

CCT in Anaesthetics

Annex B Core Level Training

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Glossary of terms

ALI	Acute Lung Injury
ALS	Advanced Life Support
APLS	Advanced Paediatric Life Support
ARDS	Acute Respiratory Distress Syndrome
ASA	American Society of Anesthesiologists
ASD	Atrial septal defect
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
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
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
PCA	Patient Controlled Analgesia
PEA	Pulseless Electrical Activity
PFO	Patent foramen ovale
PONV	Postoperative nausea and vomiting
PSI	Pounds per square inch
Ref	Reference
RS	Respiratory system
RSI	Rapid sequence induction
SpO₂	Saturation of haemoglobin with oxygen
SVP	Saturated vapour pressure
TCI	Target Controlled Infusions
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

Introduction to Anaesthetic Practice – the start of training [3-6 months]

This provides a comprehensive introduction to the principles and practices of the delivery of safe and effective anaesthetic care to patients for trainees new to the specialty. The following units of training must be completed satisfactorily:

- Perioperative medicine
 - Preoperative assessment:
 - History
 - Clinical Examination
 - Investigations
 - Specific pre-anaesthetic evaluation
 - Premedication
 - Post-operative and recovery room care
 - Perioperative management of emergency patients
- Conduct of anaesthesia
 - Induction of general anaesthesia
 - Intraoperative care
- Infection control
- Management of cardiac arrest in adults and children

The fundamental importance of developing safe clinical practice (and understanding the basic science which underpins it) means that trainees are expected to achieve **all** the minimum clinical learning outcomes detailed in this section **and** obtain the IAC before progressing to the remainder of Core Level Training. Many years of experience indicate that this will take between three and six months for most trainees.

Perioperative medicine

Preoperative assessment

Learning outcomes:

- To perform a structured preoperative anaesthetic assessment of a patient prior to surgery and recognise when further assessment/optimisation is required
- To explain options and risks of routine anaesthesia to patients, in a way they understand, and obtain their consent for anaesthesia
- To formulate a plan for the management of common co-existing diseases, in particular the perioperative plan for the patient with diabetes

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

A) History Taking

Objectives:

- To elicit a relevant structured history
- To record the history accurately
- To synthesise the history with the relevant clinical examination

Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
HT_BK_01	Lists the important elements of anaesthetic history taking	A,C,E	1
HT_BK_02	Recognises that patients do not always present history in a structured fashion	A,C,E	1
HT_BK_03	Lists the likely causes and risk factors for conditions relevant to mode of presentation	A,C,E	1
HT_BK_04	Uses the patient's agenda and history to inform examination, investigation and management	A,C,E	1

Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
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HT_BS_01	Identifies and overcomes barriers to effective communication	A,D	3,4
HT_BS_02	Manages time and draws consultations to a close appropriately	A,D	1,3
HT_BS_03	Recognises that effective history taking in non-urgent cases may require several discussions with the patient and other parties over time	A,C	1
HT_BS_04	Supplements history with standardised instruments or questionnaires when relevant	A,C	3
HT_BS_05	Identifies alternative and conflicting views from family, carers, friends and members of the multi-professional team	C,M	3,4
HT_BS_06	Assimilates history from the available information from the patient and other sources	A,C,M	1,3
HT_BS_07	Interprets and uses non-verbal communication to and from patients and carers	A,D	3,4
HT_BS_08	Focuses on relevant aspects of history.	A,D	1

B) Clinical Examination

Objectives:

- To perform focused, relevant and accurate clinical examination
- To develop the ability to relate physical findings to history in order to establish a diagnosis and formulate a management plan

Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CE_BK_01	Describes the need for a targeted and relevant clinical examination	A,C,E	1
CE_BK_02	Describes the basis for clinical signs and the relevance of positive and negative physical signs	A,C,E	1
CE_BK_03	Recognises constraints to performing physical examination and uses strategies to overcome them	A,C	1
CE_BK_04	Recognises the limitations of physical examination and the need for adjunctive forms of assessment to confirm diagnoses	A,C	1
CE_BK_05	Offers or uses a chaperone when appropriate	A,C	3,4

Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CE_BS_01	Performs an examination relevant to the presentation and risk factors that is valid, targeted and time efficient	A,D	1
CE_BS_02	Reports the possibility of deliberate harm [both self-harm and harm by others] in vulnerable patients to appropriate agencies	A,C,D	2,4

CE_BS_03	Actively elicits important clinical findings	D	1
CE_BS_04	Performs relevant additional examinations	A,D	1
C) <u>Investigations</u>			
Objectives:			
<ul style="list-style-type: none"> ➤ To describe the indications for basic preoperative investigations ➤ To interpret and act upon basic investigations with relevance to anaesthesia and surgery 			
Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
IN_BK_01 (formerly OA_BS_03)	<p>Interprets clinical data including, but not exclusively:</p> <ul style="list-style-type: none"> • Patient clinical case notes and associated records • Clinical parameters such as: <ul style="list-style-type: none"> ○ BP, Pulse, CVP ○ BMI • Fluid balance • Physiological investigations such as: <ul style="list-style-type: none"> ○ ECGs ○ Echocardiography and stress testing ○ Pulmonary function tests 	A,C,E	1
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
IN_BS_01 (formerly OA_BS_04)	<p>Interprets clinical laboratory data including:</p> <ul style="list-style-type: none"> • Haematology such as <ul style="list-style-type: none"> ○ Routine report of Hb, WBC, haematocrit etc. • Biochemistry such as <ul style="list-style-type: none"> ○ Arterial blood gases/acid-base balance ○ Urea and electrolytes ○ Liver function ○ Endocrine biochemistry such as blood glucose and thyroid function 	A,C,E	1

IN_BS_02 (formerly OA_BS_05)	Identifies normal appearances and significant abnormalities in radiographs including: <ul style="list-style-type: none"> • Chest X-rays • Trauma films – cervical spine, chest, pelvis, long bones • Head CT and MRI showing clear abnormalities 	A,C,E	1
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D) Specific Anaesthetic Evaluation

Objectives:

- To establish a problem list
- To determine whether the patient is risk assessed and optimally prepared
- To plan anaesthesia and postoperative care for common surgical procedures
- To recognise own limitations and reliably determine the level of supervision required
- To explain options and risks of routine anaesthesia to patients, in a way they understand, and obtain their consent for anaesthesia

Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OA_BK_01	Gives examples of methods of anaesthesia that are suitable for common operations.	A,C,E	1,2
OA_BK_02	Describes the ASA and NCEPOD classifications and their implications in preparing for and planning anaesthesia and postoperative care	A,C,E	1
OA_BK_03	Explains the indications for and interpretation of preoperative investigations	A,C,E	1
OA_BK_04	Lists the indications for preoperative fasting and appropriate regimens	A,C,E	1
OA_BK_05	Explains the methods commonly used for assessing the airway to predict difficulty with tracheal intubation	A,C,E	1,2
OA_BK_06	Lists the indications for Rapid Sequence Induction	A,C,D,E	1,2
OA_BK_07	Gives examples of the effect of common co-existing diseases on anaesthesia and surgery including but not exclusively: obesity; diabetes; asthma; ischaemic heart disease; hypertension; rheumatoid disease; epilepsy	A,C,E	1
OA_BK_08	Discusses how to manage drug therapy for co-existing disease in the perioperative period including, but not exclusively: diabetic treatment; steroids; anti-coagulants; cardiovascular and respiratory medication; anti-convulsants	A,C,E	1
OA_BK_09	Explains the available methods to minimise the risk of thromboembolic disease following surgery	A,C,E	1,2
OA_BK_10	Describes the complications of anaesthetic drugs [including anaphylaxis, suxamethonium apnoea and malignant hyperpyrexia] and how to predict patients who are at increased risk of these complications	A,C,E	1,2
OA_BK_11	Identifies the principles of consent for surgery and anaesthesia, including the issue of capacity	A,C,E	3,4

OA_BK_12	Explains the guidance given by the GMC on consent, in particular: <ul style="list-style-type: none"> • Understands that consent is a process that may culminate in, but is not limited to, the completion of a consent form • Understands the particular importance of considering the patient's level of understanding and mental state [and also that of the parents, relatives or carers when appropriate] and how this may impair their capacity for consent 	A,C,E	3,4
OA_BK_13	Summarises the factors determining a patient's suitability for treatment as an ambulant or day-stay patient	A,C,E	1
OA_BK_14	Recalls the factors that affect the risk of a patient suffering post-operative nausea & vomiting	A,C,E	1
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
OA_BS_01	Obtains a history specifically relevant to the planned anaesthesia and surgery including: <ul style="list-style-type: none"> • A history of the presenting complaint for surgery • A systematic comprehensive relevant medical history • Information about current and past medication • Drug allergy and intolerance • Information about previous anaesthetics and relevant family history 	A,D,E	1
OA_BS_02	Performs a relevant clinical examination including when appropriate: <ul style="list-style-type: none"> • Cardiovascular system • Respiratory system • Central and peripheral nervous system: GCS, peripheral deficit • Musculoskeletal system: patient positioning, neck stability/movement, anatomy for regional blockade • Other: nutrition, anaemia, jaundice • Airway assessment/dentition 	A,D,E	1
OA_BS_06	Makes appropriate plans for anaesthesia: <ul style="list-style-type: none"> • Reviews current medication and seeks advice where appropriate • Plans appropriate anaesthetic technique[s] • Secures consent for anaesthesia • Recognises the need for additional investigation and acts accordingly • Discusses issues of concern with relevant members of the team • Reliably predicts the level of supervision they will require 	A,C,E	1
OA_BS_07	Presents information to patients [and carers] in a format they understand, checking understanding and allowing time for reflection on the decision to give consent	A,M	3,4

OA_BS_08	Provides a balanced view of care options	A,C,E,M	2,3
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Premedication

Note: This forms part of the comprehensive pre-assessment of patients. It should be assessed as part of the overall pre-assessment process.

Learning outcome:

- To prescribe premedication when indicated, especially for the high risk population

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
PD_BK_01	Summarises the value of appropriate explanations and reassurance in alleviating the patient's anxiety	A,C,E	1,3
PD_BK_02	Lists basic indications for prescription of pre-medication	A,C,E	1
PD_BK_03	Describes the rationale for the use of different anxiolytic and sedative drugs	A,C,E	1
PD_BK_04	Discusses the applied pharmacology of sedative and anxiolytic drugs	A,C,E	1
PD_BK_05	Recalls the factors that influence the risk of gastric reflux/aspiration and lists strategies to reduce it	A,C,D,E	1,2
PD_BK_06	Explains the applied pharmacology of pro-kinetic and antacids including simple alkalis, H ₂ receptor antagonists and proton pump inhibitors	A,C,E	2
PD_BK_07	Describes the application of local/national guidelines on management of thrombo-embolic risk	A,C,E	1,2
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
PD_BS_01	Prescribes appropriate agents to reduce the risk of regurgitation and aspiration	A,C,D,E	1,2
PD_BS_02	Explains, in a way the patient understands, the benefits and possible risks of sedative premedication	A,E,M	3,4
PD_BS_03	Prescribes appropriate anxiolytic/sedative premedication when indicated	A,C,E	1

Postoperative and recovery room care

Learning outcomes:

- To manage the recovery of patients from general anaesthesia
- To describe the organisation and requirements of a safe recovery room
- To identify and manage common postoperative complications in patients with a variety of co-morbidities
- To manage postoperative pain and nausea and vomiting
- To manage postoperative fluid therapy
- Safely manage emergence from anaesthesia and extubation
- Shows awareness of common immediate postoperative complications and how to manage them
- Prescribes appropriate postoperative fluid and analgesic regimes
- Assess and treats PONV

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
PO_BK_01	Lists the equipment required in the recovery unit	A,C,E	1
PO_BK_02	Lists the types of monitoring and the appropriate frequency of observations required for patients having undergone different types of surgery	A,C,E	1
PO_BK_03	Describes the care of an unconscious patient in the recovery room, including safe positioning	A,C,D,E	1,2
PO_BK_04	In respect of restoring spontaneous respiration and maintaining the airway at the end of surgery: <ul style="list-style-type: none"> • Explains how to remove the tracheal tube and describes the associated problems and complications • Recalls/describes how to manage laryngospasm at extubation • Recalls/lists the reasons why the patient may not breathe adequately at the end of surgery • Recalls/identifies how to distinguish between the possible causes of apnoea • Lists the possible causes of postoperative cyanosis • Describes how to evaluate neuro-muscular block with the nerve stimulator 	A,C,E	1
PO_BK_05	With respect to oxygen therapy: <ul style="list-style-type: none"> • Lists its indications • Lists the techniques for oxygen therapy and describes the performance characteristics of available devices • Recalls/explains the causes and management of stridor 	A,C,E	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
PO_BK_06	Outlines/recalls the principles of appropriate postoperative fluid regimes including volumes, types of fluids and monitoring of fluid balance including indications for urethral catheterisation	A,C,E	1
PO_BK_07	In respect of postoperative pain: <ul style="list-style-type: none"> • Describes how to assess the severity of acute pain • Describes the 'analgesic ladder' • Discusses how emotions contribute to pain • Identifies appropriate postoperative analgesic regimes including types of drugs and doses • Explains how to manage 'rescue analgesia' for the patient with severe pain • Lists the complications of analgesic drugs 	A,C,E	1
PO_BK_08	In respect of PONV: <ul style="list-style-type: none"> • Recognises the impact of PONV • Lists the factors that predispose to PONV • Describes the basic pharmacology of anti-emetic drugs • Describes appropriate regimes for prevention and treatment of PONV 	A,C,E	1
PO_BK_09	Describes the possible causes and management of postoperative confusion	A,C,E	1
PO_BK_10	Describes the causes and management of postoperative hypotension and hypertension	A,C,E	1
PO_BK_11	Identifies premorbid disease states that may require patients to have higher (level 2 or 3) levels of care in the postoperative period.	A,C,E	1,2
PO_BK_12	Describes the prevention, diagnosis and management of postoperative pulmonary atelectasis	A,C,E	1
PO_BK_13	Lists the appropriate discharge criteria for patients leaving the recovery room and day stay patients	A,C,E	1
PO_BK_14	Explains the importance of following up patients in the ward after surgery	A,C,E	1,2,3
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
PO_BS_01	Performs safe tracheal extubation	A,D	1
PO_BS_02	Evaluates neuromuscular blockade using a nerve stimulator	A,D	1,2
PO_BS_03	Transfers an unconscious patient from the operating theatre to the recovery room	A,C,D	1,2

Knowledge			
Competence	Description	Assessment Method	GMP
PO_BS_04	Turns a patient into the recovery position	A,D	1
PO_BS_05	Makes a clear handover to recovery staff of perioperative management and the postoperative plan	A,D,M	1,3
PO_BS_06	Prescribes appropriate postoperative fluid regimes	A,C	1
PO_BS_07	Assesses postoperative pain and prescribes appropriate postoperative analgesia	A,C,D	1,3
PO_BS_08	Manages postoperative nausea and vomiting	A,C	1
PO_BS_09	Assesses postoperative confusion	A,C	1
PO_BS_10	Recognises when discharge criteria have been met for patients going home or to the ward	A,C,D	1,2,3
PO_BS_11	Undertakes follow-up visits to patients after surgery on the ward	A,C,D	1

Perioperative management of emergency patients

Learning outcome:

- Delivers safe perioperative care to adult ASA 1E and/or 2E patients requiring uncomplicated emergency surgery

Knowledge			
Competence	Description	Assessment Methods	GMP
ES_BK_01	Discusses the management of common problems encountered in patients requiring emergency surgery	A,C,E	1,2,3,4
ES_BK_01	Adopts a structured and timely approach to the recognition, assessment and stabilisation of the acutely ill patient with disordered physiology	A,C,E	1
ES_BK_02	In respect of the preparation of acutely ill patients for emergency surgery: <ul style="list-style-type: none"> • Describes the resuscitation of patient with hypovolaemia and electrolyte abnormalities • Discusses how patients may be inadequately fasted and how this problem is managed • Discusses the management of acute preoperative pain 	A,C,E	1
ES_BK_03	Lists the indicators of severe illness.	A,C,E	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
ES_BK_04	Describes Rapid Sequence Induction of Anaesthesia	A,C,E	1
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
ES_BS_01	Resuscitates acutely ill patients and identifies the need for appropriate plans for intra and postoperative care.	A,C,D	1,2,3,4

Conduct of anaesthesia

Induction of general anaesthesia

The use of simulators may assist in the teaching and assessment of some aspects of this section e.g. failed intubation drill

Learning outcomes:

- To conduct safe induction of anaesthesia in ASA grade 1-2 patients confidently
- To recognise and treat immediate complications of induction, including tracheal tube misplacement and adverse drug reactions
- To manage the effects of common complications of the induction process
- To conduct anaesthesia for ASA 1E and 2E patients requiring emergency surgery for common conditions (e.g. uncomplicated appendicectomy or manipulation of forearm fracture/uncomplicated open reduction and internal fixation)
- Demonstrates safe practice behaviours including briefings, checklists and debriefs
- Demonstrates correct pre-anaesthetic check of all equipment required ensuring its safe functioning [including the anaesthetic machine/ventilator in both the anaesthetic room and theatre if necessary]
- Demonstrates safe induction of anaesthesia, using preoperative knowledge of individual patients co-morbidity to influence appropriate induction technique; shows awareness of the potential complications of process and how to identify and manage them

Knowledge			
Competence	Description	Assessment Methods	GMP
IG_BK_01	<ul style="list-style-type: none"> Recalls the pharmacology and pharmacokinetics, including doses, interactions and significant side effects of drugs used during induction of anaesthesia Describes the factors that contribute to drug errors in anaesthesia and strategies used to reduce them 	A,C,D,E	1
IG_BK_02	<ul style="list-style-type: none"> Describes the basic function of monitors Recall consensus minimum monitoring standards and the indications for additional monitoring Explains the functions and safety features of the anaesthetic 	A,C,D,E	1,2
IG_BK_03	<p>In respect of the induction of anaesthesia:</p> <ul style="list-style-type: none"> Describes the effect of pre-oxygenation and knows the correct technique for its use Explains the techniques of intravenous and inhalational induction and understands the advantages and disadvantages of both techniques Describes the pharmacology of common intravenous induction agents Describes the physiological effects of intravenous induction Describes how to recognise an intra-arterial injection of a harmful substance and its appropriate management Describes anaphylactic reactions and explains the appropriate management including follow up and patient information Lists the factors influencing the choice between agents for inhalational induction of anaesthesia Discusses the additional hazards associated with induction of anaesthesia in unusual places [e.g. Emergency Room] and in special circumstances including but not exclusively: brain injury; full stomach; sepsis; upper airway obstruction Identifies the special problems of induction associated with cardiac disease, respiratory disease, musculoskeletal disease, obesity and those at risk of regurgitation/pulmonary aspiration. 	A,C,D,E	1,2
IG_BK_04	<p>Describes the principles of management of the airway including:</p> <ul style="list-style-type: none"> Techniques to keep the airway open and the use of facemasks, oral and nasopharyngeal airways and laryngeal mask airways 	A,C,D,E	1,2
IG_BK_05	<p>In respect of tracheal intubation:</p> <ul style="list-style-type: none"> Lists its indications Lists the available types of tracheal tube and identifies their applications Explains how to choose the correct size and length of tracheal tube Explains the advantages/disadvantages of different types of laryngoscopes and blades including, but not exclusively, the Macintosh and McCoy Outlines how to confirm correct placement of a tracheal tube and knows how to identify the complications of 	A,C,D,E	1,2

