

CCT in Anaesthetics

Annex C Intermediate Level Training

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Glossary of terms

ALI	Acute Lung Injury
ALS	Advanced Life Support
APACHE	Acute Physiology and Chronic Health Evaluation (Score)
APLS	Advanced Paediatric Life Support
ARDS	Acute Respiratory Distress Syndrome
ASA	American Society of Anesthesiologists
ASD	Atrial septal defect
AV	Aortic Valve
BE	Base excess
BIS	Bispectral index
BP	Blood pressure
BMI	Body mass index
BNF	British national formulary
CFAM	Cerebral function analysis monitor
CFM	Cerebral function monitor
CO₂	Carbon dioxide
COPD	Chronic Obstructive Pulmonary Disease
CPEX	Cardiopulmonary exercise testing
CSE	Combined Spinal Epidural
CSF	Cerebro spinal fluid
CSM	Committee on Safety of Medicines
CT	Computerised tomograms
CVP	Central venous pressure
ECG	Electrocardiogram
ECHO	Echocardiogram
EEG	Electroencephalogram
EMG	Electromyogram
ENT	Ear, Nose and Throat
EPLS	European Paediatric Life Support
ERPC	Evacuation of Retained Products of Conception
GCS	Glasgow Coma Score
GMC	General Medical Council
Hb	Haemoglobin
IAC	Initial assessment of competence
IDD	Intrathecal drug delivery
IPPV	Intermittent positive pressure ventilation
IRMER	Ionisation Radiation (Medical Exposure) Regulations
IT	Information technology
IVRA	Intravenous Regional Anaesthesia
LiDCO™	Lithium indicator dilution cardiac output

MAC	Minimum alveolar concentration
MH	Malignant hyperpyrexia
MRI	Magnetic resonance imaging
NAI	Non-accidental Injury
NCEPOD	National Confidential Enquiry into Perioperative Deaths
NICE	National Institute for Health and Clinical Excellence
NO	Nitric oxide
NSAID	Non-steroid anti-inflammatory drug
ODM	Oesophageal Doppler Monitor
PCA	Patient Controlled Analgesia
PEA	Pulseless Electrical Activity
PFO	Patent foramen ovale
PiCCO	Pulse Contour Continuous Cardiac Output
PONV	Postoperative nausea and vomiting
POSSUM	Physiological and Operative Severity score for enUmeration of Mortality and Morbidity
PSI	Pounds per square inch
Ref	Reference
RS	Respiratory system
RSI	Rapid sequence induction
SIADH	Syndrome of Inappropriate Anti-Diuretic Hormone
SpO₂	Saturation of haemoglobin with oxygen
SVP	Saturated vapour pressure
TCI	Target Controlled Infusions
TOE	Transoesophageal Echo
VSD	Ventricular septal defect
WCC	White cell count

<u>Assessment method decode</u>	
A	Anaesthesia Clinical Evaluation Exercise [A-CEX]
C	Case Based Discussion [CBD]
D	Direct Observation of Procedural Skills [DOPS]
E	Examination
I	Intensive Care Medicine Clinical Evaluation Exercise [I-CEX]
L	Anaesthesia List Management Assessment Tool [ALMAT]
M	Multi-source Feedback [MSF]
S	Simulation
T	Acute Care Assessment Tool [ACAT]

<u>Good Medical Practice decode</u>	
1	Knowledge, skills and performance
2	Safety and quality
3	Communication, partnership and teamwork
4	Maintaining trust

Essential Units

There are seven essential units of training at Intermediate Level, which all trainees are normally expected to complete satisfactorily before progressing to higher/advanced training. They are as follows:

- [Anaesthesia for neurosurgery, neuroradiology and neuro critical care](#)
- [Cardiothoracic anaesthesia and cardiothoracic critical care](#)
- [Intensive care medicine](#)
- [General duties](#), which consists of:
 - [Airway management](#)
 - [Day surgery](#)
 - [Critical incidents](#)
 - [General, urology and gynaecology](#)
 - [Head and neck, maxillo-facial and dental surgery](#)
 - [Management of respiratory and cardiac arrest](#)
 - [Non-theatre](#)
 - [Orthopaedic surgery](#)
 - [Regional](#)
 - [Sedation](#)
 - [Transfer medicine](#)
 - [Trauma and stabilisation](#)
- [Obstetrics](#)
- [Paediatrics](#)
- [Pain medicine](#)

With the exception of the 'general duties' unit of training, it is recommended that trainees spend between four and twelve weeks in each unit of training; this should equate to a **minimum** of twenty half day theatre sessions to ensure trainees are able to complete all the essential learning outcomes. Many years of experience suggest that this amount of time may be insufficient for a number of trainees; further, the greater the clinical exposure the greater the learning experience. [See also 11.2.2 and 11.2.3].

Anaesthesia for neurosurgery, neuroradiology and neuro critical care

Learning outcomes:

- Application of basic science knowledge and understanding gained in CT1 and 2 to the principles and practice of neuroanaesthesia and neuro-critical care.
- Develop and modify the skills of administering general anaesthesia [as identified in the Introductory Curriculum and in the basic level sections entitled 'Trauma Stabilisation' and 'Transfer'] to include a focus on the special difficulties presented by neurosurgery. This will include developing knowledge, skills and experience of the perioperative anaesthetic care of patients undergoing major elective and emergency surgery on the brain and spinal cord and associated bony structures as well as for neuroradiology

Core clinical learning outcomes:

- Deliver safe perioperative anaesthetic care to uncomplicated ASA 1-3 adult patients undergoing non-complex elective intracranial and spinal surgery with direct supervision
- Deliver safe perioperative anaesthetic care to uncomplicated ASA 1-3 adult patients undergoing non-complex emergency surgery with distant supervision [e.g. insertion of V-P shunt/EVD]
- Be an effective team member for resuscitation, stabilisation and transfer of adult patients with brain injury with distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
NA_IK_01	Recalls/describes the relevance of the anatomy of the skull, skull base, vertebral column and central nervous system to neuroanaesthetic practice [Cross ref applied sciences]	A,C,E	1
NA_IK_02	Recalls/explains the relevance of applied physiology and pathophysiology related to the central nervous system to neuroanaesthetic practice [Cross ref applied sciences]	A,C,E	1
NA_IK_03	Describes techniques for decreasing the intra-cranial pressure	A,C,E	1
NA_IK_04	Explains the indications for using neurophysiological monitoring [including EEG, evoked potentials and ICP measurement] to benefit patients requiring neurosurgery/neuro-critical care	A,C,E	1
NA_IK_05	Recalls how drugs can impact on neurophysiological monitoring	A,C,E	1

Knowledge			
Competence	Description	Assessment Methods	GMP
NA_IK_06	Recalls/explains the pharmacology of drugs which act on the central nervous system [Cross ref applied basic sciences]	A,C,E	1
NA_IK_07	Explains the complications of positioning for neurosurgical procedures: prone, sitting, lateral, park bench	A,C,D,E	1,2
NA_IK_08	Demonstrates understanding of the perioperative anaesthetic management of patients for neurosurgery and neuroradiology. This includes: <ul style="list-style-type: none"> • Preoperative assessment and optimization of patients with neurological disease • Induction and maintenance and reversal of anaesthesia • Early postoperative care including the specific areas of fluid management and the control of pain 	A,C,E	1,2,3,4
NA_IK_09	Demonstrates understanding of anaesthesia for neurosurgical procedures including but not exclusively: <ul style="list-style-type: none"> • Shunt surgery • Evacuation of intracranial haematoma • Planned supratentorial and posterior fossa surgery [including vascular disease and tumours] • Emergency surgery for traumatic brain injury • Spinal column surgery 	A,C,E	1,2,3,4
NA_IK_10	Discusses the principles of anaesthesia for neuroradiology including but not exclusively: <ul style="list-style-type: none"> • Emergency and elective imaging of the central nervous system [including the principles of stereotactic surgery] • interventional procedures [including coiling of intracranial aneurysms] [Cross reference anaesthesia in the non-theatre environment]	A,C,E	1,2,3,4
NA_IK_11	Explains the anaesthetic implications of pituitary disease including endocrine effects and trans-sphenoidal surgery	A,C,E	1
NA_IK_12	Describes anaesthesia for trigeminal neuralgia including thermocoagulation	A,C,E	1,3
NA_IK_13	Explains the anaesthetic implications of spinal cord trauma	A,C,E	1,2,3
NA_IK_14	Describes how to recognize an unstable cervical spine and explains how it should be managed	A,C,D,E	1,2
NA_IK_15	Discusses the indications for postoperative ventilation	A,C,E	1,2
NA_IK_16	Explains the techniques used for recognition and management of air embolism	A,C,E	1,2
NA_IK_17	Describes the special risk associated with prion diseases during neurosurgery	A,C,E	1,2
NA_IK_18	Demonstrates understanding of the principles of anaesthesia for patients with neurological disease [including but not exclusively]: <ul style="list-style-type: none"> • Guillain-Barre • Myasthenia gravis 	A,C,E	1,2,3,4

Knowledge			
Competence	Description	Assessment Methods	GMP
	<ul style="list-style-type: none"> • Myasthenic syndrome • Dystrophia myotonica • Muscular dystrophy • Paraplegia and long term spinal cord damage 		
NA_IK_19	Discusses the specific risks of venous thromboembolic disease in neurosurgical patients and how these are managed	A,C,E	1,2
NA_IK_20	Demonstrates understanding of the neurocritical care management of traumatic brain injury [including but not exclusively]: <ul style="list-style-type: none"> • indications for ventilation • recognition and management of raised ICP • cerebral protection strategies • fluid and electrolyte balance in the head injured patient • systemic effects of traumatic brain injury The principles of management of acute spinal cord injury	C,E	1,2,3,4
NA_IK_21	Describes the control of status epilepticus	C,E	1
NA_IK_22	Describes the requirements for safe transfer of patients with brain injury	C,E	1,2,3
NA_IK_23	Explains the issues related to the management of organ donation in neuro-critical care [Cross reference intensive care]	C,E	1,3,4

Skills			
Competence	Description	Assessment Methods	GMP
NA_IS_01	Demonstrates a full and focused preoperative assessment, followed by optimization, of patients presenting with neurological disease	A	1
NA_IS_02	Demonstrates understanding of the problems of obtaining consent in patients who are not competent, including those with impaired consciousness and confusion	A	1,3,4
NA_IS_03	Demonstrates provision of safe perioperative anaesthetic care for a variety of neurosurgical procedures [including but not exclusively]: <ul style="list-style-type: none"> • elective and emergency intracranial surgery • shunt surgery • cervical and lumbar spinal surgery 	A,C	1,2,3,4

NA_IS_04	Demonstrates the ability, via physiological and pharmacological manipulation, to improve intra-cranial homeostasis in pathological states	D,A	1
NA_IS_05	Demonstrates the ability to manage patients with acute head injuries for: <ul style="list-style-type: none"> • anaesthesia for emergency neurosurgery • non-surgical management if indicated • the on-going neuro critical care 	A,C	1,2,3,4
NA_IS_06	Demonstrates safe patient positioning – prone, lateral [park bench]	A,D	1,2
NA_IS_07	Demonstrates the ability to resuscitate, stabilise and transfer safely patients with brain injury	A,C,D	1,2,3,4
NA_IS_08	Shows sensitivity in giving support to patients and relatives during end of life care	A,M	2,3,4
NA_IS_09	Demonstrates ability to communicate well with the surgical team including ensuring the exchange of relevant information	A,M	2,3,4
NA_IS_10	Demonstrates the ability to select and use appropriate invasive monitoring when indicated in patients undergoing neurosurgical procedures	A,C	1,2
NA_IS_11	Demonstrates the ability to recognise and manage diabetes insipidus/SIADH	A,C	1
NA_IS_12	Demonstrates the ability to manipulate blood pressure as appropriate for the clinical situation	A,C	1
NA_IS_13	Demonstrates the ability to manage emergence from anaesthesia in a smooth and controlled way	A,D	1,2
NA_IS_14	Demonstrates the ability to manage neurosurgical patient in the immediate postoperative period	A,C,D	1,2

Cardiothoracic anaesthesia and cardiothoracic critical care

Learning outcomes:

- To gain knowledge and understanding of the underlying principles of anaesthesia for cardiac surgery, both ‘on’ and ‘off’ pump, and thoracic surgery
- Understands the skills required to provide safe and effective anaesthetic care to patients undergoing elective cardiac and thoracic surgery
- To understand the pathophysiology and presentation of advanced cardiac disease to better understand the peri-operative management of such patients who undergo coincidental surgery

Core clinical learning outcome:

- Deliver safe and effective perioperative anaesthetic care to patients undergoing elective coronary artery surgery and minor thoracic investigative procedures under direct supervision

