

# CCT in Anaesthetics

## Annex C Intermediate Level Training

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## Glossary of terms

|                       |  |
|-----------------------|--|
| <b>ALI</b>            | Acute Lung Injury                                      |
| <b>ALS</b>            | Advanced Life Support                                  |
| <b>APACHE</b>         | Acute Physiology and Chronic Health Evaluation (Score) |
| <b>APLS</b>           | Advanced Paediatric Life Support                       |
| <b>ARDS</b>           | Acute Respiratory Distress Syndrome                    |
| <b>ASA</b>            | American Society of Anesthesiologists                  |
| <b>ASD</b>            | Atrial septal defect                                   |
| <b>AV</b>             | Aortic Valve   |
| <b>BE</b>             | Base excess  |
| <b>BIS</b>            | Bispectral index                                       |
| <b>BP</b>             | Blood pressure   |
| <b>BMI</b>            | Body mass index  |
| <b>BNF</b>            | British national formulary                             |
| <b>CFAM</b>           | Cerebral function analysis monitor                     |
| <b>CFM</b>            | Cerebral function monitor                              |
| <b>CO<sub>2</sub></b> | Carbon dioxide   |
| <b>COPD</b>           | Chronic Obstructive Pulmonary Disease                  |
| <b>CPEX</b>           | Cardiopulmonary exercise testing                       |
| <b>CSE</b>            | Combined Spinal Epidural                               |
| <b>CSF</b>            | Cerebro spinal fluid                                   |
| <b>CSM</b>            | Committee on Safety of Medicines                       |
| <b>CT</b>             | Computerised tomograms                                 |
| <b>CVP</b>            | Central venous pressure                                |
| <b>ECG</b>            | Electrocardiogram                                      |
| <b>ECHO</b>           | Echocardiogram   |
| <b>EEG</b>            | Electroencephalogram                                   |
| <b>EMG</b>            | Electromyogram   |
| <b>ENT</b>            | Ear, Nose and Throat                                   |
| <b>EPLS</b>           | European Paediatric Life Support                       |
| <b>ERPC</b>           | Evacuation of Retained Products of Conception          |
| <b>GCS</b>            | Glasgow Coma Score                                     |
| <b>GMC</b>            | General Medical Council                                |
| <b>Hb</b>             | Haemoglobin  |
| <b>IAC</b>            | Initial assessment of competence                       |
| <b>IDD</b>            | Intrathecal drug delivery                              |
| <b>IPPV</b>           | Intermittent positive pressure ventilation             |
| <b>IRMER</b>          | Ionisation Radiation (Medical Exposure) Regulations    |
| <b>IT</b>             | Information technology                                 |
| <b>IVRA</b>           | Intravenous Regional Anaesthesia                       |
| <b>LiDCO™</b>         | Lithium indicator dilution cardiac output              |

|                        |   |
|------------------------|---|
| <b>MAC</b>             | Minimum alveolar concentration  |
| <b>MH</b>              | Malignant hyperpyrexia  |
| <b>MRI</b>             | Magnetic resonance imaging  |
| <b>NAI</b>             | Non-accidental Injury   |
| <b>NCEPOD</b>          | National Confidential Enquiry into Perioperative Deaths                               |
| <b>NICE</b>            | National Institute for Health and Clinical Excellence                                 |
| <b>NO</b>              | Nitric oxide  |
| <b>NSAID</b>           | Non-steroid anti-inflammatory drug  |
| <b>ODM</b>             | Oesophageal Doppler Monitor   |
| <b>PCA</b>             | Patient Controlled Analgesia  |
| <b>PEA</b>             | Pulseless Electrical Activity   |
| <b>PFO</b>             | Patent foramen ovale  |
| <b>PiCCO</b>           | Pulse Contour Continuous Cardiac Output   |
| <b>PONV</b>            | Postoperative nausea and vomiting   |
| <b>POSSUM</b>          | Physiological and Operative Severity score for enUmeration of Mortality and Morbidity |
| <b>PSI</b>             | Pounds per square inch  |
| <b>Ref</b>             | Reference   |
| <b>RS</b>              | Respiratory system  |
| <b>RSI</b>             | Rapid sequence induction  |
| <b>SIADH</b>           | Syndrome of Inappropriate Anti-Diuretic Hormone                                       |
| <b>SpO<sub>2</sub></b> | Saturation of haemoglobin with oxygen   |
| <b>SVP</b>             | Saturated vapour pressure   |
| <b>TCI</b>             | Target Controlled Infusions   |
| <b>TOE</b>             | Transoesophageal Echo   |
| <b>VSD</b>             | Ventricular septal defect   |
| <b>WCC</b>             | White cell count  |

| <b><u>Assessment method decode</u></b> |  |
|--|--|
| 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]                            |

