

# CCT in Anaesthetics

## Annex D Higher Level Training

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NB: \* essential for all trainees

## Glossary of terms

<b>ALI</b>	Acute Lung Injury
<b>ALS</b>	Advanced Life Support
<b>APACHE</b>	Acute Physiology And Chronic Health Evaluation
<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 the 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

### Anaesthesia for neurosurgery, neuroradiology and neuro critical care

**Learning outcomes:**

- Capture the maturation process by building on the knowledge, understanding and skills gained during intermediate training
- Become more independent in managing neurosurgical anaesthesia as demonstrated by requiring less consultant guidance and supervision

**Core clinical learning outcomes:**

- Deliver safe peri-operative anaesthetic care to complicated ASA 1-3 adult patients requiring complex elective intra-cranial and spinal surgery and neuroradiological investigations under direct supervision.
- Deliver peri-operative anaesthetic care to complicated ASA 1-3 adult patients for emergency non-complex intracranial and spinal surgery with indirect supervision [i.e. craniotomy for acute sub-dural / acute decompressive lumbar laminectomy]
- Lead the resuscitation, stabilisation and transfer of adult patients with brain injury [Cross reference Transfer section]

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
NA_HK_01	Is able to discuss and critically analyse the risks and benefits of available anaesthetic techniques for all aspects of neurosurgery and neuroradiology identified at the intermediate level and in addition for: <ul style="list-style-type: none"> <li>• acoustic neuroma surgery and facial nerve monitoring</li> <li>• complex spinal surgery</li> <li>• interventional neuroradiological procedures including coiling of intracranial aneurysms and embolisation of vascular lesions</li> </ul>	A,C	1,2
NA_HK_02	Is able to evaluate the anaesthetic and critical care implications of stroke including but not exclusively: subarachnoid haemorrhage, intracerebral haemorrhage and ischaemic stroke Discusses the indications for, and the management of techniques for spinal drainage	A,C	1,2
NA_HK_03	Discusses the indications and risks of therapies and monitors available to achieve optimal intracranial pressure and cerebral perfusion in both neuroanaesthesia and neuro-critical care	A,C	1,2
NA_HK_04	Shows awareness of current trends in the management of all aspects of neuroanaesthesia and neuro-critical care	C,M	1,2,3,4

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
NA_HS_01	Demonstrates how to critically evaluate the pre-operative condition, plan appropriate optimisation and deliver peri-operative anaesthetic care to adult patients requiring routine and emergency neurosurgery	A,C	1,2,3,4
NA_HS_02	Demonstrates the ability to provide peri-operative anaesthetic care for complex spinal surgery [including patients with unstable cervical spines]	A,C	1,2,3,4
NA_HS_03	Demonstrates the ability to engage appropriately in compassionate and authoritative discussions with patients pre-operatively about the risks and complications associated with major neurosurgery	A,M	1,3,4
NA_HS_04	Demonstrates authority and team leadership in the management of major neurosurgical emergencies	A,M	1,2,3,4
NA_HS_05	Demonstrates the ability to supervise and teach less experienced trainees in all aspects of neuroanaesthesia	A,M	1,2,3,4
NA_HK_06	Demonstrates the ability to conduct a ward round in neuro-critical care under direct supervision	A,M	1,2,3,4

## Cardiothoracic anaesthesia and cardiothoracic critical care

It is recognised that many cardiothoracic competences may be achieved not only in the theatre setting, but also in the cardiac catheterisation suite.

### Learning Objective:

- Capture the maturation process by building on the knowledge, understanding and skills gained during intermediate training
- Understands the place and value of the more complex monitoring devices used in the perioperative period
- Understands the role of minimally invasive surgery for the treatment of cardiac disease and the specific anaesthetic requirements for such surgery
- Be able to provide safe and effective anaesthetic care to patients undergoing elective mitral/ aortic valve surgery +/- coronary artery surgery and open thoracic surgery under direct supervision
- Be able to provide safe and effective care to patients admitted with acute chest trauma

### Core clinical learning outcomes:

- Deliver perioperative anaesthetic care to complicated ASA 1-3 adult patients requiring elective aortic or mitral valve surgery under direct supervision
- Deliver perioperative anaesthetic care to complicated ASA 1-3 adult patients requiring open resection of lung tissue under local supervision