NB: All competencies annotated with the letter ‘E’ can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
Cardiac			
CT_IK_01	Describes the principles of the perioperative anaesthetic management of patients for cardiac surgery	A,C,E	1,2,3,4
CT_IK_02	Understands and explains the principles of cardiopulmonary bypass including the use of cardioplegia	A,C,D,E	1
CT_IK_03	Learns from the perioperative management of patients with cardiac disease knowledge applicable to those requiring non cardiac surgery	A,C,E	1,2,3,4
CT_IK_04	Understands the pathophysiological changes and organ dysfunction associated with cardiac disease, and their implications in the perioperative period	A,C,E	1,2
CT_IK_05	Correctly assesses the risk of operation in a patient who has cardiac or respiratory disease, using common scoring systems	A,C,E	1
CT_IK_06	Explains the results of the special investigations used during the assessment of patients with cardiac disease including, Xrays, coronary angiography, ECHO, and Scanning techniques including CT, MRI and PET	A,C,E	1,3,4
CT_IK_07	Understands and explains the principles of antibiotic prophylaxis in patients with cardiac disease	A,C,E	1,2
CT_IK_08	Recalls/describes the anaesthetic and surgical problems associated with “off pump” cardiac surgery	A,C,E	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CT_IK_09	Describes the problems associated with post-cardiac surgery including bleeding and the clinical signs and symptoms of cardiac tamponade, and its management	A,C,E	1,2
CT_IK_10	Evaluates the indications for invasive and non-invasive cardiovascular monitoring, and is able to interpret the common findings	A,C,D,E	1
CT_IK_11	Describes the methods used to cool and re-warm patients during cardiac surgery, and the complications	A,C,E	1,2
CT_IK_12	Explains the need for, and methods of, altering blood coagulability during cardiac surgery	A,C,E	1
CT_IK_13	Recalls/describes the indications for cardiac pacing and lists the different modes available	A,C,E	1
CT_IK_14	Describes the principles of action, and the use of, Intra-aortic balloon counter-pulsation and other assist devices	A,C,E	1
CT_IK_15	Recalls/explains the abnormalities found in the adult patient with congenital heart disease [including corrected or partially corrected], and the implications for anaesthesia in these patients	A,C,E	1
CT_IK_16	Recalls/explains the indications for the use of inotropes and vasodilators during cardiac surgery	A,C,E	1
THORACIC			
CT_IK_17	Explains the significance of preoperative functional investigations of respiratory and cardio-respiratory performance	A,C,E	1
CT_IK_18	Describes specific risks associated with induction and maintenance of anaesthesia in patients requiring thoracic surgery and precautions to be taken to minimise these risks	A,C,E	1,2
CT_IK_19	Describes commonly performed thoracic surgical procedures and the relevant anaesthetic problems	A,C,E	1
CT_IK_20	Describes commonly used methods of local and general anaesthesia for bronchoscopy including techniques of ventilation	A,C,E	1
CT_IK_21	Describes the airway management of a patient undergoing one-lung ventilation and anaesthesia including placement of double lumen endobronchial tubes and bronchial blockers [Ref; EN_IK_11]	A,C,E	1
CT_IK_22	Recalls/explains the changes that occur during one lung ventilation and the strategies to manage these changes	A,C,E	1
CT_IK_23	Recalls the causes, symptoms and signs of a pneumothorax and explains the principles of its management	A,C,E	1
CT_IK_24	Describes the common problems associated with the postoperative care of patient who have had thoracic surgery and the methods that can be used to minimise these	A,C,E	1,2

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
CARDIAC			
CT_IS_01	Demonstrates the ability to assess and give a risk assessment for patients presenting for cardiac surgery including those with valvular and ischemic heart disease	A,D	1,2,3,4
CT_IS_02	Demonstrates the ability to assess patients with intra thoracic aortic pathology such as aneurysm, dissection and coarctation, and give an informed judgement on the risks and benefits of anaesthesia and surgery for the procedure	A,C,D,M	1,2,3,4
CT_IS_03	Demonstrates safe delivery of perioperative anaesthesia for a patient undergoing elective coronary bypass including the management of: <ul style="list-style-type: none"> • A patient during cardiopulmonary bypass • A patient having cardiac surgery off bypass • Coagulation management 	A,C,D,M	1,2,3,4
CT_IS_04	Forms postoperative care plans appropriate to the surgery and the patient's condition including postoperative analgesia and respiratory support	A,D	1
CT_IS_05	Demonstrates correct use of invasive and non-invasive monitoring in patients with cardiac or respiratory disease including non-invasive cardiac output monitoring devices utilising a variety of technologies, such as LIDCO, PICCO and ODM	A,D	1
CT_IS_06	Demonstrates an understanding of effective and evidence based use of inotropes and vasodilators	A,C,D,E	1,2
CT_IS_07	Demonstrates the ability to provide anaesthesia for procedures in cardiac intensive care including re-sternotomy, re-intubation, tracheostomy and cardioversion	A,C,D	1,2,3,4
CT_IS_08	Perform anaesthesia for patients having cardiological electrophysiological procedures, including pacemaker insertion	A,C,D	1,2,3,4
THORACIC			
CT_IS_09	Demonstrates ability to assess and recommend treatments to optimise a patient about to undergo thoracic surgery	A,C,D	1,2,3,4
CT_IS_10	Demonstrates safe delivery of perioperative anaesthetic care to patients for minor thoracic procedures, in particular bronchoscopy, including the safe use of the Sanders injector	A,C,D,M	1,2,3,4
CT_IS_11	Demonstrates correct selection of appropriate airway management for the intended procedure and the ability to correctly insert single or double lumen endobronchial tubes and bronchial blockers [Ref; AM_IS_05]	A,D	1,2
CT_IS_12	Demonstrates correct use of clinical and endoscopic methods to confirm correct tube placement	A,D	1,2
CT_IS_13	Demonstrates safe delivery of perioperative anaesthetic care for major thoracic procedures, including correct airway and ventilatory management, positioning and patient protection	A,C,D	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
CT_IS_14	Demonstrates the ability to manage a patient undergoing one lung ventilation	A,D	1,2
CT_IS_15	Demonstrates the ability to formulate correct post-operative care plans, taking into account the patient's condition and the surgical procedure, including an assessment of the need for management in Intensive care or high dependency	A,C,D,M	1,2,3,4

General duties

Airway management

Intermediate level competencies and learning outcomes are included in this section specifically relating to airway skills; most will also appear in the ENT, Maxillo-facial and dental unit of training. It is expected that trainees will complete this unit of training over the course of ST years 3 and 4 of training

Learning outcomes:

- Build on the knowledge and skills gained in the Basic Level airway training
- Develop knowledge, skills and experience of safe airway management in more complex cases undergoing major elective and emergency surgery including fiberoptic intubation
- To be able to recognise the specific problems encountered with the airway

Core clinical learning outcome:

- To be able to demonstrate the ability to perform elective fiberoptic intubation, either for an awake or an anaesthetised patient, with local supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
AM_IK_01	Lists the risks associated with awake fiberoptic endotracheal intubation and describe the process of obtaining consent for this procedure	A,C,E	1
AM_IK-02	Discusses the identification and assessment of pathology in or around the airway, including <ul style="list-style-type: none">• History and examination• Anaesthetic chart review• Interpretation of investigations such as lateral C-spine X-ray, cross sectional imaging of the upper airway (MRI/CT), flow volume loops• Discussion with surgeons	A,C,E	1,2

AM_IK_03	<p>Outlines the anaesthetic management of potential threats to the airway, including</p> <ul style="list-style-type: none"> • external compression • Foreign body, blood clots, masses • Inhalational injury, inflammation • Blunt and penetrating trauma <p>[Cross Ref; ENT]</p>	A,C,E	1
AM_IK_04	Lists the indications for tracheostomy [Cross Ref; ENT]	A,C,E	1,2
AM_IK_05	Outlines the anaesthetic principles for tracheostomy [Cross Ref ENT]	A,C,E	1,2
AM_IK_06	Describes the management of the obstructed/misplaced tracheostomy	A,C,E	1,2
AM_IK_07	Describes the specialised airway techniques used for laser surgery in, or near, the airway [Cross Ref; ENT]	A,C,E	1
AM_IK_08	Describes the causes, pathophysiology and management of obstructive sleep apnoea and the surgical procedures used to treat it [Cross Ref; ENT]	A,C,E	1,2
AM_IK_09	Outline appropriate follow up of an unexpected difficult intubation	A,C,E	1
AM_IK_10	Discuss the risks and benefits of using various supraglottic airways for IPPV	A,C,E	1
AM_IK_11	Describes the airway management of a patient undergoing one-lung ventilation and anaesthesia, including placement of double lumen endobronchial tubes and bronchial blockers [Cross Ref; cardiothoracics]	A,C,E	1
AM_IK_12	Describes the safe use of equipment and airways devices used for surgery on and below the vocal chords, including bronchoscopes, Venturi devices and fibre-optic scopes [Cross Ref; ENT]	A,C,E	1,2
AM_IK_13	Describes the principles of jet ventilation [Cross Ref; ENT]	A,C,E	1
AM_IK_14	Recalls the principles underlying the use of helium [Cross Ref; ENT]	A,C,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
AM_IS_01	Demonstrates elective fiberoptic intubation under anaesthesia with or without LMAs or other airway adjuncts	A,D	1,2
AM_IS_02	Demonstrates effective teaching of basic airway manoeuvres, direct laryngoscopy and endotracheal intubation to novice students [e.g. nurses, CT1 anaesthetic trainees, paramedics, medical students]	A,D	1,2
AM_IS_03	Demonstrate the use of supraglottic airways for IPPV	A,D	1,2

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
AM_IS_04	Demonstrate double lumen endo bronchial tube placement and lung isolation, including the use of bronchial blockers and the use of clinical/endoscopic methods to confirm correct position [Cross Ref;cardiothoracic]	A,D	1,2

Critical incidents

Learning outcomes:

Build on the knowledge and skills learnt during basic training and develop skills at managing more complex critical incidents with distant supervision

Core clinical learning outcomes:

- To demonstrate leadership in the management of critical incidents as and when they arrive
- To provide assistance/leadership to more inexperienced colleagues if called to assist in the management of critical incidents
- To demonstrate leadership in ensuring good team work and communication to help reduce the risks of harm from critical incidents

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment methods	GMP
CI_IK_01	Discusses the importance of significant event analysis or root cause analysis to examine a locally reported incident	C,S	1,2,3,4
CI_IK_02	Discusses the importance of regular practice of response protocols using simulation and their place in the development of team working and communication between professional groups	C,S	1,2,3,4

Skills			
Competence	Description	Assessment methods	GMP
CI_IS_01	Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals	D,S	1,2,3,4
CI_IS_02	Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals	D,S	1,2,3,4

Day surgery

It is anticipated that it will not be delivered as a dedicated block and that the learning outcomes will be gained throughout the entire duration of Intermediate Level training. Inevitably this unit cross references with many of the other clinical units of training given the high percentage of day care surgical procedures undertaken in all hospitals.

Learning outcomes:

- Build on the knowledge, understanding and skills gained in the basic level day surgery curriculum
- Ability to provide appropriate anaesthetic management for selected ASA 3 patients including insulin-dependent diabetics and patients with a BMI >35
- Gain knowledge of the organisational aspects of running a day surgery unit

Core clinical learning outcome:

- Deliver safe perioperative anaesthetic care to ASA 1-3 patients having more extensive or specialized day surgery procedures with direct supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DS_IK_01	Describes the key organisational issues surrounding day surgery including suitability of facilities and staffing	C,E	1,2,3,4
DS_IK_02	Provides a clear explanation of current local and national guidelines for provision of day surgical services	C,E	1,2,3,4
DS_IK_03	Demonstrates knowledge of audit and other quality assurance activities relevant to day surgery	C,E	1,2,3,4
DS_IK_04	Demonstrates knowledge of advances and controversies in anaesthesia for day surgery	A,C,E	1,2

Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DS_IS_01	Demonstrates the delivery of safe perioperative anaesthetic care to ASA 1-3 patients including those with significant co-morbidities including, but not limited to: <ul style="list-style-type: none"> • Obese patients [BMI > 35] • Insulin dependent diabetics • Those with significant cardiac and respiratory diseases • Elderly patients 	A,C,D,M	1,2,3,4

General, urological and gynaecological surgery (incorporating peri-operative care of the elderly)

It is anticipated that it will not be delivered as a dedicated block and that the learning outcomes will be gained throughout the entire duration of Intermediate Level training and that these should be achievable in most general hospitals.

