				1,2
Endoscopic fenestration of loculated ventricles				X				1,2
CT, MRI and ultrasound guided ventricular access				X				1,2
Management of arachnoid cysts by shunting, open or endoscopic fenestration				X				1,2

PROFESSIONAL SKILLS								
Antenatal counselling	X	X					X	1,2
Consent in neonates and children	X	X					X	1,2

CONGENITAL SPINAL DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Paediatric neurosurgery								
OBJECTIVE								
To achieve competence in all aspects of the management (operative and non-operative) of children with congenital spinal disorders								
KNOWLEDGE								
Embryogenesis of craniospinal dysraphism		X				X	X	1,2
Pathophysiology of CSF circulation associated with hindbrain hernia, syringobulbia and syringomyelia		X				X	X	1,2
Epidemiogy, natural history and clinical features of congenital spinal disorders including dysraphism, tethered cord syndrome, diastematomyelia, Chiari malformations, Klippel-Feil syndrome, achondroplasia, Downs syndrome etc		X				X	X	1,2
Imaging of the neonatal and growing paediatric spine of children with congenital disorders commonly		X				X	X	1,2
Antenatal diagnosis of dysraphism and its implications		X				X	X	1,2
CLINICAL SKILLS								
Assessment and clinical management of children presenting with open or closed dysraphic spines and other congenital spinal abnormalities	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Closure of myelomeningocele				X				1,2
Foramen magnum decompression for hind brain herniation				X				1,2
Syringostomy and shunting of syringomyelia				X				1,2
Excision of simple dermal sinus tract				X				1,2
Untethering and resection of bony spur in diastematomyelia				X				1,2
Untethering of lipomyelomeningocele				X				1,2
Instrumented stabilisation and fusion in the treatment of congenital spinal disorders				X				1,2
PROFESSIONAL SKILLS								
Consent issues in children	X	X				X	X	1,3,4
Collaborative multidisciplinary approach, particularly with orthopaedic surgery	X	X			X			1

CRANIOFACIAL DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Paediatric neurosurgery								
OBJECTIVE								
To achieve competence in all aspects of the management (operative and non-operative) of children with simple craniosynostosis and cranial deformity after trauma or tumour								
To understand the management of children with syndromic craniosynostosis and encephalocoeles								
KNOWLEDGE								
Advances in the genetic understanding of craniofacial conditions		X				X	X	1
Epidemiology, natural history and clinical features of simple and syndromic craniosynostosis including cosmetic, cognitive and ophthalmological complications		X				X	X	1
Imaging of simple and syndromic craniosynostosis		X				X	X	1
Indication for and timing of surgical interventions		X				X	X	1
Understanding of causes and management of positional plagiocephaly		X				X	X	1
Epidemiology, natural history, and clinical features of common skull vault conditions including eosinophilic granuloma, fibrous dysplasia etc		X				X	X	1
CLINICAL SKILLS								
Management of ophthalmic and airway emergencies in syndromic craniosynostosis		X					X	1
Neurosurgical contribution to the multi-disciplinary management of children with craniofacial abnormalities		X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Cranioplasty using autologous, titanium or acrylic implants				X				1
Surgical management of non-syndromic single suture synostosis (in the context of a multidisciplinary team)				X				1
PROFESSIONAL SKILLS								
Consent issues children	X	X					X	1,3,4
Liaison with supraregional centres for designated cases		X					X	1,3

PAEDIATRIC EPILEPSY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Paediatric neurosurgery								
OBJECTIVE								
To understand the management of paediatric epilepsy and the assessment of children for epilepsy surgery								
KNOWLEDGE								
Classification, epidemiology, natural history and clinical features of epilepsy in childhood		X				X	X	1
Clinical, encephalographic, videotelemetric and radiological assessment of children entering a surgical program		X				X	X	1
Indications for, prognosis and complications of VNS, disconnection procedures and temporal lobe surgery		X				X	X	1
CLINICAL SKILLS								
Treatment of status epilepticus	X	X					X	1
Neurosurgical contribution to the multidisciplinary assessment and clinical management of children in preparation for and undergoing epilepsy surgery		X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Cortical lesionectomy				X				1,2
VNS insertion/revision				X				1,2
Invasive EEG recording by grid and depth electrode placement				X				1,2
Surgery for temoral lobe epilepsy				X				1,2
Non-temporal lobe resections				X				1,2
Disconnection procedures				X				1,2
PROFESSIONAL SKILLS								
Consent in children	X	X				X	X	1,3,4