Knowledge			
Competence	Description	Assessment Methods	GMP
	intubation including endobronchial and oesophageal intubation <ul style="list-style-type: none"> • Discusses the methods available to manage difficult intubation and failed intubation • Explains how to identify patients who are at increased risk of regurgitation and pulmonary aspiration and knows the measures that minimise the risk • Categorises the signs of pulmonary aspiration and the methods for its emergency management 		
IG_BK_06	Explains the importance of maintaining the principles of aseptic practice and minimising the risks of hospital acquired infection	A,C,D,E	2

Skills			
Competence	Description	Assessment Methods	GMP
IG_BS_01	Demonstrates safe practice in checking the patient in the anaesthetic room	A,D	1,2
IG_BS_02	Demonstrates appropriate checking of equipment prior to induction, including equipment for emergency use	A,D	1,2
IG_BS_03	In respect of the equipment in the operating environment: <ul style="list-style-type: none"> • Demonstrates the functions of the anaesthetic machine including <ul style="list-style-type: none"> ○ Performing proper pre-use checks ○ Changing/checking the breathing system ○ Replenishing the vaporiser ○ Changing the vaporiser 	D	1,2
IG_BS_04	Selects, checks, draws up, dilutes, labels and administers drugs safely	A,D	1,2,3
IG_BS_05	<ul style="list-style-type: none"> • Obtains intravascular access using appropriately sized cannulae in appropriate anatomical locations • Demonstrates rigorous aseptic technique when inserting cannulae 	D	1
IG_BS_06	Demonstrates appropriate placement of monitoring, including ECG electrodes and NIBP cuff <ul style="list-style-type: none"> • Uses monitors appropriately • Demonstrates proficiency in the interpretation of monitored parameters 	A,D	1
IG_BS_07	Demonstrates effective pre-oxygenation	A,D	1,2,3
IG_BS_08	In respect of intravenous induction: <ul style="list-style-type: none"> • Explains induction to the patient 	A,D	1,2,3

	<ul style="list-style-type: none"> • Prepares drugs for the induction of anaesthesia • Administers drugs at induction of anaesthesia • Manages the cardiovascular and respiratory changes associated with induction of general anaesthesia 		
IG_BS_09	<p>In respect of inhalational induction of anaesthesia:</p> <ul style="list-style-type: none"> • Satisfactorily communicates with the patient during induction • Satisfactorily conducts induction 	A,D	1,2,3
IG_BS_10	<p>In respect of airway management:</p> <ul style="list-style-type: none"> • Positions the patient for airway management • Maintains the airway with oral/nasopharyngeal airways • Ventilates the lungs with a bag and mask • Inserts and confirms placement of a Laryngeal Mask Airway • Successfully places nasal/oral tracheal tubes using direct laryngoscopy • Confirms correct tracheal tube placement • Uses bougies correctly • Secures and protects LMAs/tracheal tubes during movement, positioning and transfer • Correctly conducts RSI • Correctly demonstrates the technique of cricoid pressure 	A,D	1,2,3
IG_BS_11	Demonstrates correct use of oropharyngeal, laryngeal and tracheal suctioning	A,D	1,2
IG_BS_12	Demonstrates failed intubation drill	D,S	1,2
IG_BS_13 (formerly ES_BS_03)	Manages rapid sequence induction in the high risk situation of emergency surgery for the acutely ill patient	A,D	1
IG_BS_14 (Formerly ES_BS_02)	Demonstrates safe perioperative management of ASA 1 and 2 patients requiring emergency surgery	A,C,D,M	1,2,3,4

Intra-operative care

Learning outcomes:

- The ability to maintain anaesthesia for elective and emergency surgery
- The ability to use anaesthesia monitoring systems to guide the progress of the patient and ensure safety
- Considers the effects that co-existing disease and planned surgery may have on the progress of anaesthesia and plans for the management of significant co-existing diseases

- Recognises the importance of working as a member of the theatre team
- Safely maintains anaesthesia and shows awareness of potential complications and their management

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
IO_BS_01	Directs the team to safely transfer the patient and position of patient on the operating table and is aware of the potential hazards including, but not exclusively, nerve injury, pressure points, ophthalmic injuries	A,D	1,2,3
IO_BS_02	Manages the intra-operative progress of spontaneously breathing and ventilated patients	A,D	1
IO_BS_03	Maintains anaesthesia with a face mask in the spontaneously breathing patient	A,D	1,2
IO_BS_04	Uses a nerve stimulator to assess the level of neuromuscular blockade	A,D	1
IO_BS_05	Manages the sedated patient for surgery	A,D	1,3
IO_BS_06	Maintains accurate, detailed, legible anaesthetic records and relevant documentation	A,C	1
IO_BS_07	Demonstrates role as team player and, when appropriate, leader in the intra-operative environment	A,D,M	2,3
IO_BS_08	Communicates with the theatre team in a clear unambiguous style	A,D,M	3
IO_BS_09	Respond in a timely and appropriate manner to events that may affect the safety of patients [e.g. hypotension, massive haemorrhage] [S]	A,C,D,E,M,S	1,2
IO_BS_10	Manages common co-existing medical problems [with appropriate supervision] including but not exclusively: <ul style="list-style-type: none"> • Diabetes • Hypertension • Ischaemic Heart Disease • Asthma and COPD • Patients on steroids 	A,C,D	1,2

Management of respiratory and cardiac arrest in adults and children

[To be gained during the first 6 months of training]

For those who have not completed an ALS/APLS/EPLS course successfully, simulation may be used to assist in the teaching and assessment of these competencies

Learning outcomes:

- To have gained a thorough understanding of the pathophysiology of respiratory and cardiac arrest and the skills required to resuscitate patients
- Understand the ethics associated with resuscitation
- Be able to resuscitate a patient in accordance with the latest Resuscitation Council (UK) guidelines. [Any trainee who has successfully completed a RC(UK) ALS course in the previous year, or who is an ALS Instructor/Instructor candidate, may be assumed to have achieved this outcome]

Knowledge			
Competence	Description	Assessment Methods	GMP
RC_BK_01	<p>Lists the causes of a respiratory arrest, including but not limited to:</p> <ul style="list-style-type: none"> • Drugs, toxins • Trauma • Pulmonary infection • Neurological disorders • Muscular disorders 	C,E,S	1
RC_BK_02	<p>Lists the causes of a cardiac arrest, including but not limited to:</p> <ul style="list-style-type: none"> • Ischaemic heart disease • Valvular heart disease • Drugs • Hereditary cardiac disease • Cardiac conduction abnormalities • Electrolyte abnormalities • Electrocutation • Trauma • Thromboembolism 	C,E,S	1

Knowledge			
Competence	Description	Assessment Methods	GMP
RC_BK_03	Describes the basic principles of the ECG, and recognises arrhythmias including but not exclusively: <ul style="list-style-type: none"> • Ventricular fibrillation • Ventricular tachycardia • Asystole • Rhythms associated with pulseless electrical activity [PEA] 	C,E,S	1
RC_BK_04	Discusses the mode of action of drugs used in the management of respiratory and cardiac arrest in adults and children, including but not limited to: <ul style="list-style-type: none"> • Adrenaline • Atropine • Amiodarone • Magnesium sulphate • Naloxone 	C,E,S	1
RC_BK_05	Identifies the doses of drugs, routes given [including potential difficulty with gaining intravenous access and how this is managed] and frequency, during resuscitation from a respiratory or cardiac arrest	C,E,S	1
RC_BK_06	Explains the physiology underpinning expired air ventilation and external chest compressions	C,E,S	1
RC_BK_07	Explains the need for supplementary oxygen during resuscitation from a respiratory or cardiac arrest in adults and children	C,E,S	1
RC_BK_08	Lists advantages and disadvantages of different techniques for airway management during the resuscitation of adults and children, including but not limited to: <ul style="list-style-type: none"> • Oro and nasopharyngeal airways • Laryngeal Mask type supraglottic airways, including but not limited to: LMA, Proseal, LMA supreme, iGel • Tracheal intubation 	A,C,E,S	1
RC_BK_09	Explains the reasons for avoiding hyperventilation during resuscitation	C,E	1
RC_BK_10	Compares the methods by which ventilation can be maintained in a patient suffering a respiratory or cardiac arrest, using: <ul style="list-style-type: none"> • Mouth to mask • Self-inflating bag • Anaesthetic circuit • Mechanical ventilator 	A,C,E,S	1
RC_BK_11	Explains the mechanism of defibrillation and the factors influencing the success of defibrillation	C,E,S	1
RC_BK_12	Recalls the energy used to defibrillate a patient	C,E,S	1

Knowledge			
Competence	Description	Assessment Methods	GMP
RC_BK_13	Discusses the principles of safely and effectively delivering a shock using both manual and automated defibrillator	C,E,S	1,2
RC_BK_14	Explains the need for continuous chest compressions during resuscitation from cardiac arrest once the trachea is intubated	C,E,S	1
RC_BK_15	Explains the need for minimising interruptions to chest compressions	C,E,S	1
RC_BK_16	Lists the reversible causes of cardiac arrest and their treatment, including but not limited to: <ul style="list-style-type: none"> • Hypoxia • Hypotension • Electrolyte and metabolic disorders • Hypothermia • Tension pneumothorax • Cardiac tamponade • Drugs and toxins • Coronary or pulmonary thrombosis 	C,E,S	1
RC_BK_17	Recalls/describes the Adult and Paediatric Advanced Life Support algorithms	C,E,S	1
RC_BK_18	Discusses the specific actions required when managing a cardiac arrest due to: <ul style="list-style-type: none"> • Poisoning • Electrolyte disorders • Hypo/hyperthermia • Drowning • Anaphylaxis • Asthma • Trauma • Pregnancy [including peri-mortem Caesarean Section] • Electrocutation 	C,E,S	1
RC_BK_19	Lists the signs indicating return of a spontaneous circulation	A,C,E,S	1
RC_BK_20	Lists the investigations needed after recovery from a respiratory or cardiac arrest and describes the potential difficulties with obtaining arterial blood samples and how this may be overcome in these patients	C,E,S	1
RC_BK_21	Discusses the principles of care required immediately after successful resuscitation from a respiratory or cardiac arrest	C,E,S	1,3,4
RC_BK_22	Discusses the importance of respecting the wishes of patients regarding end of life decisions	C,E,S	1,3,4
RC_BK_23	Outlines who might benefit from resuscitation attempts and the importance of knowing/accepting when to stop	C,E,S	1,3,4

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RC_BK_24	Discusses the importance of respecting the wishes of relatives to be present during a resuscitation attempt	C,E,S	3,4
RC_BK_25	Describes the value of debriefing meetings and the importance of active participation	C,S	3,4
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RC_BS_01	Uses an ABCDE approach to diagnose and commence the management of respiratory and cardiac arrest in adults and children	D,S	1
RC_BS_02	Recognises cardiac and respiratory arrest	S	1,2
RC_BS_03	Maintains a clear airway using basic techniques with or without simple adjuncts: <ul style="list-style-type: none"> • Head tilt • Chin lift • Jaw thrust • Oro- and nasopharyngeal airways 	D,S	1,2
RC_BS_04	Demonstrates correct use of advanced airway techniques including: <ul style="list-style-type: none"> • Supraglottic devices, including but not limited to LMA, Proseal, LMA supreme, iGel • Tracheal intubation 	D,S	1,2
RC_BS_05	Maintain ventilation using: <ul style="list-style-type: none"> • Expired air via a pocket mask • Self-inflating bag via facemask, or advanced airway • Mechanical ventilator 	D, S	1,2
RC_BS_06	Performs external cardiac compression	D,S	1,2
RC_BS_07	Monitors cardiac rhythm using defibrillator pads, paddles or ECG lead	D,S	1,2
RC_BS_08	Uses a manual or automated defibrillator to safely defibrillate a patient	D, S	1,2
RC_BS_09	Turn a patient into the recovery position	D	1,2
RC_BS_10	Prepare a patient for transfer to a higher level of care	A,M	1,2
RC_BS_11	Maintains accurate records of all resuscitation events	A,M	1,2

Control of infection

Learning Outcomes:

- To understand the need for infection control processes
- To understand types of infections contracted by patients in the clinical setting
- To understand and apply most appropriate treatment for contracted infection
- To understand the risks of infection and be able to apply mitigation policies and strategies
- To be aware of the principles of surgical antibiotic prophylaxis
- The acquisition of good working practices in the use of aseptic techniques

Knowledge			
Competence	Description	Assessment Methods	GMP
IF_BK_01	Identifies the universal precautions and good working practices for the control of infection including but not limited to: <ul style="list-style-type: none"> • Decontaminate hands before treating patients; when soap and water hand wash is appropriate; when alcohol gel decontamination is appropriate • The use of gloves • The use of sterilised equipment • The disposal of used clinical consumables [single use and reusable] 	A,C,D,E	1,2
IF_BK_02	Lists the types of hospital acquired infections and identifies the precautions needed to reduce their transmission	C,E	1
IF_BK_03	Recalls/discusses the concept of cross infection including: <ul style="list-style-type: none"> • Modes of cross infection • Common cross infection agents 	A,C,E	1
IF_BK_04	Recalls/explains the dynamics of bacterial and viral strain mutation and the resulting resistance to antibiotic treatment	C,E	1
IF_BK_05	Explains the need for antibiotic policies in hospitals	C,E	1,2
IF_BK_06	Recalls/discusses the cause and treatment of common surgical infections including the use of but not limited to: <ul style="list-style-type: none"> • Antibiotics • Prophylaxis 	C,E	1

IF_BK_07	Recalls/lists the types of infection transmitted through contaminated blood including but not limited to: <ul style="list-style-type: none"> • HIV • Hepatitis B and C 	C,E	1
IF_BK_08	Discusses the need for, and application of, hospital immunisation policies	C,E	1
IF_BK_09	Recalls/explains the need for, and methods of, sterilisation	C,E	1
IF_BK_10	Explains the Trust's decontamination policy and its application	C	1
IF_BK_11 (Formerly PD_BK_08)	Explains the principles and practice of using prophylactic antibiotics	A,C,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
IF_BS_01	Identifies patients at risk of infection and applies an infection mitigation strategy	A,D	1
IF_BS_02	Identifies and appropriately treats the immunocompromised patient	A,C	1,4
IF_BS_03	Administers IV antibiotics taking into account and not limited to: <ul style="list-style-type: none"> • Risk of allergy • Anaphylaxis 	A,D	1,2
IF_BS_04	Follows local infection control protocols and uses aseptic techniques when necessary	A,D,M	1,2
IF_BS_05	Demonstrates the correct use of disposable filters and breathing systems	A,D,M	1
IF_BS_06	Demonstrates the correct use and disposal of protective clothing items including but not limited to: <ul style="list-style-type: none"> • Surgical scrubs • Masks • Gloves 	A,D,M	1,2
IF_BS_07	Dispose of clinical consumable items correctly [single use and reusable]	A,D,M	1,2

Core anaesthesia – [3/6 months to 24 months]

Once the trainee has completed all the minimum clinical learning outcomes identified in 'The basis of anaesthetic practice' and has obtained the IAC, they will move on to the remainder of Core Level training. This will provide a comprehensive introduction to all aspects of elective and emergency anaesthetic practice [with the exceptions some special interest areas of practice including that for cardiothoracic surgery, neurosurgery and specialist paediatric surgery amongst others]. The core anaesthetic units of training are:

- [Airway management](#)
- [Critical incidents](#)
- [Day surgery](#)
- [General, urological and gynaecological surgery](#)
- [Head, neck, maxillo-facial and dental surgery](#)
- Intensive care medicine (See Annex F)
- [Non-theatre](#)
- [Obstetrics](#)
- [Orthopaedic surgery](#)
- [Paediatrics](#)
 - *Child protection*
- [Pain medicine](#)
- [Perioperative medicine](#)
- [Regional](#)
- [Sedation](#)
- [Transfer medicine](#)
- [Trauma and stabilisation](#)

It is anticipated that the majority of these units of training will not be delivered in dedicated blocks; the exception is intensive care medicine, which must be completed in a three month block. Trainees would benefit from other units of training being dedicated; obstetrics, paediatrics and pain are three such.

Airway management

Core airway knowledge and skills have also been included within the first six months “Basis of Anaesthetic Practice” section. Those competencies are repeated here in a standalone airway section, designed to reflect the fundamental importance of airway knowledge and skills to the novice Anaesthetist.