Learning outcomes:

- Builds on the knowledge, understanding and skills gained in Basic Level training and becomes confident at managing more complex cases
- To gain knowledge of the anaesthetic management of patients with transplanted organs for non-transplant surgery
- To gain knowledge, skills and experience of the perioperative anaesthetic care of patients requiring major general urological and gynaecological surgery, including the immediate management of major blood loss
- To manage the peri-operative care of an elderly patient in general, urological or gynaecological surgery, focussing on the issues of advancing age

Core clinical learning outcomes:

- Deliver safe perioperative anaesthetic care to complex ASA 1-3 adult patients requiring elective and emergency intra-abdominal surgery [both laparoscopic and open] with distant supervision
- Manage a list with complex ASA 1-3 adult patients for elective and emergency surgery in all disciplines with distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
GU_IK_01	<p>Recalls/describes the principles off the peri-operative management of the commoner complex cases including, but not exclusively:</p> <ul style="list-style-type: none"> • Pancreatic and liver resection • Oesophagectomy [including one lung ventilation] • Resection of neuroendocrine tumours [e.g. carcinoid and phaeochromocytoma] • Splenectomy 	A,C,E	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
	<ul style="list-style-type: none"> Resection of retroperitoneal masses [including management of pleural breach] 		
GU_IK_02	Explains the effects of chemotherapy/radiotherapy, and the implications for anaesthesia	A,C,E	1
GU_IK_03	Recalls/describes the anaesthetic considerations of co-existing diseases including problems such as spinal injury	A,C,E	1,2
GU_IK_04	Recalls/ describes the ethical considerations of cadaveric and live-related organ donation for the donor [and relatives], recipient and society as a whole	C,E	1,2,3,4
GU_IK_05	Describes the issues of anaesthesia for renal transplant surgery	C,E	1,2,3,4
GU_IK_06	Explains the anaesthetic management of patients with transplanted organs for non-transplant surgery	A,C,E	1,2
GU_IK_07	Recalls/explains the anaesthetic complications related to disturbance of fluid balance, oedema, and dehydration	A,C,E	1,2
GU_IK_08	Recalls/describes the anaesthetic implications of bariatric surgery	A,C,E	1,2,3,4
GU_IK_09	Recalls/describes the principles of enhanced recovery programmes	A,C,E	1,2
GU_IK_10	Recalls / describes the rationale and principles of perioperative haemodynamic management and optimisation	A,C,E	1,2,3
GU_IK_11	Recalls / describes the principles of preoperative evaluation of patients at risk of post-operative morbidity, including risk stratification tools, for example scoring systems and measures of functional capacity [including cardiopulmonary exercise testing]	A,C,E	1,2,3
GU_IK_12	Discusses the importance of the timing of non-elective surgery and the effect that this may have on the delivery of 'emergency surgery'	A,C	1,2,3

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
GU_IS_01	Demonstrates the ability to recognise when it is/is not necessary to order complex preoperative assessment tests such as cardiopulmonary exercise testing and echocardiography prior to anaesthesia/surgery	A,C,D	1,2,3,4
GU_IS_02	Demonstrates the ability to manage safely and effectively the peri-operative care of patients requiring elective and/or emergency resection of the lower bowel or similar complexity urological and/or gynaecological case [open or laparoscopic], with distant supervision	L.M	1,2,3,4
GU_IS_03	Demonstrates the ability to manage the effects of sudden major blood loss effectively	A,C,D	1,2

GU_IS_04	Demonstrates the ability to work with all members of the theatre and surgical teams to manage an operating list with a mixture of ASA 1- 3 cases effectively, along with the ability to provide safe peri-operative anaesthetic care for the patients	L,M	1,2,3,4
GU_IS_05	Shows the ability to lead [where appropriate] the theatre team in the perioperative management of surgical patients requiring out of hours surgery, including understanding of when to seek help appropriately	A,C,D,L,M	1,2,3,4
GU_IS_06	Demonstrates the ability to present a balanced judgement to the patient and their relatives of the perceived risks and complications of anaesthesia and surgery	A,C,D,M	1,2,3,4

Head, neck, maxillo-facial and dental surgery

It is expected that this unit can be delivered in most of the non-specialist hospitals that are part of many, if not all, Schools of Anaesthesia. It may not be possible for every trainee to become skilled in all the emergencies described [EN_IS_07], however all trainees are expected to obtain clinical teaching and training in this area of practice, although it is recognised that, availability of chair dental surgery may be limited and this may have to be deferred to the 'higher' unit of training but is not mandatory for successful completion of intermediate or higher training in this unit.

Learning outcomes:

- Build on the knowledge and skills gained in the Basic Level training for ENT, maxillo-facial and dental surgery. Develop knowledge, skills and experience of safe perioperative anaesthetic care of patients undergoing major elective and emergency surgery in these specialty areas
- To be able to recognise the specific problems encountered with the 'shared airway' and manage correctly
- To have the clinical judgement and skills to organise and manage the anaesthesia for routine ENT, dental and maxillo-facial operating lists involving ASA 1-3 patients requiring minor to intermediate surgery and such patients for emergency surgery without direct supervision

Core clinical learning outcome:

- Deliver safe perioperative anaesthetic care to ASA 1-3 adult patients requiring routine and emergency non-complex minor/intermediate ENT and maxillo-facial surgery [including list management] under distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
EN_IK_01	Explains the special requirements of anaesthesia for all common procedures encountered in specialised head and neck surgery	A,C,E	1,2
EN_IK_02	Recalls/explains the principles of anaesthesia for middle ear surgery, including use of TIVA and hypotensive techniques	A,C,E	1,2
EN_IK_03	Explains the principles of management of anaesthesia for major head and neck surgery and: <ul style="list-style-type: none"> • Recalls/describes the pathophysiological changes and co-morbidities associated with head and neck cancer • Identifies the particular requirements for acute maxillo-facial emergencies e.g. fractured mandible, intra-oral 	A,C,E	1,2

	abscesses and other pathological causes of upper airway obstruction		
EN_IK_04	Recalls/describes the causes, pathophysiology and management of obstructive sleep apnoea and the surgical procedures used to treat it [Ref; AM_IK_08]	A,C,E	1,2
EN_IK_05	Recalls/describes the characteristics of the lasers used for surgery and the circumstances in which they are used	A,C,E	1,2
EN_IK_06	Recalls the hazards of laser surgery	A,C,E	1,2
EN_IK_07	Recalls/describes the specialised airway techniques used for laser surgery in, or near, the airway	A,C,E	1
EN_IK_08	Describes the safe use of equipment and airways devices used for surgery on and below the vocal chords, including bronchoscopes, Venturi devices and fibre-optic scopes	A,C,E	1,2
EN_IK_09	Explains the use of specialised imaging techniques [CT, MRI] in planning anaesthesia and surgery for head and neck surgery	A,C,E	1
EN_IK_10	Lists the problems associated with chair dental procedures including consent, the specific needs of patients with learning disabilities, Child Protection [Cross reference paediatrics] and the Mental Capacity Act	A,C,E	1,2,3,4
EN_IK_11	Explains the principles of the recognition and appropriate management of acute ENT emergencies, including bleeding tonsils, epiglottitis, croup, and inhaled foreign body	A,C,E	1,2,3,4
EN_IK_12	Describes appropriate emergency management of fractures of the face including le Fort fractures and fractures of the mandible	A,C,E	1,2,3,4
EN_IK_13	Describes the emergency management of the obstructed airway including tracheostomy	A,C,E	1,2,3,4
EN_IK_14	Recalls the indications for tracheostomy	A,C,E	1,2
EN_IK_15	Describes the principles of the care of the tracheostomy	A,C,E	1
EN_IK_16	Recalls/explains the principles of jet ventilation	A,C,E	1
EN_IK_17	Recalls/explains the principles underlying the use of helium	A,C,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
EN_IS_01	The learner should develop and modify the skills of pre-operative assessment and optimisation, and the administration of anaesthesia [as identified in basic level training] to include a focus on the special difficulties presented by these surgical sub-specialties	A,C	1,2,3,4
EN_IS_02	Demonstrates how to interpret CT and MRI scans of the head and neck [Cross ref non-theatre]	A,C,D	1
EN_IS_03	Demonstrates correct use of a variety of advanced airway devices	A,D	1

EN_IS_04	Demonstrates use of hypotensive techniques where indicated	A,D	1
EN_IS_05	Demonstrates safe anaesthesia/sedation for outpatient dental surgery [cross ref sedation]	A,D	1
EN_IS_06	Demonstrates the safe perioperative anaesthetic management of more complex head, neck and maxillo-facial procedures including, but not limited to: <ul style="list-style-type: none"> • laser surgery • bronchoscopy • surgery on the middle ear • thyroid surgery • maxillary and mandibular osteotomies 	A,C,D,M	1,2,3,4
EN_IS_07	Demonstrates the safe perioperative anaesthetic management of head, neck, maxillo-facial and dental emergencies including: <ul style="list-style-type: none"> • bleeding tonsil • obstructed upper airway • obstructed lower airway • mandibular and maxillary fractures 	A,C,D,M	1,2,3,4
EN_IS_08	Demonstrates the ability to work with all members of the theatre and surgical teams to manage an operating list with a mixture of ASA 1- 3 non-complex minor/intermediate cases effectively, along with the ability to provide safe perioperative anaesthetic care for the patients	A,C,M	1,2,3,4
EN_IS_09	Shows the ability to lead [where appropriate] the theatre team in the perioperative management of patients requiring out of hours minor/intermediate ENT, maxillo-facial and dental surgery, including understanding of when to seek help appropriately	A,C,M	1,2,3,4
EN_IS_10	Demonstrates the specific measures needed to provide appropriate analgesia, and other postoperative care including oxygen therapy, airway monitoring, fluids and anti-emetics in patients following major head, neck, maxillo-facial and dental surgery	A,C,D,M	1,2,3,4

Management of respiratory and cardiac arrest in adults and children

It is anticipated that this unit of training will not be delivered as a dedicated block and that the learning outcomes will be gained throughout the entire duration of Intermediate Level training and that these should be achievable in most general hospitals.

Any trainee who has successfully completed a Resuscitation Council [UK] ALS course [for adults] and EPLS/APLS courses [for children] in the previous year, or who is an Instructor/Instructor candidate for these courses, may be assumed to have achieved the adult/paediatric outcomes

Learning Outcomes:

- Build upon the knowledge and skills obtained during the management of respiratory and cardiac arrest during the ST1 year of training.
- Develop the skills necessary to safely and effectively manage patients in the peri-arrest period

Core clinical learning outcome:

- Is an effective member of the multi-disciplinary member of the resuscitation team and takes responsibility for the initial airway management

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
RC_IK_01	Recalls/describes the interpretation of arrhythmias seen in the peri-arrest period, including but not limited to: <ul style="list-style-type: none"> • Narrow complex tachycardias • Broad complex tachycardias • Atrial fibrillation • Paroxysmal SVT • Bradycardia • 1st 2nd and 3rd degree heart block 	C,E,S	1
RC_IK_02	Recalls/describes the pharmacology of drugs used to treat common arrhythmias, dosage and frequency, including but not limited to:	C,E,S	1

Knowledge			
Competence	Description	Assessment Methods	GMP
	<ul style="list-style-type: none"> • Adenosine • Digoxin • Magnesium • Beta-blockers • Amiodarone • Atropine 		
RC_IK_03	Recalls the indications for performing cardioversion and the energies used	C,E,S	1
RC_IK_04	Recalls/outlines the indication for, and principles of, pacing including percussion, external and transvenous	C,E,S	1
RC_IK_05	Recalls the indications for use of thrombolysis	C,E,S	1
RC_IK_06	Recalls/discusses the indications and principles of therapeutic hypothermia after cardiac arrest	C,E,S	1
RC_IK_07	Outlines indications and principles of: <ul style="list-style-type: none"> • Open chest cardiac compressions • Resuscitative thoracotomy [Cross ref cardiothoracic] 	C,E,S	1
RC_IK_08	Describes the principles of managing cardiac arrest in the prone position	C,E,S	1
RC_IK_09	Recalls/explains the difference in aetiology of cardiac arrest between adults and children	C,E,S	1
RC_IK_10	Describes how to recognize the sick/deteriorating ill child and what treatment should be initiated to reverse such deterioration and prevent, where possible, respiratory or cardiac arrest	C,E,S	1
RC_IK_11	Recalls the specific conditions likely to deteriorate to respiratory or cardiac arrest in children [e.g. meningococcal sepsis] and describes their initial management	C,E,S	1
RC_IK_12	Recalls/details the indications for, and use of, cuffed and uncuffed tubes in the critically ill child requiring tracheal intubation	C,E,S	1,2
RC_IK_13	Describes how to: <ul style="list-style-type: none"> • Recognise supra-glottic airway obstruction and understands the indications/contra-indications of supra-glottic airway devices to bypass such obstruction • Manage complications of tracheostomy in children [e.g. obstruction and displacement] 	C,E,S	1,2
RC_IK_14	Outline the principles of safe inter-hospital transfer of the resuscitated patient	C,E,S	1,2,3,4

Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
RC_IS_01	Demonstrates the use of external cardiac pacing	D,S	1
RC_IS_02	Demonstrates the treatment of arrhythmias using drugs and cardioversion	D,S	1,2
RC_IS_03	With specific reference to the paediatric airway, demonstrates the ability to: <ul style="list-style-type: none"> • Control the airway rapidly using different airway devices • Perform positive pressure ventilation using bag/mask systems [i.e. T-piece and self-inflating bags] 	D,S	1,2
RC_IS_04	Demonstrates the ability to establish vascular access in children with 'difficult veins', including the use of intraosseous devices	D,S	1,2
RC_IS_05	Demonstrates leadership during resuscitation, including supporting less experienced members of the team	D,S	1,2,3,4
RC_IS_06	Demonstrates ability to teach and assess basic level competencies	D,S	1,3,4
RC_IS_07	Demonstrates ability to provide feedback to staff and relatives in post-resuscitation attempts debriefs	D,S	1,3,4

Non-theatre

Learning outcome

- To build on the competencies gained in basic curriculum to include managing patients in a greater variety of out of theatre environments.