Knowledge			
Competence	Description	Assessment methods	GMP
CT_HK_01	Explains the relevance of pre-operative assessment and optimisation of patients with cardiac and thoracic disease and demonstrates an in depth understanding of commonly performed investigations including cardiac catheterisation echocardiography, stress testing and radionuclide testing, as well as pulmonary function tests	A,C	1
CT_HK_02	Is able to discuss and critically analyse the risks and benefits of available anaesthetic techniques for all aspects of cardiothoracic surgery and cardiology identified at the intermediate level and in addition describe the management of patients with: <ul style="list-style-type: none"> <li>• Mitral valve repair and replacement</li> <li>• Management of post infarct VSD</li> <li>• Complex thoracic aortic reconstruction</li> <li>• Interventional cardiological procedures e.g. transvenous device placement for ASD and Aortic valve surgery</li> </ul>	A,C	1
CT_HK_03	Describes the anaesthetic requirements for complex cardiac and thoracic procedures. To include techniques for circulatory arrest, partial bypass, chest wall resection,	A,C	1,2
CT_HK_04	Describes the physical, physiological and psychological support required for patients in the immediate postoperative period for all cardiac and thoracic procedures, including cardiovascular support systems, in such a way that demonstrates an understanding of the changes that can occur in the post-operative period associated with such surgery [include an	A,C	1,2



<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
	understanding of post-operative cognitive and neurological deficit, timing of withdrawal of mechanical support]		
CT_HK_05	Is able to describe the surgical principles involved in common cardiology procedures including coronary stenting, atrial septal defect closure, ablation, pacemaker insertion, defibrillator insertion and other electrophysiological procedures, and their perioperative anaesthetic care.	A,C	1
CT_HK_06	Describes the problems of anaesthetising the adult patient with congenital heart disease and also their management during anaesthesia	A,C	1
CT_HK_07	Describes the perioperative anaesthetic management of adult patients with intrathoracic aortic pathology requiring surgery including [but not exclusively]: <ul style="list-style-type: none"> <li>• The assessment of thoracic aortic dissection and how this influences arterial line placement</li> <li>• The indications for spinal drainage</li> <li>• The techniques available to monitor cerebral well being during thoracic aortic surgery</li> </ul>	A,C	1
CT_HK_08	Discusses the management of post-operative bleeding in cardiac patients and is able to describe the signs and symptoms of cardiac tamponade, its clinical management and appropriate investigation [including any appropriate near patient testing] and understands the indications for return to theatre versus continued haematological support.	A,C	1
CT_HK_09	Discusses specific implications of blood and blood product transfusion on patient morbidity in cardiac surgery	C	1

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
<b>CARDIAC</b>			
CT_HS_01	Demonstrates the ability to critically evaluate and present the salient features of: <ul style="list-style-type: none"> <li>• The pre-operative condition of patients with cardiac disease Including, where relevant, decisions made within a cardiac MDT</li> </ul>	A,C,D	1,2,3,4
CT_HS_02	Demonstrates the ability to provide patients with information on the risks associated with complex cardiac procedures from an anaesthetic perspective	A,D	1,2,3,4
CT_HS_03	Demonstrates the ability to provide safe and effective perioperative anaesthetic care for high risk cardiac procedures , including valve surgery	A,C,D	1,2,3,4
CT_HS_04	Demonstrates understanding of when patients are suitable for “fast track” surgery and effects appropriate anaesthetic management	A,C,D	1,2,3,4
CT_HS_05	Demonstrates the ability to manage a patient for cardiopulmonary bypass, including appropriate myocardial protection, coagulation management, transfer to, and the weaning of patients from bypass with local supervision, to include:	A,C,D	1,2,3