INTRACRANIAL VASCULAR DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Paediatric neurosurgery								
OBJECTIVE								
To achieve competence in the neurosurgical aspects of the multi-disciplinary management of children presenting with intracranial vascular disorders								
KNOWLEDGE								
Epidemiology, natural history, pathophysiology and clinical features of subarachnoid haemorrhage, haemorrhagic stroke and ischaemia stroke in children secondary to intracranial aneurysms, arteriovenous malformations and fistulae, cavernomas, arterial dissection, moya-moya disease and venous sinus thrombosis		X				X	X	1
Surgical, endovascular and radiosurgical strategies for the management of intracranial vascular disorders in children		X				X	X	1

CLINICAL SKILLS								
The assessment and clinical management of children presenting with spontaneous intracranial haemorrhage, acute cerebral ischaemia and chronic cerebral ischaemia	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Emergency operative management of spontaneous intracerebral haemorrhage				X				1
Resection of superficial vascular malformations and cavernomas				X				1
PROFESSIONAL SKILLS								
Consent issues in children	X	X				X	X	1,3,4

SPASTICITY AND MOVEMENT DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Paediatric neurosurgery								
OBJECTIVE								
To understand the principles of surgical management of spasticity and movement disorders in children								
KNOWLEDGE								
Clinical presentations of spasticity and other movement disorders in childhood		X				X	X	1
Multi-disciplinary assessment of children entering a surgical program		X				X	X	1
The indications for, prognosis and complications of intrathecal baclofen therapy, dorsal rhizotomy and deep brain stimulation in the management of spasticity and dystonia		X				X	X	1
Awareness of indications for CNS modulating procedures in the management of pain and convulsive disorders		X				X	X	1
CLINICAL SKILLS								
Neurosurgical aspects of the multi-disciplinary assessment and management of children with spasticity and movement disorders		X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Baclofen pump insertion, assessment of function and revision				X				1
Laminotomy for selective dorsal rhizotomy				X				1
Removal/revision of pulse generator units				X				1
PROFESSIONAL SKILLS								
Consent in children	X	X			X		X	3

ADVANCED SURGICAL TECHNIQUES	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neuro-oncology								
OBJECTIVE								
To achieve competence in the application of advanced surgical techniques to the management of patients with brain tumours								
KNOWLEDGE								
Indications for; applications of; advantages and disadvantages of various advanced surgical approaches and adjuncts		X				X	X	1
CLINICAL SKILLS								
Assessment, counselling and pre-operative preparation of patients undergoing neuro-oncological surgery	X	X					X	1
Selection of appropriate advanced techniques based on clinical and imaging information	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Stereotactic craniotomy				X				1
Advanced image guidance techniques				X				1
Use of intraoperative chemotherapy wafers				X				1
Third ventriculostomy				X				1
Awake craniotomy				X				1
Intraoperative neurophysiological monitoring				X				1
PROFESSIONAL SKILLS								
Generic					X			3

LOW-GRADE INTRINSIC TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neuro-oncology								
OBJECTIVE								
Achieve competence in the surgical and clinical management of low grade intrinsic tumours								
KNOWLEDGE								
Epidemiology, natural history, genetic characteristics, pathology and clinical features of low grade intrinsic cerebral tumours		X				X	X	1
Surgical and non-surgical management options for low grade intrinsic tumours		X				X	X	1
CLINICAL SKILLS								
Interpretation of CT, MRI and functional imaging in patients with low grade intrinsic tumours		X				X	X	1
Assessment, counselling and pre-operative preparation of patients with low grade intrinsic tumours	X	X					X	1,3
Continuing management of patients with low grade intrinsic tumours within a multidisciplinary team setting		X			X			1,3
TECHNICAL SKILLS AND PROCEDURES								
Craniotomy for lobar low grade intrinsic tumours using appropriately selected advanced surgical techniques				X				1
PROFESSIONAL SKILLS								
Generic					X			3