Core clinical learning outcome:

- To deliver safe peri-procedure anaesthesia/sedation to adult patients outside the operating theatre, but within a hospital setting, for painful or non-painful therapeutic procedures under distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
DI_IK_01	Describes, and critically evaluates, the different techniques of anaesthesia/sedation for adults and children for procedures that may take place outside the operating theatre, but within a hospital setting, either diagnostic or therapeutic for both elective and emergency procedures, including but not exclusively in the following settings: X-Ray, CT scan, Angiography, MRI scan, Radiotherapy, [ECT]	A,C,E	1,2,3,4
DI_IK_02	Explains the indications/contraindications of sedation for patients in the non-theatre environment [Cross Ref sedation]	A,C,E	1,2
DI_IK_03	Explains the problems of providing safe post- anaesthetic care for patients in the out of theatre environment	A,C,E	1,2
DI_IK_04	Recalls/discusses the unique safety precautions required in each of the environments, particularly MRI	A,C,E	1,2,3,4
ECT			
DI_IK_05	Describes the specific physical and physiological effects of ECT	A,C,E	1
DI_IK_06	Explains the rationale behind the choice of anaesthetic technique for ECT	A,C,E	1,2,3,4
DI_IK_07	Discusses the physical and psychological needs of patients who present for ECT	A,C,E	1,3,4
DI_IK_08	Discusses the place of the Mental Capacity Act in relation to the provision of ECT	A,C,E	1,3,4
Diagnostic imaging and interventional radiology			
DI_IK_09	Describes common interventional procedures and their pathophysiological consequences	A,C,E	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DI_IK_10	Describes the anaesthetic management of patients for endovascular procedures [Cross Ref vascular]	A,C,E	1,2,3,4
DI_IK_11	Describes the anaesthetic management of patients for neurological procedures [Cross Ref neuro]	A,C,E	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
DI_IS_01	Demonstrates the ability to provide safe peri-procedure anaesthesia to adult patients in one of the environments specified in DI_IK_01	A,C,D,M	1,2,4,5,6

Orthopaedic surgery (incorporating peri-operative care of the elderly)

Learning outcomes:

- Build on the knowledge, understanding and skills gained in Basic Level training
- To gain knowledge, skills and experience of the perioperative anaesthetic care of patients requiring major spinal and pelvic orthopaedic surgery

Core clinical learning outcomes:

- Deliver safe perioperative anaesthetic care to complicated ASA 1-3 adult patients for all elective and emergency orthopaedic/trauma surgery identified at the Basic Level as well as those requiring lower limb primary joint replacement surgery
- Manage elective and emergency operating sessions with such patients with distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge

Competence	Description	Assessment Methods	GMP
OR_IK_01	Explains the difference in anaesthetic and surgical complexity between primary and secondary lower limb arthroplasty	A,C,E	1
OR_IK_02	Recalls/describes the principles of perioperative anaesthetic care for elective and emergency spinal surgery including but not exclusively: <ul style="list-style-type: none"> • Scoliosis surgery including the need for, and implications of, neurophysiological monitoring • Spinal trauma and the associated complications of spinal cord trauma 	A,C,E	1,2,3,4
OR_IK_03	Recalls/describes the principles of perioperative anaesthetic care for pelvic bone and joint surgery	A,C,E	1,2,3,4
OR_IK_04	Recalls/discusses blood conservation strategies that are used in orthopaedic surgery	A,C,E	1,2

Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OR_IS_01	Demonstrates the provision of safe perioperative anaesthetic care for a variety of orthopaedic surgical procedures in elderly patients and those with significant co-morbidities [including but not exclusively]: <ul style="list-style-type: none"> • Primary and revision lower limb arthroplasties • Upper limb surgery in the head-up and sitting positions • All ORIF surgery 	A,C,D	1,2,3,4
OR_IS_02	Demonstrates the ability to manage elective and emergency orthopaedic and trauma theatre sessions safely and effectively	A,C,D,M	1,2,3,4

Perioperative Medicine

This unit of training is intended to run in parallel with other units of training and is not designed to be undertaken as a standalone dedicated module. The learning outcomes are applicable to all patients and will be achievable during clinical practice whilst undertaking the other units of training. Attendance at a medically led preoperative assessment clinic is a mandatory component of this unit of training.

Learning outcomes:

- To deliver high quality **preoperative** assessment, investigation and management of ASA 1-4 patients for elective and emergency surgery
- To deliver high quality individualised anaesthetic care to ASA 1-3 [E] patients, focusing on optimising patient experience and outcome
- To plan and implement high quality individualised post-operative care for ASA 1-3 [E] patients

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page B-99 or in the Final examination identified in the Final FRCA blueprint on page C72 of Annex C.

Preoperative care:

Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_IK_01	Describes the uses and limitations of common risk scoring systems	C,E	1
POM_IK_02	Describes the use of 'do not resuscitate' procedures and appropriate limitations of care	C,E	3,4
POM_IK_03	Describes strategies for prehabilitation and patient optimisation and the limits of such strategies	A,C,E	1
POM_IK_04	Recalls the principles of enhanced recovery pathways	A,C,E	1
POM_IK_05	Describes the requirements for investigations in patients with complex comorbidities	C,E	1
POM_IK_06 (formerly VS_IK_02)	Lists methods of assessment of functional cardiorespiratory capacity	C,E	1
POM_IK_07	Describes appropriate preoperative strategies for minimising the use of blood products	C,E	1
POM_IK_08	Describes the effects of ethnicity on pre-operative assessment	C,E	1,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_IS_01	Assesses the patient with complex comorbidities, taking into account their individual needs and requirements	A,C,E,L	1,3,4
POM_IS_02	Liaises effectively with colleagues in Intensive Care in planning care	A,C,E,L,M	3
POM_IS_03	Explains risks and benefits of available anaesthetic techniques to patients in a manner they can understand	A,D,E,L	3
POM_IS_04	Formulates an individualised perioperative plan with the patient, using an evidence-based approach	A,E,L	1
POM_IS_05	Balances the need for early surgery against the need for further investigation, prehabilitation and pre-optimisation	A,C,E	1,2
POM_IS_06	Responds appropriately to investigation results when planning perioperative care	A,E	1
POM_IS_07	Demonstrates the ability to communicate with other specialists as part of integrated care	A,L,M	3
POM_IS_08	Conducts a comprehensive preoperative assessment for a patient with multiple co-morbidities in the outpatient pre-assessment clinic	A,L	1,3
POM_IS_09	Manages existing medications and makes appropriate changes	A,C,E	1
POM_IS_10	Discusses the risks and benefits of the transfusion of blood products with patients	A,E	1,2
POM_IS_11	Discusses requirements of postoperative organ support and its limitations	C,E	1,3,4

Intraoperative care:			
Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_IK_09	Describes the concept of Goal-Directed Therapy	C,E	1
POM_IK_10	Describes the use of different types of intravenous fluid	C,E	1
POM_IK_11	Explains the potential impact of anaesthetic technique on patient outcome	A,C,E	1
POM_IK_12	Describes the effects of deviation from normal physiological parameters on short and long-term outcomes	C,E	1
POM_IK_13	Describes rationale for point of care testing	C,E	1

Intraoperative care:			
Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_IK_14	Recalls the principles and interpretation of depth of anaesthesia monitoring	C,E	1
POM_IK_15	Explains how ethnicity may influence conduct of anaesthesia	C,E	1,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_IS_12	Chooses appropriate anaesthetic technique for patients with complex comorbidities	A,C,E	1
POM_IS_13	Interprets information from commonly used modalities for advanced haemodynamic monitoring	C,E,S	1
POM_IS_14	Uses results from point of care testing to direct treatment	C,E,S	1
POM_IS_15	Demonstrates the use of appropriate blood conservation strategies	A,S	1,2
POM_IS_16	Assumes a leadership role in patient safety in the perioperative period	A,L,M,S	3
POM_IS_17	Recognises the deteriorating perioperative patient	A,E,L,S	1
POM_IS_18	Institutes appropriate measures to stabilise the deteriorating patient	A,E,S	1
POM_IS_19	Communicates effectively with and leads the theatre team where there is cause for concern over patient condition	A,M,S	3
POM_IS_20	Uses antibiotics and other measures to reduce the risk of infection	A,E	1,2
POM_IS_21	Uses strategies to minimise post-operative cognitive dysfunction	A,E	1
POM_IS_22	Uses strategies to minimise the risk of accidental awareness under general anaesthesia	A,E	1

Postoperative care:			
Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_IK_16	Explains how a multidisciplinary team approach improves patient recovery and outcomes	C,E	3
POM_IK_17	Manages common anaesthetic and surgical complications safely as part of a multidisciplinary team	A,E,S	1,3

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_IK_18	Plans appropriate postoperative analgesia using multimodal techniques, including those required for patients with complex analgesic needs	C,E,L	1
POM_IK_19	Initiates communication with patients regarding adverse events and organises appropriate follow up	A,E,M	3,4
POM_IK_20	Contributes to discharge planning	A,E,L	3
POM_IK_21	Plans postoperative care in keeping with relevant enhanced recovery pathways	C,E,L	1,3
POM_IK_22	Describes the effects of ethnicity in postoperative management, including pain management	C,E	1,3,4

Regional

If training in some of the regional blocks identified is not available it should be deferred to Higher Training years [ST 5/6/7] years. While all the blocks listed below may not be available trainees should achieve a broad spread of block experience.

Learning outcomes:

- Build on the basic knowledge and skills gained in basic regional anaesthesia
- Increase the range of block techniques practiced
- Become skilled in performing some more complex blocks under direct supervision
- Become skilled in performing some simple nerve blocks with distant supervision

Core clinical learning outcomes:

Perform one each of the following blocks satisfactorily under local supervision

- Thoracic epidural and/or combined spinal/epidural
- An upper/lower limb plexus block with peripheral nerve stimulation or ultrasound guidance

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
RA_IK_01	Demonstrates understanding of basic sciences as applied to all regional anaesthetic blocks [Cross reference applied basic sciences]	A,C,D,E	1
RA_IK_02	Recalls/discusses advantages and disadvantages, techniques and complications [including management] of a wide variety of blocks including, but not exclusively, major peripheral blocks of the limbs, some cranial nerve blocks and blocks used to treat chronic pain conditions [Cross ref pain medicine]	A,C,D,E	1
RA_IK_03	Demonstrates understanding in the choice of local anaesthetic agents, opioids, use of additives and techniques of administration	A,C,D,E	1,2
RA_IK_04	Outlines the principles of continuous catheter techniques for peripheral nerve blockade and for postoperative analgesia	A,C,D,E	1,2,3,4

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RA_IK_05	Demonstrates an in-depth understanding of the principles of ultra sound guided nerve blocks including: <ul style="list-style-type: none"> • The principles of scanning including machine ergonomics, probe selection/handling and the use of acoustic couplant [ultrasound gel] to improve skin contact • The importance of the angle of insonation on visibility of structures [anisotropy] specifically related to nerves and tendons • The normal sonoanatomy of peripheral nerves and surrounding structures • The basic concepts of needling techniques relating to ultrasound guidance (in plane / out of plane) • Understanding and recognition of spread of local anaesthetic under ultrasound guidance, distinction between normal intraneural and intravascular injection 	A,C,D,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RA_IS_01	Demonstrates safe perioperative management of patients receiving regional techniques [identified below] including liaison with theatre staff, surgeons, recovery staff, acute pain teams and ward staff	A,C,D	1,2,3,4
RA_IS_02	Is able to perform central nerve blocks including Caudal and thoracic epidural and CSE	A,C,D	1,2
RA_IS_03	Is able to perform major nerve blocks including: <ul style="list-style-type: none"> • Upper limb blocks [minimum of one such block] • Lower limb blocks [minimum of one such block] 	A,C,D	1,2
RA_IS_04	Is able to perform minor nerve and other blocks including as many of these as possible: <ul style="list-style-type: none"> • Superficial cervical plexus block • Trunk [penile, rectus sheath, intercostal and inguinal blocks] • Upper limb [elbow and distal] • Lower limb [ankle and distal] • Ophthalmic blocks [Cross reference ophthalmic anaesthesia] • IVRA • Infiltration and fascial plane blocks 	A,C,D	1,2

RA_IS_05	Demonstrates ability to recognise and manage adverse effects and complications of the more complex regional anaesthesia described at this level	A,C,D	1,2,3,4
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Sedation

Learning outcomes:

- Builds on the knowledge, understanding and clinical skills in sedation developed in basic level training
- To be able to discuss where and when deeper levels of sedation may be indicated
- To be able to deliver pharmacological sedation to patients of all ages, safely and effectively, whilst recognising their own limitations

Minimum clinical learning outcome:

- To recognise the important principle of minimum intervention, where the simplest and safest technique which is likely to be effective is used to achieve the clinical goal
- Provision of safe and effective sedation to any adult patient using multiple drugs if required