Core clinical learning outcomes:

- Able to predict difficulty with an airway at preoperative assessment and obtain appropriate help
- Able to maintain an airway and provide definitive airway management as part of emergency resuscitation
- Demonstrates the safe management of the can't intubate can't ventilate scenario
- Maintains anaesthesia in a spontaneously breathing patient via a facemask for a short surgical procedure [less than 30 mins]

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment Methods	GMP
AM_BK_01	Explains the methods commonly used for assessing the airway to predict difficulty with tracheal intubation [Ref; OA_BK_05]	A,C,E	1,2
AM_BK_02	Describes the effect of pre-oxygenation and knows the correct technique for its use [Cross Ref; induction of GA]	A,C,D,E	1,2
AM_BK_03	Describes the principles of management of the airway including techniques to keep the airway open and the use of facemasks, oral and nasopharyngeal airways and laryngeal mask airways [Cross Ref; induction of GA]	A,C,D,E	1,2
AM_BK_04	Explains the technique of inhalational induction and describes the advantages and disadvantages of the technique. [Cross Ref; induction of GA]	A,C,D,E	1,2
AM_BK_05	Knows the factors influencing the choice between agents for inhalational induction of anaesthesia [Cross Ref; induction of GA]	A,C,D,E	1,2
AM_BK_06	In respect of tracheal intubation: <ul style="list-style-type: none"> • Lists its indications • Lists the available types of tracheal tube and identifies their applications • Explains how to choose the correct size and length of tracheal tube • Explains the advantages/disadvantages of different types the laryngoscopes and blades including, but not exclusively, 	A,C,D,E	1,2

Knowledge			
Competence	Description	Assessment Methods	GMP
	<p>the Macintosh and McCoy</p> <ul style="list-style-type: none"> • Outlines how to confirm correct placement of a tracheal tube and knows how to identify the complications of intubation including endobronchial and oesophageal intubation • Discusses the methods available to manage difficult intubation and failed intubation • Explains how to identify patients who are at increased risk of regurgitation and pulmonary aspiration and knows the measures that minimise the risk • Understands the airway management in a patient with acute illness who is at risk of gastric reflux • Categorises the signs of pulmonary aspiration and the methods for its emergency management [Cross Ref;induction of GA; emergency surgery] 		
AM_BK_07	<p>In respect of restoring spontaneous respiration and maintaining the airway at the end of surgery:</p> <ul style="list-style-type: none"> • Explains how to remove the tracheal tube and describes the associated problems and complications • Recalls/describes how to manage laryngospasm at extubation • Recalls/lists the reasons why the patient may not breathe adequately at the end of surgery • Recalls/identifies how to distinguish between the possible causes of apnoea • Lists the possible causes of postoperative cyanosis • Understands how to evaluate neuro-muscular block with the nerve stimulator [Cross Ref; post-operative] 	A,C,E	1
AM_BK_08	<p>With respect to oxygen therapy:</p> <ul style="list-style-type: none"> • Lists its indications • Knows the techniques for oxygen therapy and the performance characteristics of available devices • Describes the correct prescribing of oxygen • Recalls/explains the causes and management of stridor [Cross Ref; post-operative] 	A,C,E	1,2
AM_BK_09	Discusses the indications for RSI [Cross Ref; intra-operative]	A,C,D,E	1,2
AM_BK_10	Describes the care of the airway in an unconscious patient in the recovery room, including safe positioning [Cross Ref; post-operative]	A,C,D,E	1,2
AM_BK_11	<p>Lists advantages and disadvantages of different techniques for airway management during resuscitation, including but not limited to:</p> <ul style="list-style-type: none"> • Oro and nasopharyngeal airways • Laryngeal Mask type supraglottic airways including but not limited to: LMA, Proseal, LMA supreme, iGel • Tracheal intubation [Cross Ref; management of respiratory and cardiac arrest] 	A,C,E,S	1
AM_BK_12	Compares the methods by which ventilation can be maintained in a patient suffering a respiratory or cardiac arrest, using:	A,C,E,S	1

Knowledge			
Competence	Description	Assessment Methods	GMP
	<ul style="list-style-type: none"> • Mouth to mask • Self-inflating bag • Anaesthetic breathing system • Mechanical ventilator [Cross Ref; management of respiratory and cardiac arrest] 		
AM_BK_13	Discusses the different types of laryngoscope blades available in routine practice and the indications for their use	A,C,E	1
AM_BK_14	Outlines the advantages/disadvantages and reasons for development of new laryngoscopes [e.g. glidescope]	A,C,E	1
AM_BK_15	Outlines the indications for fibre-optic intubation and how awake intubation may be achieved	A,C,E	1,2
AM_BK_16	Describes the management of the 'can't intubate, can't ventilate' scenario	A,C,E	1,2
AM_BK_17	Describes the principles of, and indications for, the use of needle cricothyrotomy and manual jet ventilation	A,C,E	1,2

Skills			
Competence	Description	Assessment Methods	GMP
AM_BS_01	Demonstrates satisfactory proficiency in performing a relevant clinical examination and assessment of the airway and dentition [Cross Ref; intra-operative]	A,D,E	1
AM_BS_02	Identifies normal appearances and significant abnormalities in radiographs including: <ul style="list-style-type: none"> • Cervical spine, chest • Head CT and MRI showing clear abnormalities relevant to the airway [Cross Ref; intra-operative] 	A,C,E	1
AM_BS_03	Reliably predicts the level of supervision they will require [Cross Ref; intra-operative]	A, C,E	1
AM_BS_04	Demonstrates effective pre-oxygenation, including correct use of the mask, head position and clear explanation to the patient [Cross Ref; induction of GA]	A,D	1,2,3
AM_BS_05	In respect of airway management: <ul style="list-style-type: none"> • Demonstrates optimal patient position for airway management, including head tilt, chin lift, jaw thrust • Manages airway with mask and oral/nasopharyngeal airways • Demonstrates hand ventilation with bag and mask [including self-inflating bag] • Able to insert and confirm placement of a Laryngeal Mask Airway • Demonstrates correct head positioning, direct laryngoscopy and successful nasal/oral intubation techniques and confirms correct tracheal tube placement 	A,D	1,2,3

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
	<ul style="list-style-type: none"> • Demonstrates proper use of bougies • Demonstrates correct securing and protection of LMAs/tracheal tubes during movement, positioning and transfer • Correctly conducts RSI sequence • Correctly demonstrates the technique of cricoid pressure [Cross Ref; management of respiratory and cardiac arrest; induction of GA]		
AM_BS_06	Demonstrates correct use of advanced airway techniques including but not limited to Proseal, LMA supreme, iGel [Cross Ref; management of respiratory and cardiac arrest]	D,S	1,2
AM_BS_07	In respect of inhalational induction of anaesthesia: <ul style="list-style-type: none"> • Satisfactorily communicates with the patient during induction • Satisfactorily conducts induction [Cross Ref; induction of GA] 	A,D	1,2,3
AM_BS_08	Demonstrates the ability to maintain anaesthesia with a face mask in the spontaneously breathing patient [Cross Ref; intra-operative]	A,D	1,2
AM_BS_09	Demonstrates failed intubation drill [Cross Ref; induction of GA]	D,S	1,2
AM_BS_10	Demonstrates management of 'can't intubate, can't ventilate' scenario [Cross Ref; critical incidents]	D,S	1,2
AM_BS_11	Demonstrates correct use of oropharyngeal, laryngeal and tracheal suctioning [Cross Ref; induction of GA]	A,D	1,2
AM_BS_12	Demonstrate appropriate management of tracheal extubation, including; <ul style="list-style-type: none"> • Assessment of return of protective reflexes • Assessment of adequacy of ventilation • Safe practice in the presence of a potentially full stomach [Cross Ref; postoperative] 	A,D	1
AM_BS_13	Demonstrates how to turn a patient into the recovery position [Cross Ref; postoperative]	A,D	1
AM_BS_14	Demonstrates small and large bore needle cricothyrotomy and manual jet ventilation	D,S	1,2
AM_BS_15	Demonstrates surgical cricothyrotomy	D,S	1,2

Critical incidents

Many of the critical incidents listed are found elsewhere in the Core level section of the curriculum. Given the importance of the recognition and management of them, they are all included under this one heading for clarity

Whilst trainees may come across the critical incidents listed below during the course of clinical practice, it is anticipated that many will not be encountered in this way and as a result, the use of simulation to assist teaching and assessment is expected

Core clinical Learning Outcomes:

- To gain knowledge of the principle causes, detection and management of critical incidents that can occur in theatre
- To be able to recognise critical incidents early and manage them with appropriate supervision
- To learn how to follow through a critical incident with reporting, presentation at audit meetings, and discussions with patients
- To recognise the importance of personal non-technical skills and the use of simulation in reducing the potential harm caused by critical incidents

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
<i>Recall/describes the causes, detection and management of the following:</i>			
CI_BK_01	Cardiac and/or respiratory arrest	A,C,E,S	1
CI_BK_02	Unexpected fall in SpO ₂ with or without cyanosis	A,C,E,S	1
CI_BK_03	Unexpected increase in peak airway pressure	A,C,E,S	1
CI_BK_04	Progressive fall in minute volume during spontaneous respiration or IPPV	A,C,E,S	1
CI_BK_05	Fall in end tidal CO ₂	A,C,E,S	1
CI_BK_06	Rise in end tidal CO ₂	A,C,E,S	1
CI_BK_07	Rise in inspired CO ₂	A,C,E,S	1
CI_BK_08	Unexpected hypotension	A,C,E,S	1
CI_BK_09	Unexpected hypertension	A,C,E,S	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CI_BK_10	Sinus tachycardia	A,C,E,S	1
CI_BK_11	Arrhythmias: <ul style="list-style-type: none"> • ST segment changes • Sudden tachyarrhythmias • Sudden bradycardia • Ventricular ectopics • Broad complex tachycardia • Ventricular Fibrillation • Atrial fibrillation • Pulseless electrical activity [PEA] 	A,C,E,S	1
CI_BK_12	Convulsions	A,C,E,S	1
<i>Recalls/describes the causes, detection and management of the following specific conditions:</i>			
CI_BK_13	Difficult/failed mask ventilation	A,C,E,S	1
CI_BK_14	Failed intubation	A,C,E,S	1
CI_BK_15	Can't intubate, can't ventilate	A,C,E,S	1
CI_BK_16	Regurgitation/Aspiration of stomach contents	A,C,E,S	1
CI_BK_17	Laryngospasm	A,C,E,S	1
CI_BK_18	Difficulty with IPPV, sudden or progressive loss of minute volume	A,C,E,S	1
CI_BK_19	Bronchospasm	A,C,E,S	1
CI_BK_20	Pneumothorax and tension pneumothorax	A,C,E,S	1
CI_BK_21	Gas / Fat/ Pulmonary embolus	A,C,E,S	1
CI_BK_22	Adverse drug reactions	A,C,E,S	1
CI_BK_23	Anaphylaxis	A,C,E,S	1
CI_BK_24	Transfusion reactions, transfusion of mis-matched blood or blood products	A,C,E,S	1
CI_BK_25	Inadvertent intra-arterial injection of irritant fluids	A,C,E,S	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CI_BK_26	High spinal block	A,C,E,S	1
CI_BK_27	Local anaesthetic toxicity	A,C,E,S	1
CI_BK_28	Accidental decannulation of tracheostomy or tracheal tube	A,C,E,S	1
CI_BK_29	Coning due to increased intracranial pressure	A,C,E,S	1
CI_BK_30	Malignant hyperpyrexia	A,C,E,S	1
<i>Discusses the importance of understanding the need for the following attitudes and behaviours:</i>			
CI_BK_31	Awareness of human factors concepts and terminology and the importance of non-technical skills in achieving consistently high performance such as: effective communication, team-working, leadership, decision-making and maintenance of high situation awareness	A,C,E,S	1,2,3,4
CI_BK_32	Awareness of the importance and the process of critical incident reporting	A,C,E,S	1,2,3,4
CI_BK_33	Acceptance that it can happen to you; the unexpected can happen to anyone	A,C,E,S	1,2,3,4
CI_BK_34	To practice response protocols in resuscitation room or in simulation with other healthcare professionals as appropriate	C,D,S	1, 2,3,4
CI-BK_35	The need to follow through a critical incident with proper reporting, presentation at morbidity meetings and warning flags as necessary, with appropriate supervision	A,C,E,S	1,2,3,4
CI_BK_36	The provision of information to the patient and where necessary ensuring they get the appropriate counselling and advice, with appropriate supervision	A,C,E,S	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CI_BS_01	Demonstrates good non-technical skills such as: effective communication, team-working, leadership, decision-making and maintenance of high situation awareness	A,C,D,S	1,2,3,4
CI_BS_02	Demonstrates the ability to recognise early a deteriorating situation by careful monitoring	A,C,D,S	1,2,3,4
CI_BS_03	Demonstrates the ability to respond appropriately to each incident listed above	A,C,D,S	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CI_BS_04	Shows how to initiate management of each incident listed above	A,C,D,S	1,2,3,4
CI_BS_05	Demonstrates ability to recognise when a crisis is occurring	A,C,D,S	1,2,3,4
CI_BS_06	Demonstrates how to obtain the attention of others and obtain appropriate help when a crisis is occurring	A,C,D,S	1, 2,3,4

Day surgery

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 duration of Core Level training and that these should be achievable in most general hospitals at this level. Inevitably this unit cross references with many of the other Core Level clinical units of training given the high percentage of day care surgical procedures

Learning outcomes:

- To gain knowledge, skills and experience of the perioperative anaesthetic care of ASA 1 and 2 patients presenting in a dedicated Day Surgery Unit involving a range surgical specialities [minimum three]
- Understand and apply agreed protocols with regard to patient selection and perioperative care of day surgery patients
- Understand the importance of minimising postoperative complications, such as nausea and pain, in patients who are returning home the same day

Core clinical learning outcome:

- Knows the criteria for patient selection and the anaesthetic requirements for day surgical patients

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DS_BK_01	Describes the principles of preoperative assessment of patients requiring day surgery including nurse-led assessment	A,C,E	1
DS_BK_02	Explains the role of appropriate preoperative investigations for day surgery patients	A,C,E	1
DS_BK_03	Describes protocols for selection of day surgery patients including medical, surgical and social factors	A,C,E	1
DS_BK_04	Explains the importance of providing appropriate postoperative instructions to patients and relatives following day surgery including, but not confined to, level of care required following discharge, transport arrangements and when to drive	A,C,E	1,2,3,4
DS_BK_05	Describes anaesthetic techniques appropriate for day cases	A,C,E	1
DS_BK_06	Explains the potential causes of unanticipated in-patient admission following day surgery	A,C,E	1
DS_BK_07	Describes the pharmacology & selection of appropriate drugs for day cases [cross ref basic sciences]	A,C,E	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DS_BK_08	Describes appropriate analgesia for day cases	A,C,E	1
DS_BK_09	Describes strategies to reduce postoperative nausea and vomiting in day case patients	A,C,E	1
DS_BK_10	Explains the management & assessment of recovery of day surgery patients to street fitness	A,C,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DS_BS_01	Demonstrates appropriate selection and preoperative assessment of day surgery patients	A,C,M	1
DS_BS_02	Demonstrates appropriate anaesthetic management of ASA 1 and 2 patients requiring day surgery	A,C,D	1,2
DS_BS_03	Demonstrates appropriate postoperative care of patients who have undergone day surgery including control of pain, nausea, fluid management & assessment of fitness for discharge	A,C	1,3,4

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

This unit includes all aspects of elective and emergency general, urological and gynaecological surgery. 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 Core Level training and that these should be achievable in most general hospitals at this level.

Learning outcomes:

- To gain knowledge, skills and experience of the perioperative anaesthetic care of patients requiring elective and emergency general, urological and gynaecological surgery
- To gain understanding of the perioperative management of patients requiring intra-abdominal laparoscopic surgery and the particular issues related to anaesthetic practice, demonstrating the ability to manage such straightforward cases in adults under distant supervision
- To be able to recognise and manage the perioperative complications associated with intra-abdominal surgery that are relevant to anaesthesia
- To gain understanding of special peri-operative needs of elderly, frail patients

Core clinical learning outcomes:

- Deliver safe perioperative anaesthetic care to uncomplicated ASA 1-3 adult patients requiring elective and emergency surgery such as body surface surgery, appendicectomy and non-complex gynaecological surgery under distant supervision
- Manage a list with uncomplicated ASA 1-3 adults for similar elective surgery under distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment methods	GMP
GU_BK_01	Outlines the principles of preoperative assessment of patients undergoing major and minor surgery, including guidelines on the appropriateness of simple tests [i.e. NICE guidelines]	A,C,E	1,2
GU_BK_02	Describes the anaesthetic management of straightforward common surgical procedures and their complications, including but not limited to: <ul style="list-style-type: none"> • Body surface surgery including breast procedures and thyroid surgery • Urological procedures including TURP and its management [including the TURP syndrome] and procedures on the 	A,C,E	1,2,3,4

Knowledge			
Competence	Description	Assessment methods	GMP
	kidney and urological tract <ul style="list-style-type: none"> • Laparoscopic surgery including but not exclusively: <ul style="list-style-type: none"> ○ Diagnostic laparoscopy ○ Laparoscopic and open cholecystectomy • Intra-abdominal major general surgery procedures including but not exclusively: <ul style="list-style-type: none"> ○ Elective colorectal resection ○ Elective and emergency surgery for peptic ulcer disease • Endoscopic procedures on the GI and GU tracts including, but not exclusively: <ul style="list-style-type: none"> ○ OGD; flexible and rigid ○ Sigmoidoscopy, Colonoscopy ○ Cystoscopy • Gynaecology <ul style="list-style-type: none"> ○ Elective laparoscopic and open procedures on the uterus ○ Elective and Emergency procedures in patients in early pregnancy such as ERPC and salpino-oophrectomy for ectopic pregnancy 		
GU_BK_03	Explains the physical and physiological effects of laparoscopic surgery including the effects of positioning [e.g Trendelenberg / reverse Trendelenberg, specifically in the setting of laparoscopic surgery]	A,C,E	1
GU_BK_04	Describes the principles of the anaesthetic management of patients with renal failure for non-transplant surgery, including care of shunts	A,C,E	1,2,3,4
GU_BK_05	Describes the principles of management of non-fasted patients requiring emergency surgery for whatever reason	A,C,E	1,2
GU_BK_06	Explains transfusion issues in different surgical procedures	C,E	1,2
GU_BK_07	Recalls/describes the management of major haemorrhage	A,C,E	1,2
GU_BK_08	Recalls/explains the relevance of metabolism and nutrition in the perioperative period	A,C,E	1,2
GU_BK_09	Explains the specific problems of anaesthesia for non-obstetric surgery in the pregnant patient	A,C,E	1,2
GU_BK_10	Recalls the factors associated with regurgitation and airway protection during common surgical procedures	A,C,E	1,2
GU_BK_11	Recalls/describes the anaesthetic implications of abnormal body weight, including morbid obesity	A,C,E	1,2
GU_BK_12	Describes the NCEPOD classifications and explains the importance of these in delivering surgical care to patients	A,C,E	1,2
GU_BK_13	Recalls/describes the peri-operative care of the elderly	A,C,E	1,2

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
GU_BS_01	Demonstrates the ability to form an appropriate perioperative management plan for ASA 1-3 surgical patients requiring all types of surgery	A,C,D	1,2,3,4
GU_BS_02	Demonstrates the ability to recognise when more complex perioperative assessment and /or optimisation is required	A,C,D	1,2,3,4
GU_BS_03	Demonstrates the ability to identify the high risk emergency surgical patient and initiate early management/optimisation	A,C,D,M	1,2,3,4
GU_BS_04	Demonstrates the ability to deliver safe perioperative anaesthetic care to ASA1-3 patients for straightforward surgical procedures e.g. body surface surgery, appendicectomy, ERPC	A,C,D,L,M	1,2,3,4
GU_BS_05	Demonstrates the ability to manage an elective surgical list with uncomplicated ASA 1-3 adults for straightforward body surface and lower abdominal surgery under distant supervision [Examples of such cases on lists would be: <ul style="list-style-type: none"> • General surgical: hernia repair; ‘superficial lumps/bumps’; non-complex appendicetomy • Gynaecology: non-complex total abdominal hysterectomy; hysteroscopy; minor superficial surgery 	L,M	1,2,3,4
GU_BS_06	Demonstrates sensitive handling of patients with cognitive disturbances/communication problems	A,D,M	1,3,4
GU_BS_07	Shows sensitive handling of patient with cognitive impairment	A,D,M	1,2,3,4

Head, neck, maxillo-facial and dental surgery

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 duration of Core Level training and that these should be achievable in most general hospitals at this level.