TUMOURS OF THE VENTRICULAR SYSTEM AND PINEAL	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neuro-oncology								
OBJECTIVE								
To achieve competence in the management of patients with intraventricular and pineal region tumours								
KNOWLEDGE								
Epidemiology, natural history, genetic characteristics, pathology and clinical features of intraventricular and pineal region tumours		X				X	X	1
Radiological and biochemical staging		X				X	X	1
Surgical and non-surgical management options for low grade intrinsic tumours		X				X	X	1
Surgical anatomy relevant to approaches to the lateral and third ventricles and the pineal region		X				X	X	1
CLINICAL SKILLS								
Counselling of patients regarding surgical treatment options for pineal and intraventricular tumours	X	X						1,3
Choice of operative approaches based on tumour location and imaging		X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Transcallosal and transcortical approaches to ventricular tumours				X				1
Microsurgical resection of lateral intraventricular tumour				X				1
Microsurgical resection of third ventricular tumour/colloid cyst				X				1
Transfrontal endoscopic biopsy and third ventriculostomy				X				1
Supracerebellar infratentorial approaches to the pineal				X				1
Occipital transtentorial approaches to the pineal				X				1
PROFESSIONAL SKILLS								
Generic					X			3

BRAINSTEM TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neuro-oncology								
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the multidisciplinary management of patients with intrinsic brainstem tumours								
<b>KNOWLEDGE</b>								
Epidemiology, natural history, genetic characteristics, pathology and clinical features of brain stem tumours		X				X	X	1
Management options for patient with brainstem tumours including open surgery, biopsy and radiotherapy		X				X	X	1
<b>CLINICAL SKILLS</b>								
Selection of open surgery and stereotactic biopsy for patients with brainstem lesions		X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Stereotactic biopsy of brainstem lesions				X				1
Open resection of exophytic brainstem tumours				X				1
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

RADIOSURGERY AND STEREOTACTIC RADIOTHERAPY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neuro-oncology								
<b>OBJECTIVE</b>								
To achieve competence in the neurosurgical aspects of the multidisciplinary management of patients undergoing radiosurgery and stereotactic radiotherapy								
<b>KNOWLEDGE</b>								
The principles of radiosurgery and stereotactic radiotherapy		X				X	X	1
The indications for their use as adjunctive and/or primary treatment modalities		X				X	X	1
<b>CLINICAL SKILLS</b>								
Assessment of the suitability of these techniques for the treatment of metastatic and intrinsic tumours based on clinical presentation and imaging appearances		X					X	1
Counselling potential patients on the role of these techniques in tumour treatment	X							1,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Application of stereotactic frames for radiosurgical treatment				X				1
<b>PROFESSIONAL SKILLS</b>								
None								

SURGICAL MANAGEMENT OF PAIN	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Functional Neurosurgery								
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the multi-disciplinary management of patients with chronic pain syndromes								
<b>KNOWLEDGE</b>								
The aetiology and pathophysiology of chronic pain syndromes		X				X	X	1
Indications for medical, minimally-invasive and surgical management		X				X	X	1
Applied surgical anatomy		X				X	X	1
Complications of surgery and their management		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
Surgical aspects of the multi-disciplinary assessment of chronic pain patients		X					X	1
Pre-operative counselling and preparation	X	X					X	1,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Spinal cord stimulation				X				1
DREZ lesion				X				1
Open cordotomy				X				1
Deep brain stimulation for pain				X				1
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

NEUROVASCULAR COMPRESSION SYNDROMES	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Functional Neurosurgery								
<b>OBJECTIVE</b>								
To achieve advanced competence in the surgical aspects of the multi-disciplinary management of patients with neurovascular compression syndromes								
<b>KNOWLEDGE</b>								
Aetiology, epidemiology and natural history of trigeminal neuralgia, and glossopharyngeal neuralgia		X				X	X	1
Differential diagnosis and management of related cranio-facial pain syndromes		X				X	X	1
Medical management of cranio-facial pain		X				X	X	1
Surface anatomy of the trigeminal nerve and microsurgical anatomy of the CP angle		X				X	X	1
Indications for surgical management of trigeminal and glossopharyngeal neuralgia by peripheral neurectomy, percutaneous rhizotomy, radiofrequency rhizotomy, microvascular decompression		X				X	X	1
Complications of surgery and their management		X				X	X	1,2
<b>CLINICAL SKILLS</b>								
The assessment, counselling and pre-operative preparation of patients with trigeminal neuralgia	X	X					X	1,3
Interpretation of posterior fossa CT an MR and scans including MR sequences demonstrating neurovascular compression		X				X	X	1
Application and interpretation of intraoperative monitoring techniques		X	X				X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Percutaneous trigeminal rhizotomy				X				1
Trigeminal microvascular decompression				X				1
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