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
CS_IK_01	Explains what is meant by 'deep sedation' and when its use may be justifiable, identifies the associated risks and how these may be minimised to ensure patient safety is not compromised [Cross Ref sedation]	A,C,E	1,2
CS_IK_02	Discusses how multiple drug use may enhance sedation techniques, whilst detailing how this increases risks	A,C,E	1,2,3
CS_IK_03	Explains why it is essential to titrate multiple drugs [sedatives, analgesics and anaesthetic agents] to effect whilst recognising that the possibility of differing times of onset, peak effect and duration, can result in unpredictable responses	A,C,E	1,2,3
CS_IK_04	Discusses the place of infusions compared to bolus doses as well as target-controlled infusions [TCI], and the pharmacological models and pump technology relevant to their use	A,C,E	1,2
CS_IK_05	Discusses options for 'alternative' route of delivery of drugs used for conscious sedation including intra-nasal and rectal	A,C,E	1,2
CS_IK_06	Discusses the unpredictable nature of sedation techniques in the 'extremes of life' and strategies for safe delivery [cross ref paedrs]	A,C,E	1,2,3
CK_IK_07	Discusses the use of sedation in the high risk patient and the advantages/disadvantages of using general anaesthesia as opposed to sedation to cover necessary investigations/procedures in such patients	A,C,D	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
CS_IS_01	Demonstrates the ability to select sedation techniques appropriate to management in patients of all ages [above 5 years [cross ref paed] to the elderly]	A,C,D	1,2,3
CS_IS_02	Demonstrates the ability to administer and monitor sedation techniques to all patients [identified in CS_IS_01 above] for appropriate clinical procedures, safely and effectively	A,D	1,2,3
CS_IS_03	Demonstrate the ability to consider the following when considering the choice of sedation technique: <ul style="list-style-type: none"> • That no one technique is suitable for all patients and that the most appropriate technique is that based on minimum intervention, using the simplest and safest effective technique based on patient assessment and clinical need • That techniques using multiple drugs/anaesthetic drugs should only be considered where there is a clear clinical justification, having excluded simpler techniques 	A,D	1,2,3

Transfer medicine

Learning outcome:

- Build on the knowledge, understanding and skills obtained in Basic Level training, so developing greater confidence and ability to provide clinical care to patients requiring transfer, including those for **inter**-hospital transfer

Core clinical learning outcomes:

- To deliver safe and efficient transfer [with distant supervision] of:
 - Complex patients for intra-hospital including retrieving a newly referred ITU patient from A&E or the wards
 - An uncomplicated ventilated patient for inter-hospital transfer by land [Less than 4 hours]

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment methods	GMP
TF_IK_01	Explains the risks/benefits of Interhospital patient transfer	C,E	1,2,3,4
TF_IK_02	Explains the concept of primary/secondary/tertiary transfer	C	
TF_IK_03	Outlines the hazards associated with Interhospital transfer, including but not limited to physical, psychological and organisational	C,E	1,2,3,4
TF_IK_04	Describes the increased risks to critically ill patients of transfer and the reasons for these risks	C,E	1,2
TF_IK_05	Outlines strategies to minimise risk during Interhospital transfer, including but not limited to: <ul style="list-style-type: none"> ○ Stabilisation ○ Pre-emptive intervention ○ Sedation ○ Monitoring ○ Packaging ○ Choice of mode of transfer 	C,E	1,2,3,4

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
TF_IK_06	Explains how critical illness affects the risk of transfer	C,E	1
TF_IK_07	Explains how time-critical elements may influence risks to the patient and transfer personnel and how these should be managed to reduce them	C,E	1,2,3
TF_IK_08	Understands the increased risk of interventions during Interhospital transfer	C,E	1,2,3
TF_IK_09	<p>Outlines the specific considerations for transfer of patients with specific clinical conditions, including but not limited to:</p> <ul style="list-style-type: none"> ○ head, spinal, thoracic and pelvic injuries ○ critically ill medical patients ○ burns ○ children ○ pregnant women 	C,E	1,2
TF_IK_10	<p>Lists and explains the critical care equipment used during transfer including but not exclusively:</p> <ul style="list-style-type: none"> ● Ventilators ● Infusion pumps ● Monitoring 	C,E	1,2
TF_IK_11	Lists the different modes of ventilation and explains the selection of appropriate parameters in e.g. Asthma/COPD and ARDS	C,E	1
TF_IK_12	Outlines the different modes of transport available for inter-hospital transfer, including risks/benefits	C,E	1,2
TF_IK_13	Understand the safety implications of electrical and hydraulic equipment that may be used during patient transfer	C,E	1,2
TF_IK_14	Recalls/describes the physiological effects of transport including the effects of acceleration and deceleration, including Newton's laws of motion	C,E	1
TF_IK_15	Understands the effects of high ambient noise on patients and alarm status	C,E	1,2
TF_IK_16	Recalls/discusses the reasons for patients becoming unstable during transfer and strategies for management	C,E	1
TF_IK_17	Recalls/describes how to manage patients who develop sudden airway difficulties whilst in transit [both in the intubated and un-intubated patient]	C,E	1,2
TF_IK_18	Outlines the ethical issues related to patient transfer, including the need to brief patients and their relatives	C,E	3,4
TF_IK_19	Awareness of the laws relating to deaths in transit	C,E	1
TF_IK_20	Outlines how to find and use the national register of critical care beds	C,E	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
TF_IK_21	Outlines the regional protocols for organising transfers between units	C,E	1
TF_IK_22	Outlines the importance of maintaining communications between the transfer team and the base/receiving units	C,E	1,2,3
TF_IK_23	Outlines the roles and responsibilities of all staff accompanying the patient during transfer including the ambulance technicians and paramedics	C,E	1,2
TF_IK_24	Describes the personal equipment needed when leading a transfer, especially when a prolonged journey is anticipated	C,E	1,2
TF_IK_25	Discusses the importance of auditing practice and reporting critical incidents that arise during Interhospital transfer and the need for appropriate research	C,E	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
TF_IS_01	Demonstrates ability to determine when patients are in their optimum clinical condition for transfer	A,D	1,2,3,4
TF_IS_02	Demonstrates the ability to optimally package a patient for Interhospital transfer to minimise risks	A,D	1,2,3,4
TF_IS_03	Demonstrates the ability to establish appropriate ventilation and monitoring required of a critically ill patient for interhospital transfer	A,D	1,2,3
TF_IS_04	Demonstrates the ability to safely sedate a patient for interhospital transfer	A,D	1,2
TF_IS_05	Demonstrates ability to know when the patient's needs exceed the local resources available/that specific expertise is required	A,C	1,2,3,4
TF_IS_06	Demonstrates the need to integrate patient diagnosis with the physiological effects of transport	A,C,S	1,2
TF_IS_07	Demonstrates the ability to manage sudden loss of airway control, vascular access and monitoring in patients during transfer [S]	D,S	1
TF_IS_08	Demonstrates the necessary organisational and communication skills in managing inter-hospital transfers safely and effectively, recognising the importance of maintaining contact with base/receiving units if necessary whilst on transfer	D,M	3,4
TF_IS_09	Demonstrates appropriate situational awareness	D,A,S	2,3

Trauma and stabilisation

Learning outcome:

- Build on the knowledge, understanding and skills obtained in Basic Level training, so developing greater confidence and ability to provide clinical care to patients with multiple injuries
- To gain an in-depth understanding of how to manage massive blood loss in the multiply injured patient with an associated head injury
- To gain in-depth understanding of the problems associated with trauma and: severe burns; electrical injuries; drowning/near drowning; hypothermia

Core clinical learning outcomes:

- Be an effective member of the multi-disciplinary trauma team and takes responsibility for the initial airway management of the multiply injured patient with distant supervision
- Be able to manage acute life-threatening airway problems safely and effectively with distant supervision
- Provide safe perioperative anaesthetic care [from arrival in the Emergency Department through to post-operative discharge to the ward from recovery **or** intensive care] for ASA 1-3 patients with multiple injuries with distant supervision, whilst demonstrating understanding of knowing when to seek senior help

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
MT_IK_01	Recalls/describes the complex pathophysiological changes that occur in all patients [including children] with multiple injuries	A,C,E	1
MT_IK_02	Describes the perioperative anaesthetic management of patients with multiple injuries including head, facial, neck/spinal, thoracic, abdominal, pelvic and peripheral trauma	A,C,E	1,2,3
MT_IK_03	Explains the reasons for, and benefits of, the hospital triage of trauma patients and the scoring systems used	C,E	1,2
MT_IK_04	Describes strategies for minimising secondary brain injury in patients with multiple injuries	C,E	1
MT_IK_05	Describes the initial assessment, management and resuscitation of patients with: <ul style="list-style-type: none"> • Severe burns • Electrical injuries • Drowning and near drowning 	C,E	1,2,3

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
	<ul style="list-style-type: none"> Hypothermia 		
MT_IK_06	Recalls/explains the management of massive blood loss including the use of rapid infusion devices	A,C,E	1
MT_IK_07	Explains the implications, prevention and management of coagulopathy, hypothermia and acidosis in multiply injured patients	A,C,E	1,2
MT_IK_08	Describes the management of children with multiple injuries, comparing and contrasting with that of adults [cross reference paediatric anaesthesia]	C,E	1,2,3,4
MT_IK_09	Describes the specific ethical and ethnic issues associated with managing the multiply injured patient, including issues that relate to brain stem death and organ donation	C,E	1,2,3,4
MT_IK_10	Discusses the indications and contraindications of regional anaesthesia and peripheral nerve blocks in multiply injured patients for the provision of analgesia, both initially and perioperatively	C,E	1,2
MT_IK_11	Discusses the principles of clinical management for stabilisation of patients with multiple injuries requiring inter-hospital transfer strategies used, how safe transfer is undertaken, monitoring requirements and the options for modes of transfer [cross ref Transfer]	C,E	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
MT_IS_01	Demonstrates the ability to lead the multi-disciplinary trauma team to ensure that the primary survey, resuscitation and secondary surveys are conducted appropriately in non-complex trauma patients.	A,S	1,2,3,4
MT_IS_02	Demonstrates advanced airway management skills in trauma patient [including those with suspected unstable cervical spine] including surgical airway techniques	A,S	1,2
MT_IS_03	Demonstrates ability to communicate effectively with: <ul style="list-style-type: none"> Senior colleagues when planning/organising definitive care Colleagues in the referral centre when organising the transfer of a patient Relatives, showing due compassion and understanding 	A,M	1,2,3,4
MT_IS_04	Demonstrates safe perioperative anaesthetic management of patients with multiple injuries requiring early surgery, including the management of major blood loss and associated coagulopathy, hypothermia and acidosis	A,C,E	1,2,3,4

MT_IS_05	Demonstrates correct preparation of patients for safe transfer including ensuring adequate resuscitation, appropriate accompanying personnel and the use of checklists	A,C,E,M	1,2,3,4
MT_IS_06	Demonstrates safe inter-hospital transfer of stable trauma patient[s], including those with brain injury, whilst also ensuring the safety of accompanying personnel	A,C,E,M	1,2,3,4
MT_IS_07	Demonstrates the ability to interpret imaging relevant to the primary survey	A,C,E	1,2

Obstetrics

It is expected that the majority of hospitals with an obstetric unit should be able to deliver it successfully.

Learning outcome:

- To build on experience of basic training to be able to work with distant supervision

Core clinical learning outcomes:

- Able to provide emergency and non-emergency obstetric anaesthetic care in the majority of patients including those with co-morbidities and obstetric complications with distant supervision
- Perform immediate resuscitation of acute obstetric emergencies

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OB_IK_01	Recalls/describes the influence of common concurrent medical diseases on pregnancy	A,C,E	1,2
OB_IK_02	Discusses the obstetric and anaesthetic management of a premature delivery	A,C,E	1,2,3,4
OB_IK_03	Discusses the obstetric and anaesthetic management of multiple pregnancy	A,C,E	1,2,3,4
OB_IK_04	Explains the classification of placenta praevia and the associated risk to the patient	A,C,E	1,2,3,4
OB_IK_05	Recalls/describes the recognition and management of amniotic fluid embolus	C,E	1,2
OB_IK_06	Describes the recognition and management of inverted uterus	A,C,E	1,2
OB_IK_07	Demonstrates understanding of the methods of treating post-dural puncture headache	A,C,E	1,2,3,4
OB_IK_08	Discusses common causes of maternal morbidity and mortality, including national reports	C,E	1,2,3,4
OB_IK_09	Discusses the particular sensitivity of patient choices in obstetric practice – even when this is not in line with accepted evidence based best practice e.g. choice of birth plan, and refusal of blood products	A,C,E	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
OB_IS_01	Demonstrates satisfactory assessment of pregnant woman presenting for anaesthesia / analgesia including those with concurrent disease	A,C,D	1,2
OB_IS_02	Demonstrates ability to communicate a balanced view of the advantages, disadvantages, risks and benefits of various forms of analgesia and anaesthesia appropriate to individual patients	A,D,M	1,2,3,4
OB_IS_03	Demonstrates the appropriate use of CSE, subarachnoid, and epidural analgesia for labour	A,C,D,M	1,2
OB_IS_04	Demonstrates the ability to provide intravenous opiate analgesia including PCA for labour	A,C,D,M	1,2
OB_IS_05	Demonstrates the ability to manage complications of regional block including failure to achieve an adequate block	A,C,D	1,2,3,4
OB_IS_06	Demonstrates the ability to provide CSE for an operative delivery	A,D	1,2
OB_IS_07	Demonstrates the ability to choose the most appropriate regional technique for an operative delivery and justify the decision	A,C,M	1,2,3,4
OB_IS_08	Demonstrates the appropriate management of accidental dural puncture and post-dural puncture headache	A,C,M	1,2,3,4
OB_IS_09	Demonstrates the ability to provide intra uterine resuscitation for the “at risk” baby	A,C,D	1,2,3,4
OB_IS_10	Demonstrates the ability to provide appropriate anaesthesia for a caesarean section for placenta praevia under direct supervision	A,D	1,2,3,4
OB_IS_11	Demonstrates the ability to manage a high dependency obstetric patient with distant supervision	C,M	1,2,3,4