Learning outcomes:

- Gain knowledge and skills of the perioperative anaesthetic care of patients undergoing minor to intermediate ear, nose and throat [ENT], maxilla-facial and dental surgery
- To be able to recognise the specific problems encountered with a 'shared airway' and know the principles of how to manage these correctly

Core clinical learning outcome:

- Deliver perioperative anaesthetic care to ASA 1-3 adults, and ASA 1 and 2 children over 5, for non-complex ear, adenotonsillar and nasal surgery under direct supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment Methods	GMP
EN_BK_01	Lists specific conditions that may complicate airway management [e.g. anatomical variation; tumour; bleeding]	A,C,E	1,2
EN_BK_02	Describes how the surgeon operating in the airway, or requiring access via the airway, complicates anaesthesia for this type of surgery	A,C,E	1
EN_BK_03	Recalls/describes the pathophysiology of obstructive sleep apnoea and its relevance to anaesthesia [AM_BK_07]	A,C,E	1,2
EN_BK_04	Recalls/describes the specialised devices used to maintain the airway during head and neck surgery	A,C,E	1
EN_BK_05	Identifies the indications for the special surgical devices used during surgery including gags, micro-laryngoscopes, oesophagoscopes and laser surgery equipment	A,C,E	1,2
EN_BK_06	Describes appropriate anaesthetic techniques for common ENT and dental procedures and lists the particular difficulties that face the anaesthetist including but not exclusively: tonsillectomy, septoplasty, myringotomy, middle ear surgery, dental extractions and apicectomies	A,C,E	1,2,3

EN_BK_07	Recalls/explains the principles of correct and timely recognition/management of bleeding tonsils	A,C,E	1,2,3
EN_BK_08	Explains the principles of the emergency management of the obstructed airway including tracheostomy	A,C,E	1,2,3,4
EN_BK_09	Describes the special risk of transmitting prion diseases by contamination with tonsillar tissue and explains how this risk is minimised in practice	A,C,E	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
EN_BS_01	Demonstrates development of preoperative assessment and preparation/optimisation knowledge and skills [as identified in the basis of anaesthetic practice], focused on the specific difficulties presented by these surgical sub-specialties	A,D,M	1,2,3
EN_BS_02	The provision of safe perioperative anaesthetic care for a wide range of commonly performed procedures, with good operating conditions and an appropriate level of analgesia, including: <ul style="list-style-type: none"> • ENT procedures such as tonsillectomy, septoplasty and myringotomy • Common dental procedures such as extractions and apicectomies 	A,D,M	1,2,3,4
EN_BS_03	Demonstrates the correct use of a variety of specialised airway devices, including RAE tubes, LMAs, throat packs and intubating forceps	A,D	1
EN_BS_04	Manages anaesthesia so as to achieve smooth emergence, with minimal airway disturbance, laryngospasm and bronchospasm	A,D	1
EN_BS_05	Demonstrates awareness of the increased risk of airway complications postoperatively and takes precautions to assist in their early recognition and prompt management	A,D,M	1,2,3,4

Non-theatre

At core level it is anticipated that non-theatre anaesthesia will be confined to the provision of anaesthesia for diagnostic imaging

Learning outcomes:

- To safely undertake the intra-hospital transfer of the stable critically ill adult patient for diagnostic imaging
- To understand the risks for the patient of having procedures in these sites
- To understand the responsibilities as a user/prescriber of diagnostic imaging services

Core clinical learning outcome:

- Can maintain anaesthesia for stable critically ill adult patients requiring diagnostic imaging under distant supervision [in conjunction with their transfer as identified in Transfer Medicine]

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment Methods	GMP
DI_BK_01	Explains risks and benefits to patients, and risks to staff from common radiological investigations and procedures, including the use of contrast media	A,C,E	1,2,3,4
DI_BK_02	Explains current statutory radiological regulations e.g. IRMER 2000 as applied to the referrer, practitioner or operator of diagnostic services	A,C,E	1,2
DI_BK_03	Explains the general safety precautions and equipment requirements in specific environments e.g. MRI suites	A,C,E	1,2
DI_BK_04	Recalls/describes the specific anaesthetic implications of imaging techniques including but not limited to: <ul style="list-style-type: none"> • MRI scanning • CT scanning • Angiography 	A,C,E	1,2,3,4
DI_BK_05	Recalls/explains the implications of exposing the pregnant or potentially pregnant patient to ionising radiation	A,C,E	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DI_BS_01	Demonstrates the ability to provide safe anaesthesia for a stable adult patient for diagnostic imaging	A,C,D,M	1,2,3,4
DI_BS_02	Demonstrates the ability to manage a stable ventilated adult patient for diagnostic imaging	C,M	1,2,3,4

Obstetrics

Wherever possible, this Core Level unit of training should occur in a dedicated block. The use of simulators may assist in the teaching and assessment of some aspects of this section e.g. general anaesthesia for Caesarean section

Learning outcome:

- To gain knowledge, skills and experience of the treatment of the healthy pregnant woman

Core clinical learning outcomes:

- To pass the formal practical initial assessment of competence in obstetric anaesthesia and, having achieved this, be able to provide analgesia and anaesthesia as required for the majority of the women in the delivery suite
- To understand the management of common obstetric emergencies and be capable of performing immediate resuscitation and care of acute obstetric emergencies [e.g. eclampsia; pre-eclampsia; haemorrhage], under distant supervision but recognising when additional help is required

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment Methods	GMP
OB_BK_01	Recalls/describes the anatomy, physiology and pharmacology related to pregnancy and labour [cross ref basic sciences]	A,C,E	1
OB_BK_02	Lists common obstetric indications for anaesthetic intervention on the delivery suite	A,C,E	1
OB_BK_03	Describes the effects of aortocaval compression and how to avoid it	A,C,E	1,2
OB_BK_04	Recalls/describes how to assess fetal well being in utero	A,C,E	1,2
OB_BK_05	Discusses the management of pre-eclampsia and eclampsia	C,E	1,2
OB_BK_06	Lists risk factors and describes the management of major obstetric haemorrhage	C,E	1,2
OB_BK_07	Explains local feeding / starvation policies and the reasons behind them	A,C,E	1,2
OB_BK_08	Explains the thromboprophylaxis requirements in pregnancy	A,C,E	1,2
OB_BK_09	Describes the grading of urgency of Caesarean section	A,C,E	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OB_BK_10	Explains why anaesthetic techniques must be modified in the pregnant patient	A,C,E	1,2
OB_BK_11	Lists methods of analgesia during labour and discusses their indications and contraindications	A,C,E	1,2
OB_BK_12	Describes epidural or CSE analgesia in labour and recalls/discusses the indications, contraindications and complications	A,C,E	1,2
OB_BK_13	Explains how to provide regional anaesthesia for operative delivery	A,C,E	1
OB_BK_14	Understands the need to call for assistance after several attempts at placement of regional blocks proves unsuccessful	A,C,E	1,2,3
OB_BK_15	Describes the immediate management of accidental dural puncture	A,C,E	1
OB_BK_16	Recalls/describes maternal and basic neonatal resuscitation	A,C,E	1,2
OB_BK_17	Describes how to access local maternity guidelines and the value of having these guidelines	A,C,E	1,2

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OB_BS_01	Undertakes satisfactory preoperative assessment of the pregnant patient	A,D	1
OB_BS_02	Demonstrates the ability to clearly explain and prepare an obstetric patient for surgery	A,C,D	1,3,4
OB_BS_03	Demonstrates the use of techniques to avoid aorto-caval compression	D	1
OB_BS_04	Demonstrates the ability to provide epidural analgesia in labour	A,D,M	1
OB_BS_05	Demonstrates the ability to provide spinal anaesthesia for caesarean section	A,D	1
OB_BS_06	Demonstrates the ability to convert epidural analgesia to epidural anaesthesia for surgical intervention	A,C,D	1
OB_BS_07	Demonstrates the ability to provide general anaesthesia for caesarean section [S]	A,C,D,S	1
OB_BS_08	Demonstrates an appropriate choice of anaesthesia/analgesia for instrumental delivery	C	1
OB_BS_09	Demonstrates an appropriate choice of anaesthesia for retained placenta	C	1,2
OB_BS_10	Demonstrates safe and effective management of post-delivery pain relief	C,M	1
OB_BS_11	Demonstrates ability to recognise when an obstetric patient is sick and the need for urgent assistance	C,M	1
OB_BS_12	Demonstrates the ability to provide advanced life support for a pregnant patient [S]	D,S	1
OB_BS_13	Demonstrates the ability to provide basic neonatal life support [S]	D,S	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OB_BS_14	Obtains the Initial Assessment of Competence in Obstetric Anaesthesia	A,C,D	1,2,3,4

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

This unit includes all aspects of elective and emergency orthopaedic surgery. 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 Core Level training and that these should be achievable in most general hospitals at this level.

Learning outcomes:

- To gain knowledge, skills and experience of the perioperative anaesthetic care of patients requiring orthopaedic surgery including the elderly and patients with long-bone fractures
- To understand the relevance of diseases of bones and joints to anaesthesia
- To be able to recognise and manage the perioperative complications of orthopaedic surgery relevant to anaesthesia

Core clinical learning outcome:

- Deliver perioperative anaesthetic care to uncomplicated ASA 1-3 adult patients for straightforward elective and emergency orthopaedic/trauma surgery to both upper and lower limbs, including Open Reduction Internal Fixation [ORIF] surgery [which includes fractured neck of femur], under distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment Methods	GMP
OR_BK_01	Recalls/describes the perioperative implications of rheumatological disease, including but not limited to rheumatoid arthritis, osteoarthritis, osteoporosis and ankylosing spondylitis	A,C,E	1
OR_BK_02	Recalls the complications of prolonged immobility, including those due to traction	A,C,E	1,2
OR_BK_03	Recalls the problems associated with limb tourniquets	A,C,E	1,2
OR_BK_04	Recalls/explains the potential hazards associated with positioning [supine, lateral, prone, sitting]	A,C,E	1,2
OR_BK_05	Recalls/explains the problems associated with anaesthesia for surgery in the prone and lateral positions	A,C,E	1,2
OR_BK_06	Recalls/describes the pathophysiology, diagnosis and management of specific orthopaedic surgical complications that are relevant to anaesthesia including but not exclusively:	A,C,E	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
	<ul style="list-style-type: none"> • Bone cement Implantation Syndrome • Diagnosis and management of fat embolism • Upper and lower limb compartment syndromes 		
OR_BK_07	Discusses strategies for blood conservation in major orthopaedic surgery	A,C,E	1,2
OR_BK_08	Describes the principles of perioperative anaesthetic care for elective and emergency upper and lower limb orthopaedic surgery, including primary arthroplasty	A,C,E	1,2,3
OR_BK_09	Discusses the current guidance on early surgical management of hip fractures and the necessary assessment for anaesthesia	A,C,E	1,2
OR_BK_10	Discusses the timing of surgery, and the need for investigations in urgent [surgical] cases with cardiovascular signs	A,C,E	1,2
OR_BK_11	Describes the different surgical procedures for managing hip fractures, the anaesthetic requirements for each and the current evidence for the choice of anaesthetic technique	A,C,E	1
OR_BK_12	Discusses the importance of consistent decision making on fitness for surgery in elderly patients	A,C,E	1,4
OR_BK_13	Recalls/describes the peri-operative care of the elderly	A,C,E	1,2

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OR_BS_01	Demonstrates the provision of perioperative anaesthetic care for patients requiring orthopaedic surgery to the upper and lower limbs including but not exclusively: <ul style="list-style-type: none"> • ORIF surgery including internal fixation of fractured neck of femur • Lower limb primary arthroplasty including patients in the lateral position 	A,D,M	1,2
OR_BS_02	Demonstrates sensitive handling of the patient with cognitive disturbance or communication problems	A,D,M	1,3,4
OR_BS_03	Demonstrates correct assessment and perioperative management of the elderly patient with a hip fracture	A,D,M	1,2,3,4
OR_BS_04	Shows sensitive handling of patient with cognitive impairment in anaesthetic room	A,D,M	1,2,3,4

Paediatrics

The use of simulators may assist in the teaching and assessment of some aspects of this section e.g. paediatric resuscitation

Learning outcomes:

- Obtain knowledge of the principles underlying the practice of anaesthesia for children aged 1 year and older and the specific needs therein
- Have completed training in child protection

Core clinical learning outcomes:

- Demonstrates correct management of the paediatric airway in the following ways [if case mix allows, down to one year of age, but at least down to five years of age]:
 - Is able to size airway devices correctly [i.e. oral airways and tracheal tubes]
 - Is able to insert airway devices correctly
 - Is able to ventilate an apnoeic child using a bag and mask +/- an oral airway
 - Is able to intubate a child correctly, using the most appropriate size tracheal tube, placed at the correct length
- Maintains anaesthesia in a spontaneously breathing patient via a facemask for a short surgical procedure [less than 15 mins]

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

It is anticipated that the competences listed will be gained throughout CT1/2 without a dedicated period spent in paediatric anaesthesia. It is accepted that not all trainees will have sufficient clinical opportunity to progress beyond direct supervision as the variation in paediatric exposure will differ amongst trainees during CT 1/2. Trainees should take whatever opportunities they can to obtain the skills listed below.

Knowledge			
Competence	Description	Assessment Methods	GMP
PA_BK_01	Recalls/explains the relevance of the basic sciences specific to children aged 1 year and above [cross ref basic sciences]	A,C,E	1
PA_BK_02	Describes the preoperative assessment and psychological preparation of children aged 1 year and above [and their parents] for surgery	A,C,E	1,3,4
PA_BK_03	Explains the importance of avoiding excessive starvation times	A,C,E	1,2
PA_BK_04	Describes how anaesthesia can be induced for children aged 1 year and above	A,C,E	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
PA_BK_05	Describes maintenance of anaesthesia for children aged 1 year and above	A,C,E	1
PA_BK_06	Describes how recovery from anaesthesia is managed in children aged 1 year and above	A,C,E	1,2
PA_BK_07	Explains the management of postoperative pain, nausea and vomiting in children	A,C,E	1
PA_BK_08	Describes the management of acute airway obstruction including croup, epiglottitis and inhaled foreign body	A,C,E	1
PA_BK_09	Recalls/explains how blood volume is estimated and how correct solutions and volumes are used for replacement of fluid loss. Particular attention must be given to the risks of hyponatraemia if hypotonic solutions are used for fluid resuscitation	A,C,E	1,2
PA_BK_10	Explains the importance of modification of drug dosages	A,C,E	1,2
PA_BK_11	Describes how pain-relief is provided for children undergoing surgery including the use of common regional techniques [e.g. Caudal epidural, ilioinguinal block]	A,C,E	1
PA_BK_12	Explains the place of premedication, including topical anaesthesia for venepuncture	A,C,E	1
PA_BK_13	Describes paediatric anaesthetic equipment and the differences from adult practice	A,C,E	1
PA_BK_14	Recalls/explains how to calculate tracheal tube sizes and the reasons for its importance; sizing of face masks and airways [oro- and naso-pharyngeal and LMAs]	A,C,E	1,2
PA_BK_15	Explains the choice of breathing systems and the appropriate fresh gas flow rates	A,C,E	1
PA_BK_16	Explains the importance of identifying when upper respiratory tract infections are/are not significant and, as a result, when to cancel operations	A,C,E	1,2,4
PA_BK_17	Explains how to obtain consent for anaesthesia in children	A,C,E	1,3,4
PA_BK_18	Explains the importance of Child Protection regulations and what action must be taken when non-accidental injury is suspected	A,C,E	1,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
PA_BS_01	Undertakes satisfactory preoperative assessment of fit children aged 5 and over	A,D,M	1,3
PA_BS_02	Demonstrates ability to anaesthetise fit children aged 5 and over for elective and urgent minor surgery [including general, ENT, orthopaedic, minor trauma and other non-specialist procedures]. This includes induction, maintenance and recovery	A,D,M	1,2,3

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
	[including management of pain, nausea and vomiting]		
PA_BS_03	Shows how to manage the environment during the induction of anaesthesia in children	A,D,M	1,3
PA_BS_04	Demonstrates ability to secure peripheral venous access in children aged 5 and over	A,D	1
PA_BS_05	Demonstrates ability to perform intraosseous cannulation [S]	D,S	1
PA_BS_06	Demonstrates ability to manage the airway correctly including selection of the correct masks, airways, laryngeal mask airways and tracheal tubes	A,D	1,2
PA_BS_07	Demonstrates ability to perform both intravenous and gaseous induction of general anaesthesia in children	A,D	1,3
PA_BS_08	Demonstrates the management of laryngospasm in children [S]	A,D,S	1,2
PA_BS_09	Demonstrates ability to stabilise and manage the sick or injured child aged 5 or over until senior help arrives [S]	A,M,S	1,2,3,4
PA_BS_10	Demonstrates ability to perform paediatric resuscitation as described by the Resuscitation Council [UK] [S]	D,S	1,2,3,4
PA_BS_11	Shows sensitivity when communicating with children and their parents/carers	A,D,M	1,3,4
PA_BS_12	Shows how to recognise signs leading to suspicion of non-accidental injury or abuse and the correct action	A,D,S	1,2,3,4

Child protection

Anaesthetists may encounter children who have suffered physical and/or sexual abuse including resuscitation, intensive care as well as the routine pre-op examination. In all these situations, it is essential that health care professionals, including the anaesthetist, act in the best interests of the child

Minimum acceptable learning outcomes:

- Knows that Non-Accidental Injury [NAI] of children is not uncommon and is encountered by anaesthetists
- Demonstrates knowledge of local procedures for safeguarding children

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CP_BK_01	Discusses the importance of knowing that NIA is not uncommon, is encountered by anaesthetists, that they must act in the child's best interests and that all hospitals must have a written protocol for its management	C	1,2,3,4

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CP_BK_02	Understands the Child Protection procedures in their current hospital situation, who leads the process and how they may be contacted [including out of hours]	C	1,3
CP_BK_03	Describes situations in which abuse of children may present to anaesthetists including, but not exclusively, during care of the injured child whose injury cannot be wholly explained by natural circumstances or during the course of routine perioperative anaesthetic care when unusual or unexplained signs which may indicate abuse are found	A,C	1,2,4
CP_BK_04	Describes signs indicative of a possible need to safeguard the infant, child or young person	C	1,2,3,4
CP_BK_05	Describes the importance of communicating concerns within the team and asking for senior help and/or paediatrician support when appropriate	C	1,2,3,4
CP_BK_06	Outlines the importance of acting in the best interests of the child throughout any investigation of NAI	C	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
CP_BS_01	Demonstrates the ability and willingness to clearly communicate concerns, verbally and in writing	C,M	1,2,3,4
CP_BS_02	Demonstrates the ability to manage the child and parents in a sensitive, appropriate manner	C,M	1,2,3,4

Further information: See e-Learning module on child protection

Pain medicine

Wherever possible, this Core Level unit of training should occur in a dedicated block.