SPASTICITY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Functional Neurosurgery								
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the multi-disciplinary management of patients with spasticity								
<b>KNOWLEDGE</b>								
The aetiology and pathophysiology of spasticity		X				X	X	1
Indications for medical, minimally-invasive and surgical management		X				X	X	1
Applied surgical anatomy		X				X	X	1
Complications of surgery and their management		X				X	X	1
<b>CLINICAL SKILLS</b>								
Surgical aspects of the multi-disciplinary assessment of patients with spasticity		X					X	1
Pre-operative counselling and preparation	X	X					X	1,3



TECHNICAL SKILLS AND PROCEDURES								
Intrathecal drug delivery				X				1
Deep brain stimulation				X				1
PROFESSIONAL SKILLS								
Generic					X			3

EPILEPSY	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Functional Neurosurgery								
OBJECTIVE								
To achieve competence in the surgical aspects of the multi-disciplinary management of patients with epilepsy								
KNOWLEDGE								
The pathophysiology of idiopathic and lesional epilepsy		X				X	X	1
Indications for medical and surgical management		X				X	X	1
Principles of ictal, interictal, sphenoidal and intraoperative EEG		X				X	X	1
Principles of video-EEG monitoring		X				X	X	1
Applied surgical anatomy		X				X	X	1
Complications of surgery and their management		X				X	X	1,2
CLINICAL SKILLS								
Surgical aspects of the multi-disciplinary assessment of epilepsy patients	X	X					X	1
Interpretation of CT, MRI and SPECT scans		X				X	X	1
Pre-operative counselling and preparation	X	X					X	1,3
TECHNICAL SKILLS AND PROCEDURES								
Stereotactic placement of depth electrodes				X				1
Placement of subdural electrode-grids				X				1
Image-guided resection of cortical lesions				X				1,2
Mesial temporal resection				X				1,2
Vagal nerve stimulation				X				1
Functional hemispherectomy				X				1,2
Corpus callosotomy				X				1,2
PROFESSIONAL SKILLS								
Generic					X			3

MOVEMENT DISORDERS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Functional Neurosurgery								
OBJECTIVE								
To achieve competence in the surgical aspects of the multi-disciplinary management of patients with movement disorders								
KNOWLEDGE								
The aetiology and pathophysiology of movement disorders		X				X	X	1
Indications for medical, minimally-invasive and surgical management		X				X	X	1
Applied surgical anatomy		X				X	X	1
Complications of surgery and their management		X				X	X	1,2
CLINICAL SKILLS								
Surgical aspects of the multi-disciplinary assessment of patients with movement disorders	X	X					X	1
Interpretation of CT and MRI scans		X				X	X	1
Pre-operative counselling and preparation	X	X					X	1,3
TECHNICAL SKILLS AND PROCEDURES								
Deep brain stimulation				X				1
Microvascular decompression for hemi-facial spasm				X				1
PROFESSIONAL SKILLS								
Generic					X			3

SURGERY FOR MENTAL ILLNESS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Functional Neurosurgery								
OBJECTIVE								
To be familiar with current surgical treatment options for treatment resistant mental illness and in particular depression and obsessive compulsive disorder								
KNOWLEDGE								
Indications for surgical treatment of mental illness		X				X	X	1
Ethical and regulatory aspects of surgical treatment of mental illness		X				X	X	1
Surgical targets		X				X	X	1
CLINICAL SKILLS								
None								
TECHNICAL SKILLS AND PROCEDURES								
None								
PROFESSIONAL SKILLS								
Generic					X			3

ITNTRACRANIAL ANEURYSMS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neurovascular surgery								
OBJECTIVE								
To achieve competence in the surgical aspects of the multi-disciplinary management of patients with intracranial aneurysms								
KNOWLEDGE								
The epidemiology, natural history, aetiology and pathophysiology of unruptured and ruptured intracranial aneurysms		X				X	X	1
Vascular anatomy of the central nervous system		X				X	X	1
Indications for surgical and endovascular treatment of intracranial aneurysms		X				X	X	1
The principles of endovascular treatment		X				X	X	1
Indications for intra and extracranial bypass in the management of complex aneurysms		X				X	X	1
CLINICAL SKILLS								
Clinical assessment and management of patients with ruptured and unruptured intracranial aneurysms	X	X					X	1
TECHNICAL SKILLS AND PROCEDURES								
Pterional approach				X				1
Interhemispheric approaches				X				1
Temporo-zygomatic and related approaches				X				1
Exposure of the basilar termination				X				1
Exposure of the vertebral artery and PICA				X				1