Paediatrics

Paediatric anaesthesia is best learned in an exclusively paediatric environment, although it is recognised that this is not always possible. Some competencies may be acquired quickly but confidence comes with experience and a **minimum period of one month up to a maximum of three months in practical paediatric anaesthesia is recommended**. Whenever possible such training is best delivered in blocks of at least one month duration [Reference section on minimum recommended training sessions] and trainers should spend not less than the equivalent of one full operating session per week in paediatric anaesthetic practice

Learning outcomes:

- Build on the knowledge and skills gained during Basic Level training
- Develop in-depth knowledge and understanding of the anaesthetic needs of children and neonates
- Understand the potential hazards associated with paediatric anaesthesia and have obtained practical skills in the management of such events

Core clinical learning outcome:

- Deliver safe perioperative anaesthetic care to ASA 1 and 2 children aged 5 years and over for minor elective and emergency surgery (e.g. inguinal hernia repair, orchidopexy, circumcision, superficial plastic surgery, grommets, manipulation of fractures, appendectomy) with distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Method	GMP
General			
PA_IK_01	Recalls/explains the relevance of the knowledge of applied basic sciences to all age groups including neonates	A,C,E	1
PA_IK_02	Recalls/explains the implications of paediatric medical and surgical problems including major congenital abnormalities (eg tracheoesophageal fistula, diaphragmatic hernia,) congenital heart disease and syndromes eg Down's for anaesthesia	A,C,E	1,2,3,4
PA_IK_03	Recalls/explains the adverse effects of starvation and hypoglycaemia in neonates and children	A,C,E	1,2
PA_IK_04	Recalls the specific factors in preoperative assessment and preparation of neonates for surgery	A,C,E	1,2,3,4
PA_IK_05	Describes special anaesthetic techniques for neonates	C,E	1,2
PA_IK_06	Explains the difficulty of thermoregulation in the newborn and the measure required to prevent hypothermia	C,E	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
PA_IK_07	Explains the law as relates to children in respect of Consent, Restraint and Research and the concept of 'Gillick competence'	C,E	1,2,3,4
PA_IK_08	Describes the anaesthetic management of neonates and infants for minor operations, major elective and emergency surgery	A,C,E	1,2,3,4
PA_IK_09	Calculates the analgesic requirements of neonates and infants	C,E	1,2
PA_IK_10	Describes the specific anaesthetic and monitoring equipment required for neonates	C,E	1,2
PA_IK_11	Lists common anaesthetic problems in the neonatal period and explains their perioperative anaesthetic management [e.g. inguinal hernia, intestinal obstruction, pyloric stenosis]	C,E	1,2,3,4
PA_IK_12	Describes the special problems of the premature and ex-premature neonate	C,E	1,2,3,4
PA_IK_13	Explains the importance of a comprehensive knowledge of Child Protection and how to be responsible for taking appropriate action when non-accidental injury is suspected	C,E,S	1,2,3,4
Immediate Care			
PA_IK_14	Recalls/explains how to recognise the critically ill child with e.g. sepsis, trauma, convulsions, diabetic emergencies and describes their timely management	C,E,S	1,2,3,4
PA_IK_15	Explains the principles of stabilisation and safe transport of critically ill children and babies	C,E,S	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
Children and Infants			
PA_IS_01	Demonstrates the ability to resuscitate all ages, both basic and advanced [BLS and ALS]	S	1
PA_IS_02	Demonstrates correct preoperative assessment in all ages down to 1 year	A,D	1,3,4
PA_IS_03	Demonstrates the ability to use the correct technique for induction, maintenance and monitoring for elective and emergency anaesthesia	A,D	1,2,3,4
PA_IS_04	Demonstrates correct selection, management and monitoring of children requiring diagnostic and therapeutic procedures carried out under sedation	A,C,D	1,2,3,4
PA_IS_05	Demonstrates ability to maintain perioperative physiology [e.g. glucose, fluids and temperature] in children down to 5 years of age	A,C,D	1,2

PA_IS_06	Demonstrates strategies for, and the practical management of, anaesthetic emergencies in children [e.g. loss of airway, laryngospasm, failed venous access, anaphylaxis including latex allergy]	A,C,D,S	1,2
PA_IS_07	Demonstrates correct postoperative pain management, including the use of regional and local anaesthetic techniques, simple analgesics, NSAIDs and opioids	A,C,D	1,2,3,4
PA_IS_08	Demonstrates the ability to communicate clearly with children & young people, parents and carers. including those with cognitive, communication or behavioural problems	A,D,M	1,2,3,4

Pain medicine

Wherever possible, this unit of training should be carried as a dedicated block

Learning outcomes:

- To build on the competencies gained during Basic Level training
- To be fully competent in the assessment and management of acute surgical and non surgical and acute on chronic pain in most patient groups and circumstances, including infants, children, the older person and those with communication difficulties
- To be an effective member of the acute pain team
- To have a knowledge of the assessment, management and wider treatment options for chronic and cancer pain in adults
- To be aware of the need for multi-professional input and to embrace this in the management of chronic and cancer pain

Core clinical learning outcomes:

- To be competent in the assessment and management of acute surgical and non-surgical pain in most patient groups and circumstances
- To be an effective member of the acute pain team
- To understand the importance of managing acute or chronic pain in a timely manner
- To have knowledge of assessment and management of chronic and cancer pain

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PM_IK_01	Describes the assessment and management of acute pain in all types of surgery	A,C,E	1
PM_IK_02	Describes the assessment and management of acute non surgical pain	A,C,E	1
PM_IK_03	Describes the assessment and management of acute pain in special groups to include children, infants, the older person, the cognitive impaired, those with communication difficulties, the unconscious and critically ill patient	A,C,E	1,2,3,4
PM_IK_04	Describes the basic assessment and management of chronic pain in adults	A,C,E	1
PM_IK_05	Describes the basic assessment and management of cancer pain in adults	A,C,E	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PM_IK_06	Recalls advanced pharmacology of drugs used to manage pain including neuropathic pain	A,C,E	1
PM_IK_07	Explains the rationale for the use of opioids in the management of chronic non malignant pain	A,C,E	1
PM_IK_08	Describes the requirement for the multidisciplinary management of chronic pain	A,C,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PM_IS_01	Demonstrates the ability to undertake a significant role in an acute pain service	A,C,M	1
PM_IS_02	Demonstrates the ability to assess and manage acute pain for all surgery	A,C,D,M	1,2,3
PM_IS_03	Demonstrates the ability to assess and manage acute non-surgical pain	A,C	1,2
PM_IS_04	Demonstrates the ability to assess and manage acute pain for special groups to include children, infants, the older person, the cognitive impaired, those with communication difficulties, the unconscious and critically ill patient	A,C,M	1,2,3,4
PM_IS_05	Demonstrates proficiency in techniques for the management of acute pain in those on background large dose opioids	A,C	1,2
PM_IS_06	Demonstrates the ability to assess [to include thorough structured history taking, physical examination and interpretation of investigations] and carry out basic management of chronic pain in adults	A,C,D	1,2,3,4
PM_IS_07	Demonstrates the ability to assess [to include thorough structured history taking, physical examination and interpretation of investigations] and carry out basic management of cancer pain patients	A,C,D	1,2,3,4
PM_IS_08	Demonstrates the ability to assess the need for and appropriately prescribe opioids to those with chronic non-malignant pain	A,C	1,2,3,
PM_IS_09	Demonstrates the ability to recognise and manage neuropathic pain	A,C	1,2
PM_IS_10	Demonstrates the ability to: <ul style="list-style-type: none"> • Ensure appropriate continuity of care and communications occurs in the management of pain • Embrace multi-professional working in the management of pain 	A,C,M	1,2,3,4

Optional Units

Ophthalmic

This is one of the 'optional' Intermediate level units of training; whilst trainees are not expected to gain practical experience in this area of practice, they should obtain the competencies identified in the knowledge section as this forms part of the Final FRCA curriculum and therefore can be assessed

Learning outcomes:

- To gain knowledge, skills and experience of the perioperative anaesthetic care of patients undergoing ophthalmic surgery
- To understand the rationale behind the choice of local or general anaesthesia for common ophthalmic procedures

Core clinical learning outcomes:

- Deliver safe perioperative anaesthetic care to adults and children requiring routine ophthalmic surgery under direct supervision, and emergency anaesthesia for ASA 1 and 2 patients requiring minor/ intermediate ophthalmic surgery under distant supervision
- Demonstrates the ability to provide local anaesthesia for eye surgery with competence in one technique

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OP_IK_01	Discusses the preoperative assessment of ophthalmic patients with particular reference to associated co-morbidities and how the care of high risk patients requiring ophthalmic surgery may be optimised	A,C,E	1,2,3,4
OP_IK_02	Recognises that a relatively large proportion of patients requiring ophthalmic surgery are elderly and understands their particular needs including, but not exclusively, the effects of physiological changes associated with ageing and altered pharmacological responses	A,C,E	1,2

OP_IK_03	<p>Recalls/discusses the choice of local or general anaesthetic techniques in relation to the patient and surgery including their advantages, disadvantages and indications with particular reference to some or all of the following:</p> <ul style="list-style-type: none"> • Cataract surgery • Strabismus surgery • Glaucoma surgery • Vitreoretinal surgery • Oculoplastic surgery 	A,C,E	1
OP_IK_04	Recalls/describes the oculocardiac reflex, its treatment and prevention	A,C,E	1
OP_IK_05	Recalls/describes the action of anaesthetic drugs on the eye	A,C,E	1
OP_IK_06	Recalls the physiological mechanisms which control intraocular pressure	A,C,E	1
OP_IK_07	Recalls/discusses the drugs which may alter intraocular pressure	A,C,E	1
OP_IK_08	Knowledge of precautions required for revision surgery in patients who have had a previous injection of intraocular gas		1
OP_IK_09	Recalls/discusses the choice of techniques of anaesthesia for patients with penetrating eye injury	A,C,E	1,2
OP_IK_10	Describes the operating conditions required for successful outcomes in ophthalmic surgery and how these can be achieved	A,C,E	1
OP_IK_11	Recalls/discusses the special requirements of children undergoing ophthalmic surgery	A,C,E	1,2
OP_IK_12	Describes the advantages and disadvantages of sedation techniques for ophthalmic procedures	A,C,E	1,2
OP_IK_13	Outlines the safety precautions required during the use of lasers in ophthalmic surgery	A,C,E	1,2
OP_IK_14	Recalls relevant applied anatomy required for insertion of local anaesthetic blocks for ophthalmic surgery [Cross reference applied basic sciences]	A,C,E	1
OP_IK_15	<p>Recalls/describes the techniques of local anaesthesia available for ophthalmic surgery including their advantages, disadvantages and indications with particular reference to:</p> <ul style="list-style-type: none"> • Topical anaesthesia: local anaesthesia drops • Superficial injection anaesthesia: subconjunctival block • Needle blocks: extraconal [peribulbar] and intraconal [retrobulbar] injections • Canular blocks: sub-tenon's anaesthesia 	A,C,E	1
OP_IK_16	Recalls/describes the risks associated with needle blocks	A,C,E	1,2
OP_IK_17	Awareness of the national guidelines regarding local anaesthesia for intraocular surgery	A,C,E	1
OP_IK_18	Awareness of specific risk of wrong-site surgery when operating on paired organs such as the eyes		1,2
OP_IK_19	Outlines the specific factors in the postoperative care of patients who have had ophthalmic surgery	A,C,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OP_IS_01	Demonstrates effective preoperative assessment and preparation of patients for ophthalmic procedures	A,M	1,2,3,4
OP_IS_02	Demonstrates good communication skills, with particular reference to the elderly, when explaining the risks and benefits of general and local anaesthetic techniques for eye surgery	A,M	1,2,3,4
OP_IS_03	Demonstrates the provision of safe perioperative anaesthetic care in patients with significant co-morbidities and with consideration of the specific requirements for ophthalmic surgical procedures including: <ul style="list-style-type: none"> • Cataract surgery • Strabismus surgery • Glaucoma surgery • Vitreoretinal surgery • Oculoplastic surgery 	A,C,D,M	1
OP_IS_04	Demonstrates appropriate choice of airway maintenance techniques for general anaesthesia for ophthalmic procedures	A,C,D	1,2
OP_IS_05	Demonstrates techniques for control of perioperative intraocular pressure	A,C,D	1
OP_IS_06	Demonstrates techniques for the safe use of lasers in ophthalmic surgery	A,C,D	1
OP_IS_07	Demonstrates ability to use topical eye preparations, including awareness of possible effects and interactions	A,C,D	1
OP_IS_08	Demonstrates provision of local anaesthesia for eye surgery obtaining competence in at least one block	C,D	1