Learning outcomes:

- To be competent in the assessment and effective management of acute post-operative and acute non post-operative pain
- To acquire knowledge necessary to provide a basic understanding of the management of chronic pain in adults
- To recognise the special circumstances in assessing and treating pain in children, the older person and those with communication difficulties
- To demonstrate an understanding of the basic principles of post-op analgesia requirements for children, the older person and those with communication difficulties

Core clinical learning outcomes:

- Competence in the assessment of acute surgical and non surgical pain and demonstrate the ability to treat effectively
- To have an understanding of chronic pain in adults

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment methods	GMP
PM_BK_01	Recalls the anatomy and physiology of pain medicine to include nociceptive, visceral and neuropathic pain [cross ref basic sciences]	A,C,E	1
PM_BK_02	Describes drugs used to manage pain and their pharmacology [including but not limited to opioids, NSAIDs, Coxibs, local anaesthetics and drugs used to manage neuropathic pain]	A,C,E	1
PM_BK_03	Explains the principles of neural blockade for acute pain management	A,C,E	1,2
PM_BK_04	Describes the methods of assessment of pain	A,C,E	1
PM_BK_05	Explains the relationship between acute and chronic pain	A,C,E	1
PM_BK_06	Describes a basic understanding of chronic pain in adults	A,C,E	1
PM_BK_07	Explains the importance of the biopsychosocial aspects of pain	A,C	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PM_BK_08	Describes the organisation and objectives of an acute pain service	A,C,E	1
PM_BK_09	Explains the limitations of pain medicine	A,C,E	1
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PM_BS_01	Demonstrates the ability to assess manage and monitor acute surgical and non surgical pain and side effects of medication	A	1,2,3,4
PM_BS_02	Demonstrates appropriate and safe drug prescribing	A,C	1,2
PM_BS_03	Demonstrates the safe use of equipment used to manage pain including equipment used for PCA, epidurals and inhalational techniques	A,D	1,2
PM_BS_04	Demonstrates the safe and effective use of local anaesthetic peripheral and regional neural blockade techniques	A,D	1,2
PM_BS_05	Demonstrates the ability to manage severe unrelieved acute pain and distress in a timely, safe and effective manner	A,M	1,2,3,4
PM_BS_06	Demonstrates the importance of regular on-going monitoring of pain management/follow up	A,C,M	1,2,3
PM_BS_07	Demonstrates recognition of acute neuropathic pain	C	1
PM_BS_08	Demonstrates the ability to communicate effectively with patients, relatives and carers including advantages, disadvantages and side effects of pain management	C	1,2,3

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 unit. The learning outcomes are applicable to all patients and will be achievable during clinical practice whilst undertaking the other units of training. However, Perioperative Medicine elements remain within the obstetric and paediatric units of training as these elements are less transferable to other areas of anaesthesia.

Learning outcomes:

- Explains the main patient, anaesthetic and surgical factors influencing patient outcomes
- Describes the benefits of patient-centred, multidisciplinary care
- Delivers high quality **preoperative** assessment, investigation and perioperative management of ASA 1-3 patients for elective and emergency surgery with emphasis on the perioperative management of co-existing medical conditions
- Delivers high quality individualised anaesthetic care to ASA 1-2 [E] patients, focusing on optimising patient experience and outcome
- Plans and implements high quality individualised post-operative care for ASA 1-2 [E] patients

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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

Competence	Description	Assessment Methods	GMP
POM_BK_01	Describes the importance of comorbid disease in the planning and safe conduct of anaesthesia	A,C,E	1,2
POM_BK_02	Describes the role of 'do not resuscitate' procedures	A,C,E	1,3,4
POM_BK_03	Describes the effects of acute and chronic disease on patient outcomes after surgery	A,C,E	1,2
POM_BK_04	Describes the requirements for preoperative investigations including indications for specific tests	A,C,E	1,2
POM_BK_05	Interprets fundamental preoperative investigations	A,C,D,E	1
POM_BK_06	Describes the adjustments needed to provide anaesthesia for the following patient groups: the elderly, pregnant women, patients with cognitive impairment, patients with chronic pain, and substance misusers	A,C,E	1,3
POM_BK_07	Recounts implications of lifestyle factors such as smoking, alcohol intake and substance abuse on patient outcomes	A,C,E	1,3

Preoperative care:

Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BK_08	Discusses the management of concurrent medication in the perioperative period	A,C,E	1
POM_BK_09	Describes thromboprophylaxis in the perioperative period	A,C,E	1
POM_BK_10	Describes methods of risk assessment and stratification relevant to the provision of perioperative care	A,C,E	1,2
POM_BK_11	Describes methods of patient optimisation which reduce risk in the perioperative period	A,C,E	1,2
POM_BK_12	Describes how integrated perioperative care pathways in primary and secondary care affect patient outcomes	A,C,E	3
POM_BK_13	Describes specific organisational interventions which improve patient outcomes (e.g. care bundles, enhanced recovery pathways)	A,C,E	1,2,3
POM_BK_14	Describes the legal and ethical principles for obtaining informed consent in adults and the correct processes for patients who are unable to consent	A,C,E	3,4
POM_BK_15	Describes the legal and ethical considerations for determining mental capacity	A,C,E	3,4
POM_BK_16	Explains how patients requiring emergency surgery may differ from those presenting for elective surgery in terms of physiology, psychology and preparation	A,C,E	1
POM_BK_17	Describes optimal perioperative fluid and feeding regimes	A,C,E	1
POM_BK_18	Describes the impact of nutritional status on patient outcomes	A,C,E	1
POM_BK_19	Describes the effects of ethnicity on physiology	C,E	1,3,4

Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BS_01	Conducts a comprehensive preoperative assessment in the outpatient clinic	A,D,E	1,3
POM_BS_02	Assesses patient suitability for day case admission	A,C,E	1,2,3
POM_BS_03	Evaluates co-morbidity in ASA 1-3 patients	A,C,E	1,3
POM_BS_04	Initiates optimisation where appropriate	A, C, D	1,3
POM_BS_05	Organises appropriate special investigations	A,C,D,E	3

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BS_06	Makes appropriate referrals to other specialties when required	A,C,E	3
POM_BS_07	Works in a multi-professional team and ensures effective communication with other members	A,E,M	3
POM_BS_08	Communicates anaesthetic options with patients or surrogates effectively	A,D,E	3,4
POM_BS_09	Synthesises relevant information to develop a safe anaesthetic plan, taking the patient's wishes into consideration	A,C,D,E	1,3
POM_BS_10	Treats all patients with respect and compassion, especially those with particular physical, psychological and educational needs (See Annex A, Domain 10 of CCT in Anaesthetics, 2010)	A,D,M	3,4

Intraoperative care:			
Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BK_20	Describes risks and benefits of different anaesthetic techniques including their effect on early mobilisation and restoration of function	A,C,E	1
POM_BK_21	Describes the effect of perioperative analgesia on patient outcome	A,C,D,E	1
POM_BK_22	Describes strategies to minimise the risk of infection in the postoperative period	A,C,E	1,2
POM_BK_23	Describes the effect of hypothermia on patient outcome	A,C,E	1
POM_BK_24	Develops an effective patient-specific strategy to minimise post-operative nausea and vomiting	A,C,E	1
POM_BK_25	Lists the risk factors for postoperative cognitive dysfunction	A,C,E	1
POM_BK_26	Recalls principles of advanced haemodynamic monitoring	A,C,E	1
POM_BK_27	Describes perioperative fluid management strategies, with reference to maintaining homeostasis	A,C,E	1
POM_BK_28	Explains the indications for the use of blood products and describes the effective management of major haemorrhage	A,C,E	1,3
POM_BK_29	Describes the consequences of failing to maintain normal biochemical parameters, e.g. acid-base balance, blood glucose	A,C,E	1
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>

Intraoperative care:			
Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BS_11	Uses operating theatre safety checklists effectively (at the appropriate time, avoiding distraction and engaging the full team)	D,M,S	2,3
POM_BS_12	Administers intravenous fluids and blood products appropriately	A,E,S	1
POM_BS_13	Uses non-invasive and invasive monitoring appropriately	A,D,S	1
POM_BS_14	Employs effective techniques to minimise the risk of aspiration of gastric contents in at-risk patients	A,D,S	1
POM_BS_15	Employs effective strategies to maintain normal body temperature intraoperatively	A,E,S	1

Postoperative care:			
Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BK_30	Describes the consequences of postoperative malnutrition	C,E	1
POM_BK_31	Describes a patient-centred approach to postoperative analgesia and demonstrates understanding of the importance of providing adequate analgesia in the context of perioperative care	A,C,D,E	3,4
POM_BK_32	Describes the indications for Critical Care admission postoperatively	A,C,E	1,2
POM_BK_33	Describes the components of a safe and effective immediate postoperative plan (e.g. oxygen therapy, frequency and nature of observations, antibiotic prescription, thromboprophylaxis, management of glycaemic control etc.)	A,C,E	1
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BS_16	Recognises limits of competence and seeks advice where appropriate when managing of postoperative complications	A,C,E,M	3,4
POM_BS_17	Plans the transition from intravenous to enteral hydration, nutrition and analgesia where appropriate	C,E	1
POM_BS_18	Manages postoperative nausea and vomiting effectively	A,C,E	1
POM_BS_19	Manages coexisting disease and medications in the immediate postoperative period in ASA 1-3 patients	A,C,E	1
POM_BS_20	Recognises common anaesthetic and surgical complications	A,C,E	1

Postoperative care:			
Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BK_30	Describes the consequences of postoperative malnutrition	C,E	1
POM_BK_31	Describes a patient-centred approach to postoperative analgesia and demonstrates understanding of the importance of providing adequate analgesia in the context of perioperative care	A,C,D,E	3,4
POM_BK_32	Describes the indications for Critical Care admission postoperatively	A,C,E	1,2
POM_BK_33	Describes the components of a safe and effective immediate postoperative plan (e.g. oxygen therapy, frequency and nature of observations, antibiotic prescription, thromboprophylaxis, management of glycaemic control etc.)	A,C,E	1
Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_BS_21	Demonstrates a multidisciplinary approach by ensuring effective handover of care to other professionals	A,C,M	3

Regional

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 duration of Core Level training and that these should be achievable in most general hospitals at this level.

Learning outcomes:

- To become competent in all generic aspects of block performance
- Able to obtain consent for regional anaesthesia from patients
- Create a safe and supportive environment in theatre for awake and sedated patients
- Demonstrate knowledge of the principles of how to perform a number of regional and local anaesthetic procedures
- Be able specifically to perform spinal and lumbar epidural blockade
- Be able to perform some simple upper and lower limb peripheral nerve blocks *under direct supervision*
- Be able to use a peripheral nerve stimulator or ultrasound to identify peripheral nerves
- Demonstrate clear understanding of the criteria for safe discharge of patients from recovery following surgery under regional blockade
- Recognise that they should not attempt blocks until they have received supervised training, and passed the relevant assessments
- Accepts the right of patients to decline regional anaesthesia – even when there are clinical advantages

Core clinical learning outcome:

- Demonstrates safely at all times during performance of blocks including: marking side of surgery and site of regional technique; meticulous attention to sterility; selecting, checking, drawing up, diluting, and the adding of adjuvants, labelling and administration of local anaesthetic agents
- Establish safe and effective spinal and lumbar epidural blockade and manage immediate complications in ASA 1-2 patients under distant supervision
- Ability to establish a simple nerve block safely and effectively

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RA_BK_01	Recalls/describes the anatomy relevant to regional and peripheral blocks identified [Cross ref basic sciences]	A,C,E	1

Knowledge			
Competence	Description	Assessment Methods	GMP
RA_BK_02	Recalls the relevant physiology and pharmacology [including toxicity of local anaesthetic agents, its symptoms, signs and management, including the use of lipid rescue] [Cross ref basic sciences]	A,C,E	1
RA_BK_03	Recalls the relevant physics and clinical measurement related to the use of nerve stimulators in regional anaesthesia [Cross ref basic sciences; physics and clinical measurement]	A,C,E	1
RA_BK_03A	Recalls the relevant basic physics and clinical application of ultrasound to regional anaesthesia [Cross ref basic sciences; physics and clinical measurement] in respect of: <ul style="list-style-type: none"> • The components of an ultrasound machine • The interaction of ultrasound with tissues • Picture optimisation using hand movements, adjustment of depth, gain and focus 	A,C,E	1
RA-BK_04	Discusses the advantages/disadvantages, risks/benefits and indications/contra-indications of regional blockade	A,C,E	1,
RA_BK_05	Describes how to obtain consent from patients undergoing regional blockade	A,C,E	1,2,3,4
RA_BK_06	Outlines the basic functions of an ultrasound machine [including physics [ref Basic Sciences], picture optimisation and probe selection] and how nerves to and in the upper limb can be identified using ultrasound	A,C,E	1
RA_BK_07	Describes the principles of performing the following regional and local anaesthetic procedures: <ul style="list-style-type: none"> • Subarachnoid and Lumbar/caudal epidural blockade • Brachial plexus blocks: axillary, interscalene and supraclavicular • Other more distal upper limb blocks [elbow and wrist] • Lower limb blocks [femoral, sciatic and ankle] • Ilio-inguinal nerve blocks/penile blocks • Ophthalmic blocks [Cross reference to ophthalmic anaesthesia] • Intravenous Regional Anaesthesia [IVRA] 	A,C,D,E	1,2,3,4
RA_BK_08	Demonstrates understanding of the use of continuous epidural infusions and the need to prescribe correctly	A,C,D,E	1
RA_BK_09	Recalls/discusses the complications of spinal and epidural analgesia and their management including, but not exclusively, accidental total spinal blockade and accidental dural tap and post-dural puncture headache	A,C,E	1,2,3,4
RA_BK_10	Describes techniques and complications of other blocks listed in RA_BK_07	A,C,E	1,2
RA_BK_11	Shows understanding of the principles of identification of correct anatomy including the use of nerve stimulators and ultrasound [Cross reference Ultrasound]	A,C,D,E	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RA_BK_12	Outlines the dangers of accidental intravenous administration of local anaesthetic drugs, signs, symptoms and management, including the role of lipid emulsion	A,C,E	1,2,3,4
RA_BK_13	Outlines the management of incomplete or failed regional blockade including, where appropriate, the use of rescue blocks	A,C,D,E	1,2,3,4
RA_BK_14	Demonstrates understanding of the methods of sedation used in conjunction with regional anaesthesia	A,C,D,E	1,2,3,4
RA_BK_15	Recalls/describes absolute and relative contraindications to regional blockade	A,C,E	1,2,3,4
RA_BK_16	Outlines the possible effects regional blockade will have on the patient, list and the theatre staff and how these may be managed	A,C,E	1,2,3,4
RA_BK_17	Lists the advantages and disadvantages of regional anaesthetic techniques for post-operative analgesia	A,C,E	1,2
RA_BK_18	Describes the problems and solutions to obtaining adequate post-operative analgesia in the ward or home [if discharged] setting when the regional anaesthetic wears off	A,C,E	1,2,3,4
RA_BK_19	Understands the need to review patients or contact patient following regional anaesthetic techniques to ensure block has worn off and there are no residual complications	A,C,E	1,2,3
RA_BK_20	Understand the necessity to document the procedure and any complications e.g. paraesthesia, vascular puncture, pneumothorax and record images / video clip if using ultrasound where appropriate or indicated	A,C,E	1,2,3,4
RA_BK_21	Be aware of the use of information leaflets in the decision making process and in the reporting of problems or complications following discharge	A,C,E	1,2,3,4
RA_BK_22	Recalls the relevant basic physics and clinical application of ultrasound to regional anaesthesia [Cross ref basic sciences; physics and clinical measurement] in respect of: <ul style="list-style-type: none"> • The components of an ultrasound machine • The interaction of ultrasound with tissues • Picture optimisation using hand movements, adjustment of depth, gain and focus 	A,C,E	1

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
RA_BS_01	Obtains valid consent for regional blockade, including confirmation and marking of side of operation and site or regional technique where indicated	A,D	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
RA_BS_02	Demonstrates safe and correct checking of the contents of epidural / spinal packs	A,D	1,2
RA_BS_03	Practices safely including: meticulous attention to sterility during performance of blockade; selecting, checking, drawing up, diluting, adding adjuvants, labelling and administration of local anaesthetic agents	A,C,D	1,2,3,4
RA_BS_04	Demonstrates how to undertake a comprehensive and structured pre-operative assessment of patients requiring a subarachnoid blockade, perform the block and manage side effects/complications correctly	A,C,D	1,2,3,4
RA_BS_05	Demonstrates how to undertake a comprehensive and structured pre-operative assessment of patients requiring a lumbar epidural blockade, perform the block and manage side effects/complications correctly	A,C,D	1,2,3,4
RA_BS_06	Recognises which patients are unsuitable for regional blockade	A,C	1,2,3,4
RA_BS_07	Recognises patients in whom a block would be difficult to perform	A,C	1,2,4
RA_BS_08	Demonstrates the management of hypotension, nausea, anxiety and shivering induced by spinal or epidural blockade	A,C,D	1,2,3,4
RA_BS_09	Demonstrates correct post-operative care following spinal or epidural block	A,C,D	1,2,3,4
RA_BS_10	Demonstrates how to use epidural techniques for post-operative pain management	A,C,D	1,2
RA_BS_11	Demonstrates how to perform some simple nerve blocks from amongst the following: <ul style="list-style-type: none"> • Femoral • Ankle • Elbow, wrist and or digital • Rectus sheath • Inguinal • Intercostal • Infiltration techniques 	A,C,D	1,2,3,4
RA_BS_12	Shows how to use sedation correctly during surgery under regional blockade	A,C,D	1,2,3,4
RA_BS_13	Manages patients with combined general and regional anaesthesia	A,C,D	1,2,3,4
RA_BS_14	Shows consideration for the views of patients, surgeons and theatre team with regard to surgery under regional blockade	A,C,D	1,3,4
RA_BS_15	Shows the ability to correctly manage the theatre environment with an awake or sedated patient	A,C,D	1,2,3,4
RA_BS_16	Demonstrates list planning to allow time for the conduct of a block and for it to take effect	A,C,D	1,2,3,4,
RA_BS_17	Shows good communication skills towards the patients and staff during the use of regional blockade	A,C,D	3,4
RA_BS_18	Shows due care and sensitivity to the patient's needs during performance of regional block	A,C,D	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
RA_BS_19	Demonstrates how to identify peripheral nerves using basic ultrasound technology [e.g. the median, radial and ulnar in the arm]	A,C,D	1

Sedation

The use of sedation in clinical practice, particularly in non-theatre areas, is increasing and anaesthetists are frequently asked to oversee its administration. It is essential that CT 1/2 anaesthetic trainees understand what is meant by conscious sedation [“A technique in which the use of a drug or drugs produces a state of depression of the central nervous system enabling treatment to be carried out, but during which verbal contact with the patient is maintained throughout the period of sedation”] and how it is administered safely.