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

## Essential Units

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

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

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

## Anaesthesia for neurosurgery, neuroradiology and neuro critical care

### Learning outcomes:

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

### Core clinical learning outcomes:

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

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

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



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

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

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

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

## Cardiothoracic anaesthesia and cardiothoracic critical care

### Learning outcomes:

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

### Core clinical learning outcome:

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

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

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

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

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

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

## General duties

### Airway management

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

#### **Learning outcomes:**

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

#### **Core clinical learning outcome:**

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

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

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



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

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

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

## Critical incidents

### Learning outcomes:

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

### Core clinical learning outcomes:

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

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

### Knowledge

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

### Skills

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

## Day surgery

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

### **Learning outcomes:**

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

### **Core clinical learning outcome:**

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

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

## **Knowledge**

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

## **Skills**

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

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

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

### Learning outcomes:

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

### Core clinical learning outcomes:

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

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

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

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

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

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



## Head, neck, maxillo-facial and dental surgery

It is expected that this unit can be delivered in most of the non-specialist hospitals that are part of many, if not all, Schools of Anaesthesia. It may not be possible for every trainee to become skilled in all the emergencies described [EN\_IS\_07], however all trainees are expected to obtain clinical teaching and training in this area of practice, although it is recognised that, availability of chair dental surgery may be limited and this may have to be deferred to the 'higher' unit of training but is not mandatory for successful completion of intermediate or higher training in this unit.

### Learning outcomes:

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

### Core clinical learning outcome:

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

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

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

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

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

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

## Management of respiratory and cardiac arrest in adults and children

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

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

### Learning Outcomes:

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

### Core clinical learning outcome:

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

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

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

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

**Skills**

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

## Non-theatre

### Learning outcome

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

### Core clinical learning outcome:

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

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

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

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

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



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

### Learning outcomes:

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

### Core clinical learning outcomes:

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

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

### Knowledge

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

### Skills

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

## Perioperative Medicine

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

### Learning outcomes:

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

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

### Preoperative care:

#### Knowledge

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

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

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

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

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

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

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

## Regional

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

### **Learning outcomes:**

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

### **Core clinical learning outcomes:**

Perform one each of the following blocks satisfactorily under local supervision

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

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

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

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

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



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

## Sedation

### Learning outcomes:

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

### Minimum clinical learning outcome:

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

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

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

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

## Transfer medicine

### Learning outcome:

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

### Core clinical learning outcomes:

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

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

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

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

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

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

## Trauma and stabilisation

### Learning outcome:

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

### Core clinical learning outcomes:

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

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

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

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

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



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

## Obstetrics

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

### Learning outcome:

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

### Core clinical learning outcomes:

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

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

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

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

## Paediatrics

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

### Learning outcomes:

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

### Core clinical learning outcome:

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

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

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

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

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

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

## Pain medicine

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

### **Learning outcomes:**

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

### **Core clinical learning outcomes:**

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

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

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

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

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



## Optional Units

### Ophthalmic

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

#### **Learning outcomes:**

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

#### **Core clinical learning outcomes:**

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

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

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

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

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

## Plastics/burns

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

### Learning outcomes:

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

### Core clinical learning outcome:

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

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

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

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

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

## Vascular surgery

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

### **Core clinical learning outcome:**

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

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

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

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

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

## Advanced sciences to underpin anaesthetic practice

### Learning outcomes:

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

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

### Anatomy

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



## Anatomy

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

## Applied clinical pharmacology

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

## Applied clinical pharmacology

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

## **Skills**

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

## Applied Physiology and Biochemistry

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

## Applied Physiology and Biochemistry

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

## Applied Physiology and Biochemistry

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

## Nutrition

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

## Physics and Clinical Measurement

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

## Physics and Clinical Measurement

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

## Statistical basis of clinical trial management

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

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

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

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

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

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

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

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

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

\* Assessment requirements for General Duties:

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

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

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