Clipping of saccular anterior circulation aneurysm				X				1
Clipping of complex anterior circulation aneurysm				X				1
Harvest of saphenous vein and radial artery grafts				X				1
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

INTRACRANIAL ARTERIOVENOUS MALFORMATIONS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neurovascular surgery								
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the multi-disciplinary management of intracranial arteriovenous malformations (AVMs)								
<b>KNOWLEDGE</b>								
The epidemiology, classification, natural history, embryogenesis and pathophysiology of AVMs of the brain		X				X	X	1
The indications for surgical, radiosurgical and endovascular treatment of asymptomatic, symptomatic and ruptured brain AVMs		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment and clinical management of patients undergoing treatment of AVMs of the brain	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Evacuation of intracerebral haematoma associated with an AVM				X				1
Microsurgical resection of superficial cortical AVM				X				1
Microsurgical resection of paraventricular and posterior fossa AVM				X				1
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

INTRACRANIAL DURAL ARTERIOVENOUS FISTULAE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neurovascular surgery								
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the multi-disciplinary management of intracranial dural arteriovenous fistulae (dAVFs)								
<b>KNOWLEDGE</b>								
Applied anatomy of the cerebral venous circulation		X				X	X	1
The epidemiology, classification, natural history, pathogenesis and pathophysiology of intracranial dAVFs		X				X	X	1
The indications for surgical and endovascular treatment of asymptomatic, symptomatic and ruptured intracranial dAVFs		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment and clinical management of patients undergoing treatment of intracranial dAVFs	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Exploration and closure of supratentorial dAFV				X				1
<b>PROFESSIONAL SKILLS</b>								
Generic				X				3

CEREBRAL ISCHAEMIA	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Neurovascular surgery								
<b>OBJECTIVE</b>								
To achieve competence in the surgical aspects of the management of patients with acute and chronic cerebral ischaemia								
<b>KNOWLEDGE</b>								
The epidemiology, natural history and pathophysiology of extra- and intracranial atherosclerotic occlusive disease		X				X	X	1
The epidemiology, natural history and pathophysiology of non-atherosclerotic occlusive diseases		X				X	X	1
Optimal medical management of occlusive and thrombo-embolic cerebrovascular disease		X				X	X	1
Imaging of the acutely ischaemic brain using CT and MRI		X				X	X	1
Principles of non-invasive and invasive imaging of the extra and intracranial vasculature using ultrasound, transcranial Doppler, CT, MRI and catheter angiography		X				X	X	1
Principles of regional cerebral blood flow and metabolism measurement and imaging using CT and MRI perfusion techniques; SPECT and PET scanning		X				X	X	1
Indications for carotid endarterectomy		X				X	X	1
Indications for endovascular intervention including intra-arterial thrombolysis; carotid angioplasty and stenting; intracranial angioplasty		X				X	X	1
Principles of cerebral revascularisation by indirect synangiosis, low-flow EC-IC anastomosis and high flow EC-IC bypass grafting		X				X	X	1
<b>CLINICAL SKILLS</b>								
The assessment and clinical management of patients with acute and chronic cerebral ischaemia	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Carotid endarterectomy				X				1
Saphenous and radial artery graft harvest				X				1
Extracranial vascular anastomosis				X				1
Intracranial microvascular anastomosis				X				1
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

CRANIAL BASE MENINGIOMAS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Skull-base surgery								
<b>OBJECTIVE</b>								
To achieve competence in the neurosurgical aspects of the multidisciplinary management of cranial base meningiomas								
<b>KNOWLEDGE</b>								
Epidemiology, natural history, pathology and clinical presentation of meningiomas of the anterior, middle and posterior fossae		X				X	X	1
Indications for radical or subtotal resection of skull-base meningiomas		X				X	X	1
Indications for radiosurgical treatment		X				X	X	1
Applied surgical anatomy of the skull base and craniofacial skeleton		X				X	X	1
Selection of optimal approaches in relation presenting pathology and imaging		X				X	X	1
<b>CLINICAL SKILLS</b>								
Assessment and clinical management of patients with skull base meningiomas	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Anterior interhemispheric, fronto-orbital, zygomatic and temporo-zygomatic approaches				X				1
Resection of anterior fossa meningioma: olfactory, planum sphenoidale and outer sphenoid wing				X				1



Resection of clinoidal and suprasellar meningioma				X				1
Resection of occipital, lateral petrosal and tentorial meningioma				X				1
Resection of cavernous sinus and petroclival meningioma				X				1
<b>PROFESSIONAL SKILLS</b>								
None					X			