Learning outcomes:

- To gain a fundamental understanding of what is meant by conscious sedation and the risks associated with deeper levels of sedation
- To be able to describe the differences between conscious sedation and deeper levels of sedation, with its attendant risks to patient safety
- Understands the particular dangers associated with the use of multiple sedative drugs especially in the elderly
- To be able to manage the side effects in a timely manner, ensuring patient safety is of paramount consideration at all times
- To be able to safely deliver pharmacological sedation to appropriate patients and recognise their own limitations

Core clinical learning outcome:

- Provision of safe and effective sedation to ASA 1 and 2 adult patients, aged less than 80 years of age using a maximum of two short acting agents

NB: All competencies annotated with the letter ‘E’ can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment Methods	GMP
CS_BK_01	Can explain: <ul style="list-style-type: none"> • What is meant by conscious sedation and why understanding the definition is crucial to patient safety • The differences between conscious sedation and deep sedation and general anaesthesia • The fundamental differences in techniques /drugs used /patient safety • That the significant risks to patient safety associated with sedation technique requires meticulous attention to detail, the continuous presence of a suitably trained individual with responsibility for patient safety, safe monitoring and contemporaneous record keeping 	A,D,E	1,2,3
CS_BK_02	Describes the pharmacology of drugs commonly used to produce sedation	A,C,E	1

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CS_BK_03	Explains the need for and means of monitoring the sedated patient including the use of commonly used sedation scoring systems	A,C,E	1,2
CS_BK_04	Describes how drugs should be titrated to effect and how the use of multiple drugs with synergistic actions can reduce the therapeutic index and hence the margin of safety	A,C,E	1,2
CS_BK_05	Describes the importance of recognising the following when multiple drug techniques are employed: <ul style="list-style-type: none"> Increased potential for adverse outcomes when two or more sedating/analgesic drugs are administered The importance of titrating multiple drugs to effect whilst recognising that the possibility of differing times of onset, peak effect and duration, can result in an unpredictable response Knowledge of each drugs time of onset, peak effect, duration of action and potential for synergism 	A,C,E	1,2,3
CS_BK_06	Can list which sedative drugs should not be given to the elderly [over 80 years of age], with reasons	A,C,E	1,2,3,4
CS_BK_07	Can explain the minimal monitoring required during pharmacological sedation	A,C,E	1
CS_BK_08	Describes the indications for the use of conscious sedation	A,C,E	1,2
CS_BK_09	Describes the risks associated with conscious sedation including [but not exclusively] those affecting the respiratory and cardiovascular systems	A,C,E	1,2
CS_BK_10	Can explain the use of single drug, multiple drug and inhalation techniques	A,C,E	1,2
CS_BK_11	Describes the particular risks of multiple drug sedation techniques	A,C,E	1,2,3
CS_BK_12	Outlines the unpredictable nature of sedation techniques in children [Cross ref paediatrics]	A,C,E	1,2,3
CS_BK_13	Explains the need for robust recovery and discharge criteria when conscious sedation is used for out-patient procedures and the importance of ensuring appropriate escort arrangements are in place [Cross ref day surgery]	A,C,E	1,2,3

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
CS_BS_01	Demonstrates the ability to select patients for whom sedation is an appropriate part of clinical management	A,C,D	1,2,3
CS_BS_02	Demonstrates the ability to explain sedation to patients and to obtain consent	A,D	1,2,3
CS_BS_03	Demonstrates the ability to administer and monitor inhalational sedation to patients for clinical procedures [Cross ref obstetrics]	A,D	1,2,3

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
CS_BS_04	Demonstrates the ability to administer and monitor intravenous sedation to patients for clinical procedures	A,D	1,2,3
CS_BS_05	Demonstrates the ability to recognise and manage the complications of sedation techniques appropriately, including recognition and correct management of loss of verbal responsiveness	A,D	1,2,3

Transfer Medicine

The learning outcomes and competencies listed are those necessary for the first 24 months of anaesthetic training. It is strongly recommended that CT 1/2 trainees complete this unit of training before undertaking intra-hospital transfer with distant supervision. Many of the competencies may be attained whilst gaining training and experience in intensive care.

Learning outcomes:

- Correctly assesses the clinical status of patients and decides whether they are in a suitably stable condition to allow **intra-hospital transfer [only]**
- Gains understanding of the associated risks and ensures they can put all possible measures in place to minimise these risks

Core clinical learning outcome:

- Safely manages the intra-hospital transfer of the critically ill but stable adult patient for the purposes of investigations or further treatment [breathing spontaneously or with artificial ventilation] with distant supervision

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment Methods	GMP
TF_BK_01	Explains the importance of ensuring the patient's clinical condition is optimised and stable prior to transfer	A,C,E	1,2
TF_BK_02	Explains the risks/benefits of intra-hospital transfer	A,C,E	1,2
TF_BK_03	Recalls/describes the minimal monitoring requirements for transfer	A,C,E	1,2,3
TF_BK_04	Lists the equipment [and back up equipment] that is required for intra-hospital transfer	A,C,E	1,2
TF_BK_05	Outlines the physical hazards associated with intra-hospital transfer	A,C,E	1,2
TF_BK_06	Explains the problems caused by complications arising during transfer and the measures necessary to minimise and pre-empt difficulties	A,C,E	1
TF_BK_07	Outlines the basic principles of how the ventilators used for transfer function	A,C,E	1
TF_BK_08	Indicates the lines of responsibility that should be followed during transfer	A,C,E	1,2,3

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
TF_BK_09	Outlines the consent requirements and the need to brief patients in transfer situations	A,C,E	1,2,3,4
TF_BK_10	Outline the issues surrounding the carrying/recording of controlled drugs during transfer	A,C,E	1,2,3
TF_BK_11	Describes the importance of keeping records during transfer	A,C,E	1
TF_BK_12	Outlines the problem of infection and contamination risks when moving an infected patient	A,C,E	1,2
TF_BK_13	Explains how to assess and manage an uncooperative and aggressive patient during transfer	A,C,E	1,2,3,4
TF_BK_14	Understands hospital protocols governing transfer of patients between departments	A,C,E	1
TF_BK_15	Outlines the importance of maintaining communication, when appropriate with the patient and members of the transfer team.	A,C,E	1,2

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
TF_BS_01	Demonstrates the necessary organisational and communication skills to plan, manage and lead the intra- hospital transfer of a stable patient	A,M	1,2,3,4
TF_BS_02	Demonstrates how to set up the ventilator and confirm correct functioning prior to commencing transfer	A,D	1,2
TF_BS_03	Demonstrates safety in securing the tracheal tube securely prior to commencing the movement/transfer	A,D	1,2
TF_BS_04	Demonstrates the ability to calculate oxygen and power requirements for the journey	A,D	1,2
TF_BS_05	Demonstrates safety in securing patient, monitoring and therapeutics before transfer	A,D	1,2,3,4
TF_BK_06	Demonstrates how to check the functioning of drug delivery systems	A,D	2,3
TF_BS_07	Demonstrates appropriate choices of sedation, muscle relaxation and analgesia to maintain the patient's clinical status during transfer	A,C,D,M	1,2
TF_BS_08	Demonstrates the ability to maintain monitoring of vital signs throughout transfer	A,D	1,2
TF_BS_09	Demonstrates the ability to maintain clinical case recording during transfer	C,M	1

Trauma and stabilisation

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

Learning outcomes:

- To understand the basic principles of how to manage patients presenting with trauma
- To recognise immediate life threatening conditions and prioritise their management

Core clinical learning outcome:

- Understands the principles of prioritizing the care of patients with multi-trauma including airway management

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Knowledge			
Competence	Description	Assessment Methods	GMP
MT_BK_01	Explains the principles of the primary and secondary survey in trauma patients	A,C,E	1,2,3
MT_BK_02	Recalls/describes the related anatomy, physiology and pharmacology [cross reference Basic anatomy, physiology and pharmacology sections]	A,C,E	1
MT_BK_03	Recalls/describes the pathophysiological changes occurring in the trauma patient	A,C,E	1
MT_BK_04	Explains the importance of early recognition of and the potential for airway compromise	A,C,E	1,2
MT_BK_05	Explains the importance of correct airway management in the trauma patient	A,C,E	1,2
MT_BK_06	Describes how to recognise and correctly manage hypovolaemia and other causes of shock	A,C,E	1
MT_BK_07	Recalls/describes the indications for invasive cardiovascular monitoring, the relevant anatomy, principles of placement, associated complications and principles of their management	A,C,E	1,2
MT_BK_08	Recalls/discusses the effects of hypothermia, the reasons for its prevention and methods available in trauma patients	A,C,E	1,2

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
MT_BK_09	Explains the importance of correct pain relief in the trauma patient and methods used [from Emergency Dept to post-operatively]	A,C,E	1,2,3
MT_BK_10	Discusses the options available for intravenous access in trauma patients including the intraosseous route	A,C,E	1
MT_BK_11	Understands the importance of preventing hypothermia and acidosis in the trauma patient	A, C, E	1,2,3
MT_BK_12	Describes the correct initial investigations required in the trauma patient	A,C,E	1
MT_BK_13	Describes the imaging requirements in the emergency room [Cross Ref; non-theatre]	A,C,E	1,2
MT_BK_14	Recalls/explains the principles of assessment and management of patients with brain injury [including the use of the Glasgow Coma Scale [GCS]]	A,C,E	1,2
MT_BK_15	Describes the causes and mechanisms for the prevention of secondary brain injury	A,C,E	1
MT_BK_16	Outlines the particular problems associated with patients presenting with actual or potential cervical spine injuries particularly airway management	A,C,E	1,2
MT_BK_17	Describes the principles of the perioperative management of the trauma patient	A,C,E	1,2,3,4
MT_BK_18	Describes how to manage intra-hospital transfer of trauma patients [Cross Ref: transfer medicine]	A,C,E	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
MT_BS_01	Demonstrates how to perform the Primary survey in a trauma patient [S]	A,D,S	1,2
MT_BS_02	Demonstrates correct emergency airway management in the trauma patient including those with actual or potential cervical spine damage [S]	A,D,S	1,2
MT_BS_03	Demonstrates how to manage a tension pneumothorax [Cross Ref: critical incidents] [S]	A,D,S	1
MT_BS_04	Demonstrates how to insert a chest drain [S]	D,S	1
MT_BS_05	Demonstrates assessment of patients with brain injury including the use of the GCS [cross ref Neuroanaesthesia] [S]	A,D,S	1,2
MT_BS_06	Demonstrates the initial resuscitation of patients with trauma and preparation for further interventions including, emergency surgery	A,D	1,2,3,4
MT_BS_07	Demonstrates provision of safe perioperative anaesthetic management of ASA 1 and 2 patients with multiple trauma	A,C,D	1,2,3,4

Skills			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
MT_BS_08	Demonstrates how to perform a secondary survey in a trauma patient	A, D, S	1,2
MT_BS_09	Demonstrates the ability to undertake intra-hospital transfer of patients from the Emergency Dept for further management [e.g. to imaging suite, theatre and/or intensive care] [Cross Ref; transfer medicine]	A,D	1,2,3,4

Basic sciences to underpin anaesthetic practice

Learning Outcomes:

- To gain a good understanding of human anatomy relevant to the safe practice of anaesthesia at core level and to support progress to intermediate level training
- To acquire a sound understanding of human physiology, biochemistry and pharmacology, and to be able to apply this to clinical practice at core level and to support progress to intermediate training.
- To gain a good understanding of the basic principles of physics and clinical measurement; emphasis is on the function of monitoring equipment, equipment safety, and measurement techniques.
- To gain a good understanding of physiological and pharmacological consequences of ageing.

NB: All competencies annotated with the letter 'E' can be examined in any of the components of the Primary 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.

Anatomy

Competence	Description	Assessment Methods	GMP
Demonstrates knowledge of:			
Respiratory system			
AN_BK_01	Mouth, nose, pharynx, larynx, trachea, main bronchi, segmental bronchi, structure of the bronchial tree; age-related changes from the neonate to the adult	A,C,E	1
AN_BK_02	Airway / respiratory tract blood supply and innervation	A,C,E	1
AN_BK_03	Pleura [including surface anatomy], mediastinum and its contents	A,C,E	1
AN_BK_04	Lungs; lobes and microstructure of lungs	A,C,E	1
AN_BK_05	Diaphragm, other muscles of respiration including innervation	A,C,E	1
AN_BK_06	The thoracic inlet and 1st rib	A,C,E	1
AN_BK_07	Interpretation of the normal adult chest x-ray	A,C,E	1
Cardiovascular system			

Anatomy			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
AN_BK_08	Heart - chambers, valves, conducting system and pericardium; blood supply and innervation	A,C,E	1
AN_BK_09	Great vessels, main peripheral arteries and veins	A,C,E	1
Nervous system			
AN_BK_11	Brain and its subdivisions; blood supply	A,C,E	1
AN_BK_12	Spinal cord, structure of spinal cord, major ascending and descending pathways; blood supply	A,C,E	1
AN_BK_13	Anatomical organisation of pain and sensory pathways from the periphery to the central nervous system	A,C,E	1
AN_BK_14	Pain pathways relevant to the stages of obstetric labour and delivery	A,C,E	1
AN_BK_15	Spinal meninges, subarachnoid and extradural space; contents of extradural space	A,C,E	1
AN_BK_16	Anatomy of CSF system	A,C,E	1
AN_BK_17	Spinal nerves; dermatomes; applied knowledge of dermatomes in regional anaesthesia	A,C,E	1
AN_BK_18	Brachial plexus; nerves of the upper limb	A,C,E	1
AN_BK_19	Intercostal nerves	A,C,E	1
AN_BK_20	Nerves of the abdominal wall including innervation of the inguinal region	A,C,E	1
AN_BK_21	Lumbar and sacral plexuses; nerves of the lower limb	A,C,E	1
AN_BK_22	Anatomical organisation of the autonomic nervous system. [See also PR_BK_21]	A,C,E	1
AN_BK_23	Sympathetic innervation, sympathetic chain, ganglia and plexuses	A,C,E	1
AN_BK_24	Parasympathetic innervation; cranial and sacral outflow	A,C,E	1
AN_BK_25	Stellate ganglion	A,C,E	1
AN_BK_26	Cranial nerves	A,C,E	1
AN_BK_27	Innervation of the pharynx and larynx	A,C,E	1
AN_BK_28	Eye and orbit	A,C,E	1
Endocrine system			
AN_BK_29	Functional anatomy of the hypothalamic/pituitary system	A,C,E	1
AN_BK_30	Functional anatomy of the adrenal gland	A,C,E	1

Anatomy			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
AN_BK_31	Functional anatomy of the thyroid and parathyroid glands	A,C,E	1
AN_BK_32	Anatomical organisation of the endocrine pancreas	A,C,E	1
Vertebral column			
AN_BK_33	Cervical, thoracic and lumbar vertebrae	A,C,E	1
AN_BK_34	Sacrum, sacral hiatus	A,C,E	1
AN_BK_35	Ligaments of vertebral column	A,C,E	1
AN_BK_36	Surface anatomy of vertebral spaces; length of spinal cord and subarachnoid space; age-related differences from the neonate to the adult	A,C,E	1
Surface anatomy			
AN_BK_37	Structures in the antecubital fossa	A,C,E	1
AN_BK_38	Structures in the axilla: landmarks for identifying the brachial plexus in the neck and axilla	A,C,E	1
AN_BK_39	Large veins of the neck and the anterior triangle of the neck; surface anatomy and ultrasound demonstrated anatomy relevant to insertion of central venous cannulae	A,C,E	1
AN_BK_40	Large veins of the leg and femoral triangle	A,C,E	1
AN_BK_41	Arteries of the upper and lower limbs	A,C,E	1
AN_BK_42	Landmarks for performance of cricoid pressure and surgical airway procedures	A,C,E	1
AN_BK_43	Landmarks for insertion of intercostal drainage catheters	A,C,E	1

Pharmacology			
<i>Competence</i>	<i>Description</i>		<i>GMP</i>
Demonstrates knowledge of:			
PR_BK_01	Organic chemistry: drugs as organic molecules: types of intermolecular bonds; interactions between molecules; organic compared with inorganic compounds; bond strength; important atomic constituents: C, N, O, P, S and halides	A,C,E	1
PR_BK_02	Organic chemistry: ionization of molecules: type of groups that ionize: amides, hydroxyl, carboxyl. Oxidation and reduction.	A,C,E	1

Pharmacology

Competence	Description		GMP
Demonstrates knowledge of:			
	Permanently charged [quaternary ammonium] drugs.		
PR_BK_03	Drug chemistry: solubility, partition coefficients and movement of drugs through membranes: Lipid solubility; influence of pKa and pH; partition coefficients. Passive and active transport mechanisms	A,C,E	1
PR_BK_04	Isomers: structural and stereoisomers: classification systems; clinical relevance	A,C,E	1
PR_BK_05	Mechanisms of drug action: physicochemical; pharmacodynamic; pharmacokinetic: drug-receptor interactions; dose-response and log[dose]-response curves; agonists, partial agonists, antagonists. Reversible and irreversible antagonism. Potency and efficacy	A,C,E	1
PR_BK_06	Non-specific drug actions: Physicochemical mechanisms: e.g. adsorption; chelation; neutralization	A,C,E	1,2
PR_BK_07	Voltage-gated ion channels; membrane-bound transport pumps. Sodium, potassium and calcium channels as targets for drug action	A,C,E	1,2
PR_BK_08	Receptors as proteins; ion channels; transmembrane transduction and intermediate messenger systems; intracellular/nuclear receptors. Receptor regulation and tachyphylaxis	A,C,E	1
PR_BK_09	Transduction systems as receptors: G-protein coupled receptors [GPCRs] and non-GPCR systems.	A,C,E	1
PR_BK_10	Nuclear receptors: Intracellular hormone receptors. e.g. cytoplasmic receptors for steroids; corticosteroids vs. mineralocorticoid receptors	A,C,E	1
PR_BK_11	Enzymes as drug targets: Michaelis-Menten kinetics. Direct and allosteric mechanisms. e.g. acetylcholinesterase; cyclo-oxygenase; phosphodiesterase	A,C,E	1
PR_BK_12	Anticholinesterases: Classification of drugs that inhibit acetylcholinesterase and plasma cholinesterase including organophosphates	A,C,E	1,2
PR_BK_13	Predictable side effects of drugs: non-selective actions of drugs; action at multiple receptors; multiple anatomical locations; predictable enzyme induction-inhibition	A,C,E	1,2
PR_BK_14	Idiosyncratic side effects of drugs: e.g. blood and bone-marrow dyscrasias; pulmonary fibrosis; anti-platelet effects. Anaphylactic and anaphylactoid reactions: comparison; treatment; identification of responsible drug; risks with polypharmacy	A,C,E	1,2
PR_BK_15	Tachyphylaxis and tolerance: Examples of drugs demonstrating tachyphylaxis; proposed mechanisms. Opioid dependence and tolerance	A,C,E	1,2
PR_BK_16	Drug interactions: Types of interaction: synergism, additivity, antagonism; isobolograms. Classification of mechanisms of drug	A,C,E	1