Plastics/burns

This 'optional' Intermediate level unit of training, which may not be available to all trainees as this will be dependent upon the distribution and availability of local services. Severe burns, although initially admitted to many Emergency departments will, following resuscitation, be transferred to a specialist unit and training opportunities will be limited. However since all anaesthetists may be involved in the initial resuscitation of burns at a receiving hospital teaching in this field is essential. This may take a number of forms including classroom, CD-ROM and e-learning presentations or simulator training. Knowledge in this area is assessed in the Final FRCA examination

Learning outcomes:

- To gain knowledge of the initial resuscitation and management of a patient with severe burns prior to transfer to a specialist centre
- To gain an understanding of the specific requirements of anaesthesia for burns and plastic surgery including the principles of safe perioperative anaesthetic care to patients for a wide range of surgical procedures undertaken by plastic surgeons [to include microsurgery and free-flap reconstructive techniques]

Core clinical learning outcome:

- Delivers safe perioperative anaesthetic care to ASA 1-3 adult patients for minor to intermediate plastic surgery [e.g. tendon repair or split skin grafting] with distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
Plastics			
PL_IK_01	Can explain the specific features of preoperative assessment of patients for major plastic surgery procedures	A,C,E	1,2
PL_IK_02	Explains and critically evaluates anaesthetic techniques appropriate for plastic surgical procedures including major reconstructive cases procedures	A,C,E	1,2
PL_IK_03	Explains the factors affecting tissue blood flow with respect to free-flap surgery	A,C,E	1,2
PL_IK_04	Describes methods for improving blood flow to the surgical field during plastic surgery	A,C,E	1,2
BURNS			

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
PL_IK_05	Describes the pathophysiology of burn injury including thermal airway injury and smoke inhalation	A,C,E,S	1,2
PL_IK_06	Describes the initial assessment and management of a patient with severe burns, including electrical & chemical burns	A,C,E,S	1
PL_IK_07	Explains the principles of anaesthetic management of burns patients for surgery including dressing changes, grafting and related procedures	A,C,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
Plastics			
PL_IS_01	Demonstrates safe perioperative anaesthetic management of ASA 1-3 patients requiring major plastic surgical procedures	A,C,D	1,2,3,4
PL_IS_02	Demonstrates strategies to improve the surgical field by pharmacological [including induced hypotension] and non-pharmacological methods	A,C,D	1,2,3,4
BURNS [if clinical placement and/or simulator-based training available]			
PL_IS_03	Demonstrates appropriate initial assessment and management of the patient with severe burns including analgesia, airway and fluid management	A,C,D,S	1,2,3,4

Vascular surgery

This is one of the 'optional' Intermediate level units of training; whilst trainees are not expected to gain practical experience in this area of practice, they should obtain the competencies identified in the knowledge section as this forms part of the FRCA curriculum and therefore may be assessed. Where vascular is available at the intermediate level, the skill competencies are identical to those defined for higher vascular. The difference between intermediate and higher vascular is that the core clinical learning outcome is under direct supervision for intermediate and distant supervision for higher.

Core clinical learning outcome:

- To gain knowledge of the perioperative anaesthetic management of patients undergoing elective and emergency abdominal aortic surgery and newer stenting techniques
- To anaesthetise patients for carotid endarterectomy and aortic aneurysm surgery with direct supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Knowledge			
Competence	Description	Assessment Methods	GMP
VS_IK_01	Recalls/describes the cardiovascular physiology and pharmacology relevant to perioperative vascular surgery	A,C,E	1
VS_IK_02	Lists the methods of assessment of the patient's functional cardiovascular capacity	C,E	1
VS_IK_03	Explains the preoperative management of the patient with atherosclerotic disease	C,E	1,2
VS_IK_04	Describes the perioperative management of the patient for major vascular surgery	A,C,E	1,2
VS_IK_05	Describes the resuscitation and management of major vascular accidents including the management of ruptured aortic aneurysms	C,E	1,2,3,4
VS_IK_06	Explains the management of patients for endovascular radiological procedures [e.g. Stenting] including anaesthesia in isolated locations [Cross reference non-theatre anaesthesia]	C,E	1,2,3,4
VS_IK_07	Describes the management of elective carotid artery surgery with general or regional anaesthesia	A,C,E	1,2,3,4
VS_IK_08	Explains the principles and anaesthetic implications of sympathectomy, including thoracoscopic procedures	C,E	1,2

VS_IK_09	Describes the postoperative management and critical care of vascular patients	C,E	1,2,3,4
VS_IK_10	Explains the effects of smoking on health	C,E	1,2,3,4
VS_IK_11	Recalls/describes the morbidity and mortality associated with vascular surgery	C,E	1,2,3,4
VS_IK_12	Recalls/explains the principles of blood conservation and red cell salvage when major haemorrhage is predicted	A,C,E	1,2
VS_IK_13	Recalls the pathophysiology of aortic cross-clamping and of renal protection strategies	A,C,E	1,2

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
VS_HS_01	Demonstrates the pre-operative assessment of vascular patients with coexisting disease	A,D,M	1,2,,3,4
VS_HS_02	Performs the pre-operative optimisation of high risk vascular patients	A,C,D,M	1,2
VS_HS_03	Manages the effects of aortic clamping, including the implications of supra-renal or thoracic aortic clamping with distant supervision	A,D	1,2
VS_HS_04	Demonstrates safe peri-operative anaesthetic care of patients having combined surgical / radiological procedures, including those performed in isolated sites using either regional or general anaesthesia	A,,D,M	1,2,3,4
VS_HS_05	Demonstrates the ability to perform either general or regional anaesthesia safely and effectively for carotid artery surgery	A,D	1,2,3,4
VS_HS_06	Demonstrates the ability to perform safe and effective regional anaesthesia for vascular surgery including placement and management of thoracic and lumbar epidural, spinal and combined spinal –epidural	A,D	1,2,3,4

Advanced sciences to underpin anaesthetic practice

Learning outcomes:

- Increased depth of knowledge of the basic sciences.
- Deeper understanding of the clinical application of knowledge of biochemistry, pharmacology, physics and physiology to anaesthetic practice at an intermediate level and to support progress to higher training.
- The use of anatomical knowledge to ensure safe performance of practical procedures throughout the whole range of anaesthetic practice.
- To understand the sources and limitations of individual measurements in clinical assessment and monitoring.
- To understand the statistical fundamentals upon which most clinical research is based

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint on page C-73.

Anatomy

Competence	Description	Assessment methods	GMP
Demonstrates knowledge and understanding of:			
AN_IK_01	Relevant anatomy for understanding of surgical procedures	A,C,E	1,2,3
AN_IK_02	Anatomy relevant to acute and chronic pain management, including the whole range of neural blockade techniques outlined in the pain management section of the intermediate syllabus	A,C,E	1
AN_IK_03	Anatomy relevant to the whole range of practical procedures outlined in the intensive care medicine section of the intermediate syllabus	A,C,E	1
AN_IK_04	Anatomy relevant to the regional anaesthetic techniques [central and peripheral blocks, including ophthalmic] as outlined in the regional anaesthesia section of the intermediate syllabus; includes anatomy as visualised using ultrasound imaging during regional anaesthesia	A,C,E	1
AN_IK_05	Anatomy of the airway including anatomical knowledge relevant to the performance of fibre-optic intubation	A,C,E	1
AN_IK_06	Anatomy of the central veins and adjacent structures as visualised using ultrasound imaging	A,C,E	1
AN_IK_07	Anatomy relevant to the avoidance of injury to patients due to posture and positioning during anaesthesia	A,C,E	1
AN_IK_08	Anatomical changes that occur during development from neonate to older child	A,C,E	1
AN_IK_09	Maternal and fetal anatomy relevant to the practice of obstetric anaesthesia	A,C,E	1

Anatomy

Competence	Description	Assessment methods	GMP
Demonstrates knowledge and understanding of:			
AN_IK_10	Anatomy relevant to the practice of neuroanaesthesia including anatomy of the skull, skull base, CSF circulation and cerebral blood flow	A,C,E	1

Applied clinical pharmacology

Competence	Description	Assessment methods	GMP
Demonstrates knowledge of:			
PR_IK_01	Analgesia: principles of analgesia including infusions, patient controlled analgesia; medications for chronic pain including antidepressants, anticonvulsants, antiarrhythmics; routes of administration including oral; sublingual; subcutaneous, IM; IV; inhalational analgesia, patient controlled analgesia, epidural; agents used for regional techniques and local blocks	A,C,E	1,2
PR_IK_02	Management of acute poisoning: including aspirin; paracetamol; opioids; aminophylline; digoxin; ecstasy and other social drugs; antidepressants; alcohol	A,C,E	1,2
PR_IK_03	Drug toxicity, causes and avoidance. Management of malignant hyperthermia. Potential risks of drug additives	A,C,E	1
PR_IK_04	Pharmacokinetics. Including target controlled infusions and effects of renal and/or hepatic impairment on drug disposition and elimination of; influence of renal replacement therapies of commonly used drugs	A,C,E	1,2
PR_IK_05	Cardiovascular System: principles and use of inotropes and vasodilators, including pulmonary vasodilators; pharmacological problems in cardiopulmonary bypass, cardioplegia; Management of arrhythmias	A,C,E	1,2
PR_IK_06	Use of drugs in the management of cardiogenic shock and cardiac failure	A,C,E	1
PR_IK_07	Management of hypertension before anaesthesia, including acute management and pheochromocytoma. Manipulation of blood pressure to assist surgery	A,C,E	1
PR_IK_08	Antibiotics: principles of action; choice of drug. Antibiotic prophylaxis against surgical infection including subacute bacterial endocarditis. Therapy of bacterial, fungal and viral infections	A,C,E	1
PR_IK_09	Anticoagulant and thrombolytic prophylaxis and therapy, including management of pulmonary embolus	A,C,E	1
PR_IK_10	The Respiratory System: management of severe asthma; use of gases: helium and nitric oxide	A,C,E	1,2

Applied clinical pharmacology

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
PR_IK_11	The Gastrointestinal System: acid aspiration prophylaxis; anti-emetics	A,C,E	1,2
PR_IK_12	CNS: general vs regional anaesthesia in all areas of anaesthesia; action of drugs on the eye; control of convulsions	A,C,E	1,2
PR_IK_13	The Musculoskeletal System: muscle relaxants and reversal agents; anaesthetic implications of myasthenia gravis and other neuromuscular disorders	A,C,E	1,2
PR_IK_14	Resuscitation: including management of allergy and anaphylaxis	A,C,E	1,2
PR_IK_15	Principles of parenteral and enteral nutritional formulas in intensive care	A,C,E	1,2
PR_IK_16	Therapeutics in pathologic states: problems associated with organ transplantation; anaesthetic relevance of drugs used in malignancy; therapy in acute and chronic respiratory diseases	A,C,E	1,2
PR_IK_17	Problems of drug dependency and addiction	A,C,E	1
PR_IK_18	Environmental effects of anaesthetic agents	A,C,E	1
PR_IK_19	Influence of age on drug pharmacokinetics and pharmacodynamics	A,C,E	1
PR_IK_20	Assessment of cognitive dysfunction issues such as delirium, POCD and dementia, and implications	A,C,E	1

Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
PR_IS_01	TIVA and TCI: Demonstrate how a TCI system is set-up and used to deliver both induction and maintenance levels of intravenous agents. Discuss the advantages and disadvantages of such a technique	D, M	1,2
PR_IS_02	Adverse event reporting: Describe how to complete a yellow card alert and local critical incident report form; discuss investigation of a suspected allergic responses to drugs administered during anaesthesia. See also CI-BAB_04	D, C	1,2
PR_IS_03	Teaching of basic principles of pharmacology: Demonstrate the ability to lead a tutorial session on basic principles of pharmacology for more junior trainees	D	3
PR_IS_04	Demonstrate critical appraisal of publications	D	1

Applied Physiology and Biochemistry

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
CARDIOVASCULAR			
PB_IK_01	Abnormal electrocardiogram and arrhythmias; electrophysiological basis of arrhythmias	A,C,E	1
PB_IK_02	Cardiomyopathy and abnormal ventricular function – congenital and acquired	A,C,E	1
PB_IK_03	Heart failure – systolic vs diastolic, high vs low cardiac output	A,C,E	1
PB_IK_04	Hypovolaemia and shock – neurohumoral adaptations	A,C,E	1
PB_IK_05	Ischaemic heart disease	A,C,E	1
PB_IK_06	Valvular defects – stenotic vs regurgitant	A,C,E	1
PB_IK_07	Hypertension – systemic and pulmonary	A,C,E	1
PB_IK_08	Common congenital heart defects – including PFO, ASD, bicuspid AV, VSD	A,C,E	1
KIDNEY AND BODY FLUIDS			
PB_IK_09	Disturbances of fluid balance, oedema and dehydration	A,C,E	1
PB_IK_10	Management of acid-base abnormalities	A,C,E	1
PB_IK_11	Renal tubular acidosis	A,C,E	1
PB_IK_12	Assessment of renal function	A,C,E	1
PB_IK_13	Renal failure and its management	A,C,E	1
PB_IK_14	Diuresis – action of diuretics	A,C,E	1
PB_IK_15	Plasma electrolyte disturbances	A,C,E	1
LIVER			
PB_IK_16	Hepatic failure	A,C,E	1
PB_IK_17	Jaundice	A,C,E	1
PB_IK_18	Porphyria	A,C,E	1