PITUITARY AND SELLAR REGION TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Skull-base surgery								
<b>OBJECTIVE</b>								
To achieve competence in the management of patients with pituitary and sellar region tumours								
<b>KNOWLEDGE</b>								
Classification, epidemiology, natural history, pathology and clinical presentation of tumours of the pituitary and sellar region		X				X	X	1
Pathophysiology of the hypothalamic-pituitary axis		X				X	X	1
Investigation of the hypothalamic pituitary axis in patients with hypopituitarism and hypersecretion syndromes		X				X	X	1
Indications for surgery, radiosurgery and adjuvant radiotherapy		X				X	X	1
Selection of surgical approaches: sublabial, transnasal and endoscopic		X				X	X	1
Applied surgical anatomy of the skull base		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery and their management		X				X	X	1
<b>CLINICAL SKILLS</b>								
Peri-operative management of patients with established and threatened dysfunction of the hypothalamic-pituitary axis		X					X	1
Neurosurgical aspects of the continuing care of patients with pituitary tumours		X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Transphenoidal exposure of the pituitary fossa (microsurgical transnasal or sublabial) Transphenoidal resection of non-functioning macroadenoma				X				1
Transphenoidal selective microadenectomy				X				1
Endoscopic transphenoidal resection of non-functioning adenoma				X				1
Pterional craniotomy and microsurgical decompression of optic nerves and chiasm				X				1
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

ACOUSTIC NEUROMAS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Skull-base surgery								
<b>OBJECTIVE</b>								
To achieve competence in the neurosurgical aspects of the multidisciplinary management of patients with acoustic neuromas								
<b>KNOWLEDGE</b>								
Epidemiology, natural history, pathology and clinical presentation of sporadic and NFII-related acoustic neuromas Relative indications for surgery, radiosurgery and conservative management		X				X	X	1
Principles of intra-operative facial nerve and BAEP monitoring		X				X	X	1
Applied microsurgical anatomy of the CP angle, brainstem and lower cranial nerves		X				X	X	1
Relative indications for retrosigmoid, middle fossa, and translabyrinthine approaches with respect to hearing preservation, tumour size and position		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurosurgical aspects of the assessment and clinical management of patients undergoing acoustic neuroma surgery	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Retrosigmoid approach				X				1
Retrosigmoid subtotal resection of acoustic neuroma				X				1
Retrosigmoid radical resection				X				1
Translabyrinthine resection of acoustic tumour				X				1
<b>PROFESSIONAL SKILLS</b>								
Multidisciplinary working with neuro-otologists and oncologists					X			1,3
Role of hearing therapy							X	1

OTHER SKULL-BASE TUMOURS	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Skull-base surgery								
<b>OBJECTIVE</b>								
To achieve competence in the neurosurgical aspects of the multidisciplinary management of patients with benign and malignant cranial base tumours								
<b>KNOWLEDGE</b>								
Epidemiology, natural history, pathology and clinical presentation of benign and malignant tumours of the skull base including cranial nerve schwannomas, chordomas, paragangliomas, adenoid cystic carcinomas, angiofibromas and nasopharyngeal carcinomas		X				X	X	1
Indications for radical or subtotal resection of skull-base tumours		X				X	X	1
Indications for radiosurgical treatment		X				X	X	1
Applied surgical anatomy of the skull base and craniofacial skeleton		X				X	X	1
Selection of optimal approaches in relation presenting pathology and imaging		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurosurgical aspects of the multidisciplinary assessment and clinical management of patients with rarer skull base tumours	X	X					X	1
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Frontobasal approaches to the anterior fossa and orbito-ethmoidal complex				X				1
Transfacial and mid-face approaches to the skull base				X				1
Lateral approaches to the infratemporal fossa and pterygo-palatine fossa				X				1
Transtemporal approaches to the jugular bulb and petrous apex				X				1
<b>PROFESSIONAL SKILLS</b>								
Multidisciplinary working with neurotologists, maxillofacial surgeons and oncologists					X			1,3

CRANIOFACIAL REPAIR	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Skull-base surgery								
<b>OBJECTIVE</b>								
To achieve competence in the repair of skull base defects and the closure of CSF fistulae								
<b>KNOWLEDGE</b>								
Applied surgical anatomy of the cranial base floor and paranasal sinus		X				X	X	1
Indications for open surgical and endoscopic repair of spontaneous, post-traumatic and post-surgical skull base defects and CSF fistulae		X				X	X	1
Principles of simple, pedicled and free vascularised tissue transfer		X				X	X	1
<b>CLINICAL SKILLS</b>								
Neurosurgical aspects of the multi-disciplinary management of patients with skull base defects	X	X					X	1