Pharmacology

Competence	Description		GMP
Demonstrates knowledge of:			
	interaction		
PR_BK_17	Pharmacokinetics: general principles: absorption, distribution and redistribution; elimination, excretion. Chemical properties of drugs and their pharmacokinetics: blood-brain-barrier and placental barrier. Protein binding: plasma and tissue. Body compartments; adipose and vessel-poor tissue. Bioavailability; clearance	A,C,E	1
PR_BK_18	Administration and absorption: routes of administration; first-pass metabolism and bioavailability. Selection of appropriate route. Drug delivery systems: e.g. sustained release, enteric coated, transdermal patch and iontophoretic systems	A,C,E	1
PR_BK_19	Oral administration: Time-course for systemic appearance; factors e.g. pKa, lipid solubility, active transport. Bioavailability of drugs given orally and its measurement	A,C,E	1
PR_BK_20	Drug elimination from plasma. Mechanisms: distribution; metabolism; excretion: exhalation; renal; biliary; sweat; breast milk. Factors affecting e.g.: pathological state: renal and hepatic failure; age, including extremes of age; gender; drug interactions. Active and inactive metabolites; pro-drugs. Enzyme induction and inhibition	A,C,E	1,2
PR_BK_21	Non-enzymatic drug elimination: Hofmann degradation	A,C,E	1
PR_BK_22	Pharmacokinetic modelling: types of models available: one, two and three-compartment models; non-compartmental; physiological. Pharmacokinetic parameters: volume of distribution, half-life and time constant, clearance	A,C,E	1,2
PR_BK_23	Context-sensitive half-time: comparison of drugs e.g. propofol, fentanyl and remifentanyl. Target-controlled infusions [TCI]	A,C,E	1
PR_BK_24	TCI in practice: accuracy, applicability, cost. Variations due to patient differences: predictable and unpredictable	A,C,E	1,2
PR_BK_25	Differences in patient response to therapy: gender; pathology; polypharmacy; in particular, changes occurring with increasing age	A,C,E	1,2
PR_BK_26	Pharmacogenetics: pharmacokinetic variation e.g. pseudocholinesterase; acetylation; CYP450 variants. Poor and fast metabolizers; racial and geographic distribution of common abnormal genes	A,C,E	1,2
PR_BK_27	Volatile and gaseous anaesthetic agents: Structure of available agents. MAC. Clinical effects: CNS [including ICP], CVS, RS. Unwanted effects of individual agents. MH susceptibility; hepatitis risks. Factors affecting onset and offset time. Oil/gas partition coefficient	A,C,E	1
PR_BK_28	Intravenous anaesthetic agents: Chemical classes. Properties of an ideal induction agent. Adverse effects on CNS [including effects on ICP], CVS, RS; pharmacokinetics including metabolism	A,C,E	1,2
PR_BK_29	Mechanisms of general anaesthetic action	A,C,E	1

Pharmacology

Competence	Description		GMP
Demonstrates knowledge of:			
PR_BK_30	Benzodiazepines: classification of action. Clinical actions. Synergism with anaesthetic agents. Antidote in overdose	A,C,E	1,2
PR_BK_31	Local anaesthetic agents. Additional effects, including anti-arrhythmic effects. Mechanism of action. Clinical factors influencing choice: operative site, patient, available agents. Toxicity syndrome; safe clinical and maximum clinical doses; treatment of overdose	A,C,E	1,2
PR_BK_32	Analgesics. Simple analgesics, NSAIDs and opioids. Available routes of administration; peri-operative prescribing; chronic compared with acute pain prescribing	A,C,E	1,2
PR_BK_33	Aspirin and paracetamol. Comparison of structures; indications and contraindications; mechanisms of action. Bioavailability; metabolism; toxicity	A,C,E	1,2
PR_BK_34	Non-steroidal anti-inflammatory analgesics: Classification. Mechanism of action. Clinical effects and uses; unwanted effects, contraindications	A,C,E	1,2
PR_BK_35	Opioid analgesics: Receptor classification. Mechanism of action. Inhibitory effects, sites of action on pain pathways. Unwanted effects. Full and partial agonists and partial agonists. Routes of administration	A,C,E	1,2
PR_BK_36	Muscle relaxants. Classification. Sites of action. Properties of an ideal muscle relaxant. Dantrolene and management of MH	A,C,E	1,2
PR_BK_37	Depolarizing muscle relaxants: Structure, mechanism of action. Organophosphate poisoning. Adverse effects and contraindications	A,C,E	1,2
PR_BK_38	Non-depolarizing muscle relaxants: Structural classification; sub-classification according to onset-time and duration of action. General comparison of aminosteroids and bisbenzyisoquinoliniums. Comparison of individual agents; metabolism and active metabolites. Unwanted effects.	A,C,E	1,2
PR_BK_39	Reversal of neuromuscular blockade: Indications for use; mechanisms of action; clinically unwanted effects of reversal of neuromuscular blockade	A,C,E	1,2
PR_BK_40	Drugs and the autonomic nervous system: anatomy; myelinated and unmyelinated nerves; ganglia and rami communicantes. Neurotransmitters. Sites at which drugs can interfere with autonomic transmission	A,C,E	1
PR_BK_41	Drugs and the sympathetic nervous system: adrenergic receptors and molecular mechanisms of action: Indications for pharmacological use of naturally occurring catecholamines and synthetic analogues. Other classes of drugs active in the sympathetic system: e.g. MAOIs:	A,C,E	1,2
PR_BK_42	Drugs and the parasympathetic nervous system: nicotinic and muscarinic receptors with subgroups. Mechanism of action. Agonists, antagonists. Comparison of available drugs. Hyoscine and antiemesis	A,C,E	1,2

Pharmacology

Competence	Description		GMP
Demonstrates knowledge of:			
PR_BK_43	Cardiovascular system: general: drug effects on the heart [inotropy and chronotropy] and on the circulation: arterial and venous effects; systemic and pulmonary effects	A,C,E	1
PR_BK_44	Inotropes and pressors: Classification; site of action. Synthetic inotropes compared with adrenaline	A,C,E	1,2
PR_BK_45	Drugs used in ischaemic heart disease: Classification of drugs used. Mechanisms of drug action. Unstable angina	A,C,E	1,2
PR_BK_46	Antiarrhythmics: Classification. Indications for use, including use in resuscitation	A,C,E	1,2
PR_BK_47	Hypotensive agents: Classes of drugs to produce acute hypotension in theatre. Therapeutic antihypertensive agents: classification according to mechanism of action. Adverse effects of drugs in each class	A,C,E	1,2
PR_BK_48	Anticoagulants: oral and parenteral. Sites of action; indications use; monitoring effect. Comparison of heparins: unfractionated and fractionated. Newer anticoagulants	A,C,E	1,2
PR_BK_49	Antiplatelet agents. Perioperative management of antiplatelet medication	A,C,E	1,2
PR_BK_50	Pro-coagulants: Drugs. Individual factor concentrates; multi-factor preparations including FFP; vitamin K	A,C,E	1,2
PR_BK_51	Colloids, including blood and blood products: Composition of preparations; safe use and avoidance of errors	A,C,E	1,2
PR_BK_52	Crystalloid fluids: Composition; suitable fluids for maintenance and replacement of losses. Comparison with colloids; unwanted effects	A,C,E	1,2
PR_BK_53	Respiratory system: general: Classes of drugs acting on the respiratory tract including bronchodilators; oxygen; surfactant; mucolytics; pulmonary vasodilators. Methods of administration; indications for use; mechanisms of action; adverse effects	A,C,E	1,2
PR_BK_54	Respiratory system: drugs used in acute severe asthma and chronic asthma; volatile agents. Mechanisms of action	A,C,E	1,2
PR_BK_55	Gastrointestinal system: general: antisialogogues; drugs reducing gastric acidity; drug effects on the GI tract including gastric and bowel motility	A,C,E	1,2
PR_BK_56	Antiemetics: Anatomical sites for antiemetic action; central and peripheral inputs to vomiting centre; use of dexamethasone	A,C,E	1,2
PR_BK_57	Renal system: diuretics: Classification of diuretics. Unwanted effects; indications for use	A,C,E	1,2
PR_BK_58	CNS: antiepileptic agents: Mechanisms of action; unwanted side effects	A,C,E	1,2
PR_BK_59	CNS: antidepressants: Classes of drug: anaesthetic relevance	A,C,E	1,2
PR_BK_60	Therapy for diabetes mellitus: Drugs used in type 1 and type 2 diabetes: Insulins: classification of types available; routes of administration; perioperative management. Unwanted effects and risks and therapy of hypo- or hyperglycaemia	A,C,E	1,2

Pharmacology

Competence	Description		GMP
Demonstrates knowledge of:			
PR_BK_61	Hormones: corticosteroids: Indications for use; clinical effects; long-term complications of glucocorticoid use	A,C,E	1,2
PR_BK_63	Hormones: treatment of thyroid disorders: Synthesis and release of thyroid hormones. Preparations used in hyper- and hypo-thyroidism	A,C,E	1,2
PR_BK_64	CNS stimulants; classes, mechanisms of action, uses in anaesthesia	A,C,E	1,2
PR_BK_65	RS stimulants including theophyllines, doxapram	A,C,E	1,2
PR_BK_66	Antimicrobial agents: general classification: Types of antimicrobial agents: antiviral; antibacterial; antifungal; bacteriostatic and bacteriocidal. Mechanism of action. Indications for use of different classes of antibiotics. Bacterial resistance	A,C,E	1,2
PR_BK_67	Effects of drugs on the eye and vision; includes intra-ocular pressure	A,C,E	1.2
PR_BK_68	Social drugs including tobacco, alcohol and non-legal drugs: anaesthetic relevance	A,C,E	1.2

Physiology and Biochemistry

Competence	Description	Assessment Methods	GMP
Demonstrates knowledge of:			
GENERAL			
PB_BK_01	Organization of the human body and control of internal environment	A,C,E	1
PB_BK_02a	Changes at birth and in early life	A,C,E	1
PB_BK_02b	Changes with advancing age	A,C,E	1
PB_BK_03	Cells; components and organelles	A,C,E	1
PB_BK_04	Function of cells; genes and their expression	A,C,E	1
PB_BK_05	Cell membrane characteristics; cell junctions, receptors	A,C,E	1
PB_BK_06	Protective mechanisms of the body	A,C,E	1
BIOCHEMISTRY			

Physiology and Biochemistry

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
PB_BK_07	Definition of pH. Strong and weak acids.	A,C,E	1
PB_BK_08	Acid base balance. Includes buffers, Henderson-Hasselbalch equation and anion gap	A,C,E	1
PB_BK_09	Ions e.g. Na ⁺ , K ⁺ , Ca ⁺⁺ , Mg ⁺⁺ , Cl ⁻ , HCO ₃ ⁻	A,C,E	1
PB_BK_10	Cellular metabolism; aerobic vs anaerobic	A,C,E	1
PB_BK_11	Enzymes	A,C,E	1
BODY FLUIDS AND THE FUNCTIONS AND CONSTITUENTS			
PB_BK_12	Capillary dynamics and interstitial fluid; osmosis, filtration and convection	A,C,E	1
PB_BK_13	Osmolarity: osmolality, partition of fluids across membranes, tonicity	A,C,E	1
PB_BK_14	Lymphatic system	A,C,E	1
PB_BK_15	Special fluids especially cerebrospinal fluid: also pleural, pericardial and peritoneal fluids	A,C,E	1
PB_BK_16	Active cellular transport mechanisms	A,C,E	1
HAEMATOLOGY AND IMMUNOLOGY			
PB_BK_17	Blood: physical properties, components, functions	A,C,E	1
PB_BK_18	Red blood cells: production and turnover, haematinics, haemoglobin and its variants including abnormal haemoglobins eg thalassaemia, HbS	A,C,E	1
PB_BK_19	Anaemia: acute and chronic adaptations – Iron absorption, transportation, metabolism	A,C,E	1
PB_BK_20	Polycythaemia: causes and implications	A,C,E	1
PB_BK_21	Blood groups: ABO, Rhesus, others	A,C,E	1
PB_BK_22	Transfusion reactions; rhesus incompatibility	A,C,E	1
PB_BK_23	Haemostasis and coagulation, fibrinolysis – including abnormalities, congenital and acquired	A,C,E	1
PB_BK_24	Alternative oxygen carrying solutions	A,C,E	1
PB_BK_25	White blood cells: types, origins, characteristics, turnover	A,C,E	1
PB_BK_26	The inflammatory response, systemic inflammatory responses, hypersensitivity reactions	A,C,E	1
PB_BK_27	Immunity and allergy; innate vs acquired, non-specific vs specific, humoral vs cellular	A,C,E	1

Physiology and Biochemistry

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
PB_BK_28	Immunodeficiency – congenital and acquired	A,C,E	1
MUSCLE			
PB_BK_29	Action potential generation and its transmission	A,C,E	1
PB_BK_30	Neuromuscular junction and transmission, motor end-plate	A,C,E	1
PB_BK_31	Disturbances of neuromuscular transmission	A,C,E	1
PB_BK_32	Myopathies – congenital and acquired	A,C,E	1
PB_BK_33	Muscle contracture – malignant hyperthermia, myoclonus, burns	A,C,E	1
PB_BK_34	Muscle types; skeletal, smooth, cardiac	A,C,E	1
PB_BK_35	Skeletal muscle excitation-contraction coupling	A,C,E	1
PB_BK_36	Smooth muscle contraction: sphincters	A,C,E	1
PB_BK_37	Motor unit concept	A,C,E	1
HEART/CIRCULATION			
PB_BK_38	Cardiac muscle contraction	A,C,E	1
PB_BK_39	The cardiac cycle: pressure volume relationships, work and power	A,C,E	1
PB_BK_40	Rhythmicity of the heart; cardiac impulse generation	A,C,E	1
PB_BK_41	Regulation of cardiac function; general and cellular	A,C,E	1
PB_BK_42	Control of cardiac output [including Starling relationship]	A,C,E	1
PB_BK_43	Fluid challenge and heart failure, types of shock	A,C,E	1
PB_BK_44	Electrocardiogram and arrhythmias, origin of ECG, effects of temperature, ischaemia, infarction and electrolyte imbalance	A,C,E	1
PB_BK_45	Neurological and humoral control of systemic blood pressures, blood volume and blood flow [at rest and during physiological disturbances e.g. exercise, haemorrhage and Valsalva manoeuvre]	A,C,E	1
PB_BK_46	Peripheral circulation: capillaries, vascular endothelium and arteriolar smooth muscle	A,C,E	1
PB_BK_47	Functions of endothelium	A,C,E	1
PB_BK_48	Characteristics of special circulations including: pulmonary, coronary, cerebral, renal, portal, transitional and fetal	A,C,E	1

Physiology and Biochemistry

Competence	Description	Assessment Methods	GMP
Demonstrates knowledge of:			
RENAL TRACT			
PB_BK_49	Structure and function, renal circulation	A,C,E	1
PB_BK_50	Blood flow and glomerular filtration, plasma clearance and tubulo-glomerular feedback	A,C,E	1
PB_BK_51	Tubular function and urine formation; transport processes	A,C,E	1
PB_BK_52	Assessment of renal function	A,C,E	1
PB_BK_53	Regulation of water and electrolyte [Na ⁺ , K ⁺ , Ca ⁺⁺ , Mg ⁺⁺ , PO ₄ ⁻ ,] balance; response to fluid loss /hypovolaemia. Role of urea and creatinine measurement.	A,C,E	1
PB_BK_54	Regulation of acid-base balance	A,C,E	1
PB_BK_55	Micturition	A,C,E	1
PB_BK_56	Pathophysiology of acute renal failure	A,C,E	1
RESPIRATION			
PB_BK_57	Gaseous exchange: O ₂ and CO ₂ transport, hypoxia and hyper- and hypocapnia, hyper- and hypobaric pressures	A,C,E	1
PB_BK_58	Function of haemoglobin in oxygen carriage and acid-base equilibrium	A,C,E	1
PB_BK_59	Pulmonary ventilation: volumes, capacities, flows, dead space, compliance, work of breathing	A,C,E	1
PB_BK_60	Effect of IPPV on lungs	A,C,E	1
PB_BK_61	Mechanics of ventilation: ventilation/perfusion abnormalities, regional V/Q, surfactant	A,C,E	1
PB_BK_62	Control of breathing, acute and chronic ventilatory failure, effect of oxygen therapy	A,C,E	1
PB_BK_63	Effects of altitude	A,C,E	1
PB_BK_64	Non-respiratory functions of the lungs	A,C,E	1
NERVOUS SYSTEM			
PB_BK_65	Neuronal structure and function	A,C,E	1
PB_BK_66	Resting membrane potential, action potentials, conduction, synaptic mechanisms, actions of neurotransmitters	A,C,E	1
PB_BK_67	The brain: functional divisions	A,C,E	1
PB_BK_68	Brain stem; organization, interconnections	A,C,E	1