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
	<ul style="list-style-type: none"> <li>• Demonstrating understanding of the anaesthetist's role in perfusionist administration of drugs</li> <li>• The problems associated with prolonged bypass and how to deal with them</li> <li>• Issues surrounding disconnections, air embolisation and acid base management</li> </ul>		
CT_HS_06	Demonstrates appropriate use of cardiac investigations and monitoring such as the Oesophageal Doppler, Transthoracic and Transoesophageal ECHO, LIDCO, PICCO and a variety of non-invasive monitors for determining cardiac output in the management of patients undergoing cardiac surgery	A,C,D	1
CT_HS_07	Demonstrates the ability to provide a team management plan for the post operative critical care of patients who have had cardiac surgery, including the management of associated cardiovascular problems and communicates this plan effectively to CICU staff	A,C,D	1,2,3
CT_HS_08	Demonstrates the ability to recognise, and appropriately manage, patients with excessive bleeding after cardiac surgery including the investigation and immediate management of a patient with cardiac tamponade	A,C,D	1,2,3,4
CT_HS_09	Demonstrates the ability to manage patients with assist devices Including indications for insertion and withdrawal	A,C,D	1
CT_HS_10	Demonstrates the ability to design, complete and evaluate an audit/quality improvement project related to the perioperative anaesthetic management of cardiac patients	A,C,D	1
CT_HS_11	Demonstrates leadership skills during resuscitation and stabilisation of a sick cardiac patient pre-operatively. Is able to defend decisions made, by reference to current literature	A,C,D,M	1,2,3,4
<b>THORACIC</b>			
CT_HS_12	Through active participation in the preoperative assessment and preparation of patients for thoracic surgery, is able to demonstrate an understanding of suitability for surgery, or need for optimisation of a patient for thoracic surgery, and can defend the decisions made with reference to current literature. Examples might include: <ul style="list-style-type: none"> <li>• Evaluation of a patient with borderline lung function for pneumonectomy</li> <li>• Evaluation of the relative merits of open versus video assisted lung resection</li> </ul>	A,C,D	1,2,3,4
CT_HS_13	Demonstrates the ability to provide safe and effective perioperative anaesthetic care to patients undergoing thoracic surgery including procedures such as bronchoscopy, Video assisted Thoracoscopic Surgery (VATS) and thoracotomy for lung resection	A,C,D	1,2,3,4
CT_HS_14	Demonstrates understanding of ventilatory issues through appropriate airway and ventilatory management including the ability to utilise ventilatory strategies to minimise barotrauma or re-expansion pulmonary oedema		
CT_HS_15	Demonstrates the correct management of chest drains	D	1
CT_HS_16	Prepares a post-operative management plan for patients who have had thoracic procedures which demonstrates an understanding of the physiological and physical changes that occur following thoracic surgery [include a rational approach to postoperative pain management and the use of multimodal therapies]	A,C,D	1,2,3
CT_HS_17	Correctly manages patients with chest trauma, including the recognition and management of patients with pneumo- and	A,C,D	1,2,3

Skills			
Competence	Description	Assessment methods	GMP
	haemo- thorax, fractured ribs and flail segments		

## General duties

It is expected that the vast majority of anaesthetic trainees will do twelve months of 'general duties'; **as a minimum all trainees must do six months**; those doing less than twelve months must receive prospective approval from the RCoA Training Department. There are fourteen units within this broad essential unit of training, many of which have a significant number of transferable competencies which may be obtained in the course of ST years 5-7 training without being part of a specific 'block' of training. All trainees **must** complete at least nine of these units satisfactorily, whatever their final career aspirations may be, three of which **must be** 'airway management', 'management of respiratory and cardiac arrest' and 'perioperative medicine' as these are core areas for **all** anaesthetists. Elderly patients form an increasing part of anaesthetic caseload across all specialist areas, and emphasis on their care and attendant problems should feature in many subunits of general duties. Those trainees who have approval for less than twelve months must complete a pro-rata minimum number of units satisfactorily.

It is anticipated that many trainees will complete this unit of training in non-specialist hospitals and therefore the units available will vary. The fourteen units are as follows:

- [Airway management\\*](#)
- [Day surgery](#)
- [Head, neck, maxillo-facial and dental surgery](#)
- [General, urological and gynaecological surgery](#)
- [Management of respiratory and cardiac arrest\\*](#)
- [Non-theatre](#)
- [Obstetrics](#)
- [Orthopaedic surgery](#)
- [Perioperative medicine\\*](#)
- [Regional](#)
- [Sedation](#)
- [Transfer medicine](#)
- [Trauma and stabilisation](#)
- [Vascular surgery](#)

[Note, units of training annotated with an \* are essential for all trainees]

## Airway management\*

This higher unit is one of the three mandatory units of higher training which all trainees are expected to complete satisfactorily during their general duties training block. It shares a number of important competencies with ENT, maxillo-facial and dental surgery and it is expected that it can be delivered in many of the non-specialist hospitals that form part of many, if not all, Schools of Anaesthesia.