<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Use of simple autologous grafts and substitutes (fascia, pericranium, fat etc) in closing small defects				X				1
Use of vascularised pericranial, temporalis muscle and galeal flaps for major defects				X				1
Endoscopic repair of anterior fossa defects				X				1
Free vascularised flap reconstruction following major cranio-facial resections				X				1
<b>PROFESSIONAL SKILLS</b>								
Multi-disciplinary working with neurotologists and plastic surgeons					X			1,3

<b>SPINAL TRAUMA</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>Spinal Surgery</b>								
<b>OBJECTIVE</b>								
To achieve competence in the operative management of fracture-subluxations of the cervical and thoracolumbar spine								
<b>KNOWLEDGE</b>								
Pathophysiology of spinal cord injury		X				X	X	1,2
Classification of cervical and thoracolumbar fracture dislocations		X				X	X	1,2
Biomechanics of spinal instability		X				X	X	1,2
Indications for halo traction and external stabilisation		X				X	X	1,2
Indications for and principles of open reduction and stabilisation		X				X	X	1,2
Applied surgical anatomy of cervical and thoracolumbar fracture-subluxations		X				X	X	1,2
Relative indications for operative reduction and stabilisation by anterior and posterior approaches		X				X	X	1,2
Management of post-traumatic spinal deformity and delayed sequelae		X				X	X	1
<b>CLINICAL SKILLS</b>								
Assessment and clinical management of patients with spinal injuries	X	X					X	1,2
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Application of cranial-cervical traction			X					1,2
Instrumented stabilisation of subaxial fracture-dislocation by anterior cervical plate and/or lateral mass screws				X				1,2
Instrumented stabilisation of atlanto-axial fracture dislocation by anterior odonto-axial screws and/or posterior atlantoaxial screws/wiring				X				1,2
Application of halo-body jacket				X				1,2
Posterior reduction of thoracolumbar fractures by pedicle screw instrumentation and ligamentotaxis				X				1,2
Combined anterior and posterior reduction and instrumented stabilisation of thoracolumbar fractures				X				1,2
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

<b>METASTATIC SPINAL DISEASE</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>Spinal Surgery</b>								
<b>OBJECTIVE</b>								
To achieve competence in the management of patients with malignant secondary spinal cord compression								
<b>KNOWLEDGE</b>								
The pathophysiology of spinal cord compression		X				X	X	1
The classification, aetiology and natural history of vertebral metastases		X				X	X	1
Spinal instability associated with vertebral malignancy		X				X	X	1
Indications for percutaneous and open spinal biopsy		X				X	X	1
Role of primary radiotherapy and adjuvant radiotherapy or chemotherapy		X				X	X	1
Indications for spinal decompression with and without instrumented spinal stabilisation		X				X	X	1
<b>CLINICAL SKILLS</b>								
Clinical assessment of patients with malignant spinal cord compression	X	X					X	1
Interpretation of plain radiology, CT and MRI scans		X				X	X	1
Liaison with medical oncologists and radiotherapist	X	X					X	1
Counselling and pre-operative preparation of patients with malignant spinal cord compression	X	X					X	1,3
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
Decompressive thoracic and lumbar laminectomy with extradural tumour resection and pedicle screw stabilisation				X				1,2
Anterior cervical corpectomy with anterior column re-construction and anterior cervical plating				X				1,2
Cervical lateral mass stabilisation				X				1,2
Posterior corpectomy with anterior column replacement and posterior stabilisation				X				1,2
Combined anterior and posterior total vertebrectomy with stabilisation				X				1,2
<b>PROFESSIONAL SKILLS</b>								
Generic					X			3

<b>PRIMARY SPINAL TUMOURS</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>Spinal Surgery</b>								
<b>OBJECTIVE</b>								
N/A								
<b>KNOWLEDGE</b>								
N/A								
<b>CLINICAL SKILLS</b>								
N/A								
<b>TECHNICAL SKILLS AND PROCEDURES</b>								
N/A								
<b>PROFESSIONAL SKILLS</b>								
N/A								