Applied Physiology and Biochemistry

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
RESPIRATION			
PB_IK_19	Disorders of respiratory mechanics, gas exchange and gas transport	A,C,E	1
PB_IK_20	Disorders of the pulmonary circulation – arterial vs venous	A,C,E	1
PB_IK_21	Respiratory failure and ventilatory support; consequences of positive pressure ventilation	A,C,E	1
PB_IK_22	Effects of changes in ambient pressure	A,C,E	1
NERVOUS SYSTEM			
PB_IK_23	Consciousness and sleep	A,C,E	1
PB_IK_24	Depth of anaesthesia – effects of anaesthetics on neurotransmission	A,C,E	1
PB_IK_25	Consequences of spinal cord injury and deafferentation	A,C,E	1
PB_IK_26	Monitoring of spinal cord function under general anaesthesia	A,C,E	1
PB_IK_27	Mechanisms of pain; somatic, visceral, neuropathic	A,C,E	1
PB_IK_28	Control of cerebral circulation, intracranial and intraocular pressures	A,C,E	1
PB_IK_29	Disorders of the autonomic nervous system	A,C,E	1
GASTROINTESTINAL TRACT			
PB_IK_30	Nausea and vomiting	A,C,E	1
PB_IK_31	Oesophageal reflux	A,C,E	1
PB_IK_32	Obstruction of bowel – physiological consequences	A,C,E	1
PB_IK_33	Swallowing disorders	A,C,E	1
PB_IK_34	The mucosal barrier	A,C,E	1
METABOLISM AND BODY TEMPERATURE			
PB_IK_35	Hormonal and metabolic response to trauma	A,C,E	1
PB_IK_36	Hyperthermia and hypothermia	A,C,E	1
PB_IK_37	Starvation / obesity	A,C,E	1
ENDOCRINOLOGY			

Applied Physiology and Biochemistry

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PB_IK_38	Structure and function of the endocrine system; endocrine abnormalities of significance to anaesthesia – e.g. Cushing's, Addison's, diabetes mellitus, hypothyroidism, hypopituitarism, pheochromocytoma. The stress response	A,C,E	1
OBSTETRICS, PAEDIATRICS AND ADVANCING AGE			
PB_IK_39	Effects of prematurity	A,C,E	1
PB_IK_40	Developmental changes in infancy and childhood, including psychological aspects	A,C,E	1
PB_IK_41	Physiology of normal and abnormal pregnancy, including physiology of labour and childbirth	A,C,E	1
PB_IK_42	Changes in the elderly	A,C,E	1

Nutrition

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
NU_IK_01	Nutritional assessment techniques including laboratory tests	A,C,E	1,2
NU_IK_02	Clinical consequences of poor nutritional status: including wound healing, infection, cardiovascular stability, thermoregulation, respiratory control	A,C,E	1,2
NU_IK_03	The role of artificial nutritional support in improving surgical outcome – enteral and parenteral. Nutritional supplements	A,C,E	1,2
NU_IK_03	Mechanics of providing parenteral and enteral nutrition and different routes; pre and post pyloric	A,C,E	1,2
NU_IK_04	Complications of parenteral and enteral nutritional support	A,C,E	1,2
NU_IK_05	Consequences of overfeeding: CO ₂ production, uraemia, hypermetabolism, hypertryglyceridaemia, hepatic steatosis	A,C,E	1
NU_IK_06	Changes in intestinal blood flow with injury/sepsis/critical illness	A,C,E	1
NU_IK_07	Choice of artificial nutritional support in trauma/sepsis/critical illness. Principles of enteral and parenteral feeding including trace elements	A,C,E	1
NU_IK_08	Knowledge of the vulnerability of certain groups [very old, very young] to malnutrition and its effects	A,C,E	1,2

Physics and Clinical Measurement

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
PC_IK_01	Assessment of respiratory function: blood gases, including capillary, venous and mixed venous; flow-volume loops, diffusion capacity	A,C,E	1
PC_IK_02	Assessment of cardiac function, including exercise testing: METS, stair climbing, shuttle test	A,C,E	1
PC_IK_03	Measurement of nerve conduction	A,C,E	1
PC_IK_04	Operative spinal cord monitoring	A,C,E	1
PC_IK_05	Peripheral nerve stimulators: assessment of neuromuscular function. Identification of nerves with needle electrode.	A,C,E	1
PC_IK_06	Interpretation of biochemical data	A,C,E	1
PC_IK_07	Interpretation of haematological data	A,C,E	1
PC_IK_08	Measurement of coagulation of the blood and interpretation of data	A,C,E	1
PC_IK_09	Interpretation and errors of dynamic pressure measurements: systemic, pulmonary, arterial and venous pressures	A,C,E	1
PC_IK_10	Interpretation and errors of dynamic pressure measurements: intracranial, intrathoracic, intra-abdominal and intraocular pressures	A,C,E	1
PC_IK_11	Cardiac output measurement: interpretation and limitations of derived indices: PiCO, LiDCO, bioimpedance, contour analysis	A,C,E	1
PC_IK_12	Trans-oesophageal ECHO [TOE]	A,C,E	1
PC_IK_13	Principles of imaging: principle characteristics of medical imaging devices [including X-rays, CT, MRI, ultrasound], including principles, construction, artefacts, bio-effects, hazards and safety	A,C,E	1
PC_IK_14	Radiation protection	A,C,E	1
PC_IK_15	Capnography: interpretation and errors	A,C,E	1
PC_IK_16	Pulse oximetry	A,C,E	1
PC_IK_17	Ventilatory and respiratory gas analysis	A,C,E	1
PC_IK_18	Sleep studies - principles	A,C,E	1
PC_IK_19	Principles of hygiene, including cleaning and sterilisation of equipment, and care of fibre-optic instruments	A,C,E	1

Physics and Clinical Measurement

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
PC_IK_20	Principles of fibre-optic instruments	A,C,E	1
PC_IK_21	Principles of haemofiltration and renal support	A,C,E	1
PC_IK_22	Assessment of the depth of general anaesthesia and avoidance of awareness	A,C,E	1
PC_IK_23	Measurement of evoked potentials in the clinical situation	A,C,E	1
PC_IK_24	Glasgow coma score [GCS]	A,C,E	1
PC_IK_25	Anaesthetic and surgical outcome scoring systems: including Goldman, Detsky, APACHE, POSSUM etc	A,C,E	1
PC_IK_26	Sedation scoring systems	A,C,E	1
PC_IK_27	Assessment of cognitive function e.g. abbreviated mental test score and confusion assessment method	A,C,E	1

Statistical basis of clinical trial management

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
Data collection and analysis			
SM_IK_01	Explains the simple aspects of study design defining the outcome measures and the uncertainty of measuring them	A,C,E	1
Application to clinical practice			
SM_IK_02	Explains the difference between statistical and clinical significance	A,C,E	1
SM_IK_03	Recalls the limits of clinical trials	A,C,E	1
SM_IK_04	Recalls the basics of systemic review and its pitfalls	A,C,E	1
Study design			
SM_IK_05	Recalls how to define a clinical research question	A,C,E	1
SM_IK_06	Explains the effects of bias	A,C,E	1
SM_IK_07	Recalls the use of controls, placebos, randomisation and binding exclusion criteria	A,C,E	1
SM_IK_08	Explains statistical issues including sample size and ethical issues	A,C,E	1

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**Blueprint of the Final FRCA examination mapped
against the core level units of training**

Unit of Training	MCQ	SAQ	SOE 1	SOE 2
Preoperative assessment	✓	✓	✓	✓
Premedication	✓	✓	✓	✓
Induction of general anaesthesia	✓	✓	✓	✓
Intra-operative care				
Postoperative and recovery room care	✓	✓	✓	✓
Perioperative management of emergency patients	✓	✓	✓	✓
Transfer medicine	✓	✓	✓	✓
Management of respiratory and cardiac arrest in adults and children	✓	✓	✓	✓
Control of infection	✓	✓	✓	✓
Academic and research	✓	✓		✓
Airway management	✓	✓	✓	✓
Critical incidents	✓	✓	✓	✓
Day surgery	✓	✓	✓	✓
General, urological and gynaecological surgery	✓	✓	✓	✓
Head, neck, maxillo-facial and dental surgery	✓	✓	✓	✓
Intensive care medicine	✓	✓	✓	✓
Non-theatre	✓	✓	✓	✓
Obstetrics	✓	✓	✓	✓
Orthopaedic surgery	✓	✓	✓	✓
Perioperative medicine	✓	✓	✓	✓
Sedation	✓	✓	✓	✓
Paediatrics including child protection	✓	✓	✓	✓
Pain medicine	✓	✓	✓	✓
Regional	✓	✓	✓	✓
Trauma and stabilisation	✓	✓	✓	✓
Anatomy	✓	✓		✓
Physiology and biochemistry	✓	✓		✓
Pharmacology	✓	✓		✓
Physics and Clinical measurement	✓	✓		✓
Statistical methods	✓	✓		✓

Blueprint of the Final FRCA examination mapped against the intermediate level units of training

Unit of Training	MCQ	SAQ	SOE 1	SOE 2
Essential Units				
Anaesthesia for neurosurgery, neuroradiology and neuro critical care	√	√	√	√
Cardiothoracic anaesthesia and cardiothoracic critical care	√	√	√	√
General duties				
Airway management	√	√	√	√
Critical incidents	√	√	√	√
Day surgery	√	√	√	√
General, urological and gynaecological surgery	√	√	√	√
Head, neck, maxillo-facial and dental surgery	√	√	√	√
Management of respiratory and cardiac arrest	√	√	√	√
Non-theatre	√	√	√	√
Orthopaedic surgery	√	√	√	√
Perioperative medicine	√	√	√	√
Regional	√	√	√	√
Sedation	√	√	√	√
Transfer medicine		√	√	√
Trauma and stabilisation	√	√	√	√
Intensive care medicine	√	√	√	√
Obstetrics	√	√	√	√
Paediatric	√	√	√	√
Pain medicine	√	√	√	√
Optional Units				
Ophthalmic	√	√	√	√
Plastics/Burns	√	√	√	√
Vascular	√	√	√	√
Advanced sciences to underpin anaesthetic practice				
Anatomy	√	√		√
Applied clinical pharmacology	√	√	√	√
Applied physiology and biochemistry	√	√	√	√
Nutrition	√	√		√
Physics and clinical measurement	√	√		√
Statistical basis for trial management	√	√		√

Blueprint of the Final FRCA examination mapped against professionalism of medical practice [Annex A]

Domain	MCQ	SAQ	SOE1	SOE2
Domain 1 – Professional attitudes				
a. Commitment	✓	✓	✓	✓
b. Compassion	✓	✓	✓	✓
c. Honesty and integrity	✓	✓	✓	✓
d. Respect for others	✓	✓	✓	✓
e. Community	✓	✓	✓	✓
f. Competence	✓	✓	✓	✓
Domain 2 – Clinical practice	✓	✓	✓	✓
Domain 5 – Innovation	✓	✓	✓	✓
Domain 8 – Safety in clinical practice	✓	✓	✓	✓
Domain 9 – Medical ethics and confidentiality	✓	✓	✓	✓
Domain 10 – Relationships with patients	✓	✓	✓	✓
Domain 11 – Legal framework for practice	✓	✓	✓	✓
Domain 12 – Information technology	✓	✓	✓	✓

Blueprint of workplace based assessments mapped against the intermediate level units of training

Unit of Training	A-CEX	ALMAT	CBD	DOPS
Essential units				
Anaesthesia for neurosurgery, neuroradiology and neuro critical care	√		√	√
Cardiothoracic anaesthesia and cardiothoracic critical care	√		√	√
General duties*				
Airway management	√	√	√	√
Critical incidents			√	
Day surgery	√	√	√	
General, urological and gynaecological surgery	√	√	√	
Head, neck, maxillo-facial and dental surgery	√	√	√	
Management of respiratory and cardiac arrest**				√
Non-theatre	√		√	
Orthopaedic surgery	√	√	√	
Regional	√	√	√	√
Perioperative medicine	√	√	√	
Sedation	√	√	√	
Transfer medicine	√	√	√	
Trauma and stabilisation	√	√	√	
Intensive care medicine	See Annex F			
Obstetrics	√		√	√
Paediatric	√		√	√
Pain medicine	√		√	√
Optional units				
Ophthalmic	√		√	√
Plastics/Burns	√		√	√
Vascular surgery	√		√	√

* Assessment requirements for General Duties:

- Option of A-CEX or ALMAT for each unit blueprinted with both types of assessment
- Minimum of 3 CBD
- Airway course with assessment can replace DOPS for Airway Management

** Current ALS/ATLS/APLS can replace DOPS for Management of Cardiac and Respiratory Arrest

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