Physiology and Biochemistry

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
PB_BK_69	Intracranial pressure: cerebrospinal fluid, blood flow	A,C,E	1
PB_BK_70	Maintenance of posture	A,C,E	1
PB_BK_71	Autonomic nervous system; organization, ganglia, adrenergic vs cholinergic	A,C,E	1
PB_BK_72	Neurological reflexes: monosynaptic, polysynaptic, stretch, inhibition	A,C,E	1
PB_BK_73	Motor function: basal ganglia, spinal and peripheral	A,C,E	1
PB_BK_74	Sense: receptors, nociception, proprioception, sight, taste, smell, hearing, balance, touch, temperature	A,C,E	1
PB_BK_75	Pain: afferent nociceptive pathways, dorsal horn, peripheral and central mechanisms, neuromodulatory systems, supraspinal mechanisms, visceral pain, neuropathic pain, influence of therapy on nociceptive mechanisms	A,C,E	1
PB_BK_76	Spinal cord: anatomy and blood supply, effects of spinal cord section	A,C,E	1
PB_BK_77	Nausea and vomiting	A,C,E	1
LIVER			
PB_BK_78	Functional anatomy and blood supply, immunological functions	A,C,E	1
PB_BK_79	Metabolic and digestive functions	A,C,E	1
GASTROINTESTINAL			
PB_BK_80	Gastric function; secretions, nausea and vomiting	A,C,E	1
PB_BK_81	Gut motility, sphincters and reflex control – neurohumoral integration	A,C,E	1
PB_BK_82	Digestive functions; composition of secretions; digestion of carbohydrates, lipids, proteins, vitamins, minerals	A,C,E	1
PB_BK_83	Immune functions	A,C,E	1
METABOLISM			
PB_BK_84	Energy homeostasis. Energy balance and nutritional status. Body mass/composition: body mass index, body fat estimation. Functional measurements: e.g. handgrip strength, work/exercise capacity. Biochemical measurements. Immune function.	A,C,E	1
PB_BK_85	Principles of nutrition: carbohydrates, fats, proteins, vitamins and minerals. Energy requirements/expenditure and measurement.	A,C,E	1
PB_BK_86	Metabolic pathways, energy production and enzymes; metabolic rate; lactate metabolism	A,C,E	1

Physiology and Biochemistry

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
PB_BK_87	Hormonal control of metabolism: regulation of plasma glucose, response to trauma	A,C,E	1
PB_BK_88	Physiological alterations in starvation, obesity [including normal and abnormal BMI ranges], exercise and the stress response.	A,C,E	1
PB_BK_89	Body temperature and its regulation, [including differences at extremes of age]	A,C,E	1
ENDOCRINOLOGY			
PB_BK_90	Hormones; types, receptors, heirarchy, extracellular signalling	A,C,E	1
PB_BK_91	Mechanisms of hormonal control; feedback mechanisms, effects on membrane and intracellular receptors	A,C,E	1
PB_BK_92	Hypothalamic and pituitary function	A,C,E	1
PB_BK_93	Adrenocortical hormones	A,C,E	1
PB_BK_94	Adrenal medulla; adrenaline and noradrenaline	A,C,E	1
PB_BK_95	Pancreas; insulin, glucagons and exocrine function	A,C,E	1
PB_BK_96	Thyroid and parathyroid hormones and calcium homeostasis	A,C,E	1
PREGNANCY			
PB_BK_97	Physiological changes associated with pregnancy	A,C,E	1
PB_BK_98	Materno-fetal, fetal and neonatal circulation	A,C,E	1
PB_BK_99	Function of placenta; placental transfer	A,C,E	1
PB_BK_100	Fetus; physiological changes at birth	A,C,E	1
PB_BK_101	Lactation	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_BK_01	Mathematical concepts: relationships and graphs	A,C,E	1
PC_BK_02	Exponential functions including wash-in, wash-out, tear-away	A,C,E	1

Physics and Clinical Measurement

Competence	Description	Assessment Methods	GMP
Demonstrates knowledge of:			
PC_BK_03	Logarithms	A,C,E	1
PC_BK_04	Area under the curve [integration] and rate of change [differentiation]	A,C,E	1
PC_BK_05	Basic measurement concepts relevant to understanding of monitoring in anaesthesia: <ul style="list-style-type: none"> • linearity • drift • hysteresis • signal to noise ratio • static and dynamic response 	A,C,E	1
PC_BK_06	Electrolyte solutions [also drug doses]: conversion between units e.g. molar, mg/ml, %	A,C,E	1
PC_BK_07	SI Units: fundamental units and derived units	A,C,E	1
PC_BK_08	Other non SI units relevant to anaesthesia: including mmHg, bar, atmospheres, cm H ₂ O, psi	A,C,E	1
PC_BK_09	Simple mechanics: mass, force, work, energy, power	A,C,E	1
PC_BK_10	Heat: including temperature, absolute zero	A,C,E	1
PC_BK_11	Heat transfer and loss: conduction, convection, radiation, evaporation	A,C,E	1
PC_BK_12	Temperature measurement: including Hg, alcohol, infrared, thermistor, thermocouple, Bourdon gauge, liquid crystal. Anatomical sites used for measurement	A,C,E	1
PC_BK_13	Latent heats, triple point of water	A,C,E	1
PC_BK_14	Patient warming systems: principles	A,C,E	1
PC_BK_15	Warming equipment for intravenous fluids: principles	A,C,E	1
PC_BK_16	Laws of thermodynamics; mechanical equivalent of heat	A,C,E	1
PC_BK_17	Humidity, absolute and relative; including measurement	A,C,E	1
PC_BK_18	Colligative properties: osmolarity, osmolality, osmometry, diffusion	A,C,E	1
PC_BK_19	Physics of gases. Gas Laws: kinetic theory of gases, Boyles, Henry's, Dalton, Charles, Gay-Lussac	A,C,E	1
PC_BK_20	Critical temperature, critical pressure	A,C,E	1
PC_BK_21	Physics of vapours	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_BK_22	Pressure: absolute and relative pressure; gauge pressure	A,C,E	1
PC_BK_23	Manufacture and storage of gases and vapours, safety	A,C,E	1
PC_BK_24	Cylinders and pipelines, Bourdon gauge	A,C,E	1
PC_BK_25	Suction devices	A,C,E	1
PC_BK_26	Scavenging devices	A,C,E	1
PC_BK_27	Measurement of lung volumes and diffusion	A,C,E	1
PC_BK_28	Density and viscosity of gases	A,C,E	1
PC_BK_29	Laminar and turbulent flow: Hagen-Poiseuille equation, Reynold's number, examples including helium	A,C,E	1
PC_BK_30	Measurement of volume and flow in gases and liquids, including pneumotachograph and other respirometers	A,C,E	1
PC_BK_31	Bernoulli principle	A,C,E	1
PC_BK_32	Venturi effect and entrainment devices	A,C,E	1
PC_BK_33	Vapour pressure: saturated vapour pressure	A,C,E	1
PC_BK_34	Vaporisation: process of vaporisation	A,C,E	1
PC_BK_35	Vaporisers: principles, including plenum and draw-over, temperature compensation, concentration	A,C,E	1
PC_BK_36	Principles of surface tension	A,C,E	1
PC_BK_37	Basic concepts of electricity and magnetism	A,C,E	1
PC_BK_38	Electrical voltage, AC and DC current, resistance, impedance	A,C,E	1
PC_BK_39	Electrical circuits: series and parallel	A,C,E	1
PC_BK_40	Symbols of basic components of electrical circuits	A,C,E	1
PC_BK_41	Capacitance, inductance	A,C,E	1
PC_BK_42	Wheatstone bridge: principles, uses	A,C,E	1
PC_BK_43	Electrical hazards: causes and prevention	A,C,E	1
PC_BK_44	Electrocution: including microshock, earth faults, leakage	A,C,E	1
PC_BK_45	Electrical equipment safety: domestic and medical, classification/types of equipment, symbols	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_BK_46	Circuit breakers, fuses	A,C,E	1
PC_BK_47	Transformers, inductance	A,C,E	1
PC_BK_48	Transistors, diodes	A,C,E	1
PC_BK_49	Amplifiers: band width, low pass, high pass, band pass filters	A,C,E	1
PC_BK_50	ECG: principles including electrodes and electrode placement	A,C,E	1
PC_BK_51	Fourier analysis	A,C,E	1
PC_BK_52	Amplification of biological signals: including ECG, EMG, EEG, BIS, CFM, CFAM	A,C,E	1
PC_BK_53	Piezo-electric devices	A,C,E	1
PC_BK_54	Electrical interference: sources, methods of reduction	A,C,E	1
PC_BK_55	Processing, storage, display of physiological measurements	A,C,E	1
PC_BK_56	Transducers and strain gauges	A,C,E	1
PC_BK_57	Lasers: basic principles and safety	A,C,E	1
PC_BK_58	Ultrasound: basic principles of ultrasound	A,C,E	1
PC_BK_59	Demonstrates knowledge of the physics relevant to optical fibres	A,C,E	1
PC_BK_60	Doppler effect, principle and clinical application	A,C,E	1
PC_BK_61	Cardiac pacemakers: principles and classification	A,C,E	1
PC_BK_62	Defibrillators and defibrillation: principles, including thoracic impedance, monophasic, multiphasic, implantable devices	A,C,E	1
PC_BK_63	Diathermy: monopolar, bipolar; safety and uses	A,C,E	1
PC_BK_64	Pressure transducers	A,C,E	1
PC_BK_65	Resonance, damping, frequency response	A,C,E	1
PC_BK_66	Plenum systems: warming blankets, theatre and anaesthetic room ventilation	A,C,E	1
PC_BK_67	Breathing systems: Maplesons' classification, coaxial systems, circle systems, T-piece; resuscitation breathing devices	A,C,E	1
PC_BK_68	Ventilators: principles, including pressure and flow generators, cycling, minute volume dividers, jet and oscillator ventilators	A,C,E	1
PC_BK_69	Disconnection: monitoring of patient ventilatory disconnection	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_BK_70	CO ₂ absorption: chemistry, complications	A,C,E	1
PC_BK_71	Capnography	A,C,E	1
PC_BK_72	Pulse oximetry	A,C,E	1
PC_BK_73	Fires and explosions: risks and prevention	A,C,E	1
PC_BK_74	Measurement of gas pressures	A,C,E	1
PC_BK_75	Blood pressure: direct and indirect measurement	A,C,E	1
PC_BK_76	Pulmonary artery pressure measurement	A,C,E	1
PC_BK_77	Cardiac output: principles of measurement	A,C,E	1
PC_BK_78	Measurement of gas and vapour concentrations: e.g. infra-red, paramagnetic, fuel cell, oxygen electrode, mass spectrometry	A,C,E	1
PC_BK_79	Measurement of pH, PCO ₂ , PO ₂ , electrolytes	A,C,E	1
PC_BK_80	Derived blood gas variables, e.g. HCO ₃ a, HCO ₃ s, BE. Siggaard-Andersen nomogram	A,C,E	1
PC_BK_81	Measurement of CO ₂ production, oxygen consumption, respiratory quotient	A,C,E	1
PC_BK_82	Simple tests of pulmonary function: peak flow rate, spirometry	A,C,E	1
PC_BK_83	Measurement of perfusion: coronary, cerebral, splanchnic, renal	A,C,E	1
PC_BK_84	Assessment of neuromuscular blockade	A,C,E	1
PC_BK_85	Infusion pumps and syringe drivers; including PCA drivers and epidural infusion devices: principles, use, safety, and relevant drug infusion calculations	A,C,E	1
PC_BK_86	Environmental monitoring: contamination by anaesthetic gases and vapours	A,C,E	1
PC_BK_87	Minimum monitoring standards	A,C,E	1
PC_BK_88	Understanding the limits of monitoring equipment	A,C,E	1
PC_BK_89	Principles of calibration of monitoring equipment	A,C,E	1
PC_BK_90	Principles of hygiene, including cleaning and sterilisation of equipment	A,C,E	1

Statistical Methods

Learning Outcomes:

- To understand the basis of statistical concepts
- To understand the statistical background to measurement error and statistical uncertainty

Knowledge			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
Demonstrates knowledge of:			
Data Collection			
SM_BK_01	Recalls the simple aspects of study design	A,C,E	1
SM_BK_02	Explains the outcomes measures and the uncertainty in their definition	A,C,E	1
SM_BK_03	Explains the basis of meta-analysis and evidence based medicine	A,C,E	1
Descriptive statistics			
SM_BK_04	Recalls the types of data and their representation	A,C,E	1
SM_BK_05	Explains the normal distribution as an example of parametric distribution	A,C,E	1
SM_BK_06	Explains indices of central tendency and variability	A,C,E	1
Deductive and inferential statistics			
SM_BK_07	Recalls simple probability theory and the relationship to confidence values	A,C,E	1
SM_BK_08	Explains the null hypothesis	A,C,E	1
SM_BK_09	Explains the choices for simple statistical tests for different types of data	A,C,E	1
SM_BK_10	Recalls type I and type II errors	A,C,E	1

Assessments to be used for the Initial Assessment of Competence

A-CEX	
<i>Assessment Code</i>	<i>Assessment</i>
IAC_A01	Preoperative assessment of a patient who is scheduled for a routine operating list [not urgent or emergency] [0-3 months]
IAC_A02	Manage anaesthesia for a patient who is not intubated and is breathing spontaneously [0-3 months]
IAC_A03	Administer anaesthesia for acute abdominal surgery [0-3 months]
IAC_A04	Demonstrate Rapid Sequence Induction [0-3 months]
IAC_A05	Recover a patient from anaesthesia [0-3 months]

DOPS	
<i>Assessment Code</i>	<i>Assessment</i>
IAC_D01	Demonstrate functions of the anaesthetic machine [0-3 months]
IAC_D02	Transfer a patient onto the operating table and position them for surgery [lateral, Lloyd Davis or lithotomy position] [0-3 months]
IAC_D03	Demonstrate cardio-pulmonary resuscitation on a manikin. [0-3 months]
IAC_D04	Demonstrates technique of scrubbing up and donning gown and gloves. [0-3 months]
IAC_D05	Core Competencies for Pain Management – manages PCA including prescription and adjustment of machinery [0-3 months]
IAC_D06	Demonstrates the routine for dealing with failed intubation on a manikin.

CBD	
Examine the case-notes. Discuss how the anaesthetic plan was developed. Ask the trainee to explain their approach to pre-op preparation, choice of induction, maintenance, post op care. Select each one of the following topics and discuss the trainees understanding of the issues in context.	
<i>Assessment Code</i>	<i>Assessment</i>
IAC_C01	Discuss the steps taken to ensure correct identification of the patient, the operation and the side of operation
IAC_C02	Discuss how the need to minimise postoperative nausea and vomiting influenced the conduct of the anaesthetic
IAC_C03	Discuss how the airway was assessed and how difficult intubation can be predicted
IAC_C04	Discuss how the choice of muscle relaxants and induction agents was made
IAC_C05	Discuss how the trainee's choice of post-operative analgesics was made
IAC_C06	Discuss how the trainee's choice of post-operative oxygen therapy was made
IAC_C07	Discuss the problems emergency intra-abdominal surgery causes for the anaesthetist and how the trainee dealt with these
IAC_C08	Discuss the routine to be followed in the case of failed intubation.

The Initial Assessment of Competence Certificate is available for download from the secure area of the College website.

Assessments for the Initial Assessment for Competence in Obstetric Anaesthesia

A-CEX	
<i>Assessment Code</i>	<i>Assessment</i>
OB_BTC_A01	Core Competencies for Obstetric Anaesthesia – conduct epidural analgesia for labour [12-24 months]
OB_BTC_A02	Core Competencies for Obstetric Anaesthesia – conduct regional anaesthesia for caesarean section [12-24 months]
OB_BTC_A03	Core Competencies for Obstetric Anaesthesia – conduct general anaesthesia for caesarean section [12-24 months][S]

DOPS	
<i>Assessment Code</i>	<i>Assessment</i>
OB_BTC_D01	Core Competencies for Obstetric Anaesthesia – top up epidural for labour analgesia [12-24 months]
OB_BTC_D02	Core Competencies for Obstetric Anaesthesia – top up epidural for caesarean section [12-24 months]
OB_BTC_D03	Core Competencies for Obstetric Anaesthesia – Perform spinal anaesthesia [12-24 months]

CBD	
Examine the case-notes. Discuss how the anaesthetic plan was developed. Ask the trainee to explain their approach to pre-op preparation, choice of induction, maintenance, post op care. Select each one of the following topics and discuss the trainees understanding of the issues in context	
<i>Assessment Code</i>	<i>Assessment</i>
OB_BTC_C01	Discuss how changes in the anatomy and physiology due to pregnancy influenced the conduct of anaesthesia
OB_BTC_C02	Discuss whether pregnancy influenced the choice of drugs used during anaesthesia
OB_BTC_C03	Discuss how the conduct of general anaesthesia is affected by late pregnancy
OB_BTC_C04	Examine the case records of a patient that the trainee has anaesthetised for operative delivery in a situation where major haemorrhage might be expected. Discuss the factors that influence the likelihood of major obstetric haemorrhage, the precautions that should be taken to deal with it and the principles of its management.
OB_BTC_C05	Examine the case records of a patient with pregnancy associated hypertension that the trainee has treated. Discuss how this influences anaesthetic management.
OB_BTC_C06	Examine the case records of a patient for whom the trainee provided extradural analgesia for normal labour. Discuss the methods of pain relief available for normal delivery.

The obstetric core test of competence certificate can be downloaded from the secure area of the College website.

Blueprint of the Primary FRCA examination mapped against the core level units of training

Unit of Training	MCQ	OSCE	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	√	√		√
Sedation	√	√	√	√
Paediatrics including child protection	√	√	√	√
Pain medicine	√	√	√	√
Perioperative medicine	√	√	√	√
Regional	√	√	√	√
Trauma and stabilisation	√	√		√
Anatomy	√	√		
Physiology and biochemistry	√	√	√	√***
Pharmacology	√	√	√	√***
Physics and Clinical measurement	√	√		√
Statistical methods	√			√

OSCE: * Communicates risk information, and risk-benefit trade-offs, in ways appropriate for individual patients.

SOE1: ** All the drugs patients may be on preoperatively. SOE2: *** Partially covered

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

Domain	MCQ	OSCE	SOE 1	SOE 2
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				√

Blueprint for workplace based assessments against the core level units of training

Unit of Training	A-CEX	ALMAT	CBD	DOPS
Introduction to anaesthesia				
Preoperative assessment	√		√	√
History taking	√		√	√
Clinical examination	√		√	√
Investigations	√		√	
Specific anaesthetic evaluation	√		√	√
Premedication	√		√	√
Induction of general anaesthesia	√		√	√
Intra-operative care	√		√	√
Postoperative and recovery room care	√		√	√
Perioperative management of emergency patients	√		√	√
Management of respiratory and cardiac arrest in adults and children	√		√	√
Control of infection	√		√	√
Core anaesthesia				
Airway management	√		√	√
Critical incidents	√		√	√
Day surgery	√		√	√
General, urological and gynaecological surgery	√	√	√	√
Head, neck, maxillo-facial and dental surgery	√		√	√
Intensive care medicine	See Annex F			
Non-theatre	√		√	√
Obstetrics	√		√	√
Orthopaedic surgery	√		√	√
Paediatrics	√		√	√
Child protection	√		√	√
Pain medicine	√		√	√
Regional	√		√	√
Perioperative medicine	√		√	√
Sedation	√		√	√
Transfer medicine	√		√	√
Trauma and stabilisation	√		√	√