<b>INTRADURAL TUMOURS</b>	<b>CEX</b>	<b>CBD</b>	<b>DOPS</b>	<b>PBA</b>	<b>MSF</b>	<b>ISB Section 1</b>	<b>ISB Section 2</b>	<b>GMP</b>
<b>Spinal Surgery</b>								
<b>OBJECTIVE</b>								
To achieve competence in the management of patients with intradural spinal tumours								
<b>KNOWLEDGE</b>								
Classification, epidemiology, natural history and pathology of intradural spinal tumours		X				X	X	1
Pathophysiology of spinal cord compression		X				X	X	1
Indications for biopsy, subtotal and radical surgery		X				X	X	1
Selection of surgical approaches		X				X	X	1
Applied surgical anatomy		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery and their management		X				X	X	1,2
Role of adjuvant treatment		X				X	X	1
<b>CLINICAL SKILLS</b>								
None								

TECHNICAL SKILLS AND PROCEDURES								
Microsurgical excision of intradural extramedullary tumours				X				1
Microsurgical biopsy of intramedullary spinal cord tumour				X				1
Subtotal microsurgical resection of intramedullary tumour				X				1
Duroplasty				X				
PROFESSIONAL SKILLS								
Generic					X			3

SYRINGOMYELIA AND HIND BRAIN ANOMALIES	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Spinal Surgery								
OBJECTIVE								
To achieve competence in the management of craniocervical stenosis and hindbrain herniation								
KNOWLEDGE								
The pathogenesis and natural history of hindbrain herniation, craniocervical stenosis, syringomyelia and syringobulbia		X				X	X	1,2
Indications for foramen magnum decompression		X				X	X	1,2
Applied surgical anatomy of the craniocervical junction		X				X	X	1,2
Selection of surgical approaches		X				X	X	1,2
Principles of peri-operative care		X				X	X	1,2
Complications of surgery		X				X	X	1,2
CLINICAL SKILLS								
Assessment and clinical management of patients with hindbrain herniation and syringomyelia	X	X					X	1,3
TECHNICAL SKILLS AND PROCEDURES								
Foramen magnum decompression				X				
Syringostomy and syringo-pleural shunting				X				
PROFESSIONAL SKILLS								
Generic					X			3

ADVANCED SURGERY OF THE AGEING AND DEGENERATIVE SPINE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Spinal Surgery								
OBJECTIVE								
To achieve competence in the advanced surgery of the ageing and degenerative spine								
KNOWLEDGE								
Techniques for operative stabilization of the osteoporotic spine		X				X	X	1
Principles of surgery for degenerative scoliosis		X				X	X	1
Biomechanical principles of and indications for cervical and lumbar disc replacement		X				X	X	1
Biomechanical principles of and indications for non-fusion spinal stabilisation		X				X	X	1
Indications for, techniques and complications of vertebroplasty and Kyphoplasty		X				X	X	1
Principles of thoracoscopic and laparoscopic surgical techniques		X				X	X	1
CLINICAL SKILLS								
Assessment and clinical management of patients with degenerative spinal disorders	X	X					X	1,3
TECHNICAL SKILLS AND PROCEDURES								
Pedicle screw instrumentation of the thoracic and lumbar spine				X				1,2
Lumbar interbody fusion by posterior(PLIF) and postero-lateral (TLIF) fusion				X				1,2
Lumbar anterior interbody fusion				X				1,2
Single and multi-level cervical corporectomy with anterior cervical plating				X				1,2
Anterior cervical discectomy and cervical arthroplasty				X				1,2
Cervical laminectomy with lateral mass and/or pedicle screw stabilisation				X				1,2
Cervical laminoplasty				X				1,2
Postero-lateral thoracic discectomy				X				1,2
Anterior (transthoracic) discectomy				X				1,2
Thoracoscopic techniques				X				1,2
PROFESSIONAL SKILLS								
Generic					X			3

SURGERY OF THE RHEUMATOID SPINE	CEX	CBD	DOPS	PBA	MSF	ISB Section 1	ISB Section 2	GMP
Spinal Surgery								
OBJECTIVE								
To achieve competence in the management of rheumatoid atlanto-axial subluxation, cranial settling and related disorders								
KNOWLEDGE								
The pathology and natural history of rheumatoid spondylopathy		X				X	X	1
Indications for operative management of atlanto-axial subluxation, cranial settling and related disorders		X				X	X	1
Applied surgical anatomy of the craniocervical junction		X				X	X	1
Selection of surgical approaches		X				X	X	1
Principles of peri-operative care		X				X	X	1
Complications of surgery		X				X	X	1