### Learning outcomes:

- Become skilled at managing the more complex airways by building upon intermediate knowledge, skills and experience

### Core clinical learning outcomes:

- Able to perform elective fiberoptic intubation in patients without serious intra-oral/laryngeal pathology, safely and proficiently, in awake or anaesthetised patients under distant supervision
- Able to manage patients with complex airway disorders, safely and proficiently, in all situations, under local supervision

Knowledge			
Competence	Description	Assessment Methods	GMP
AM_HK_01	Discusses the use of novel airway techniques, including the use of retrograde catheters and airway exchange devices	A,C	1,2

Skills			
Competence	Description	Assessment Methods	GMP
AM_HS_01	Demonstrates ability to perform awake elective fiberoptic intubation, including obtaining consent	A,D	1,2
AM_HS_02	Demonstrates ability to perform fiberoptic intubation for elective cases including for those with airway pathology under distant supervision	A,D	1,2,3,4

AM_HS_03	Demonstrates ability to perform fiberoptic intubation for emergency cases including for those with airway pathology under direct supervision	A,D	1,2,3,4
AM_HS_04	Demonstrates management of an operating list involving multiple patients for airway related surgery, including patients with predicted difficult airway, with appropriate airway management decision making	A	1,2,3,4
AM_HS_05	Demonstrates the correct use of high frequency jet ventilation [Cross ref; ENT]	A	1,2
AM_HS_06	Demonstrates ability to use a variety of advanced airway management techniques	A,S	1
AM_HS_07	Demonstrates the use of novel methods of laryngoscopy including but not limited to: <ul style="list-style-type: none"> <li>• Straight blade laryngoscope</li> <li>• Videolaryngoscopy</li> </ul>	A,S	1

## Day surgery

It would be expected that the majority of trainees would complete this unit as part of a year of higher general duties. Many of the competencies may be achieved while managing appropriate day case procedures as part of other higher units of training.

### Learning outcomes:

- Develops expertise by building on the knowledge, understanding and skills gained in the intermediate level day surgery curriculum
- Become more independent in managing anaesthesia for day case lists as demonstrated by requiring less consultant guidance and supervision

### Core clinical learning outcome:

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

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DS_HK_01	Recalls/describes an evidence based approach to the anaesthetic management of day case procedures for patients with a range of significant co-morbidities, and issues presented by the elderly	C,E	1,2,3,4

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
DS_HS_01	Demonstrates the team leadership and communication skills necessary to effectively manage day surgical lists to the benefit of patients and the organisation	A,C,D,M	1,2,3,4
DS_HS_02	Demonstrates the ability to critically evaluate the pre-operative condition and suitability of patients with significant co-morbidities for day surgical procedures, for example the elderly	A,C,D,M	1,2,3,4
DS_HS_03	Demonstrates the ability to supervise and teach less experienced trainees in all aspects of anaesthesia for day surgery, whilst recognising the limitations of their expertise	A,C,D,M	1,2,3,4

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

The majority of trainees are expected to complete this unit satisfactorily during a year of higher general duties. It shares a number of important competencies with the 'Airway Management unit [which is one of the two mandatory units of higher training] and it is expected that it can be delivered in many of the non-specialist hospitals that form part of many, if not all, Schools of Anaesthesia. Chair dental surgery is not mandatory for successful completion of this unit but where available, trainees should receive some exposure during their higher training.

### Learning outcomes:

- Build on knowledge, skills and experience acquired in the intermediate syllabus
- To supervise more junior colleagues providing peri-operative anaesthetic care for minor/intermediate cases in these surgical sub-specialties
- To acquire knowledge, skills and experience treating complex clinical cases and challenging airway situations

### Core clinical learning outcomes:

- Provides comprehensive safe perioperative anaesthetic care to ASA 1-4 adult patients requiring ENT, maxillo-facial and dental [where available] surgery of greater complexity with distant supervision
- Manage ENT, maxillo-facial and dental [where available] surgery lists with distant supervision

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
EN_HK_01	Discusses the principles of pre-operative assessment and optimisation of patients with significant ENT pathology and/or with concomitant disease [ASA 3 or 4] including team approaches to planning and management of such complex surgery	A,C	1,2,3,4
EN_HK_02	Discusses anaesthetic techniques used for more complex surgery including, but not exclusively: <ul style="list-style-type: none"> <li>▪ Laryngectomy</li> <li>▪ Major head and neck surgery</li> <li>▪ Procedures requiring multi-disciplinary surgical teams</li> </ul>	A,C	1,2,3,4
EN_HK_03	Discusses techniques used to assist the preservation of facial nerve function during procedures such as parotid and mastoid surgery	A,C	1,2
EN_HK_04	Discusses the pathophysiological effects of chemotherapy and radiotherapy	A,C	1,2
EN_HK_05	Discusses the importance of managing nutrition in major head and neck surgery and how this can be optimised	A,C	1,2,3,4
EN_HK_06	Identifies the post operative management and complications of patients who have had complex maxillofacial surgery including but not exclusively jaw wiring, tracheostomy and HDU/ICU care	A,C	1,2,3,4

EN_HK_07	Outlines the paediatric syndromes associated with the need for anaesthesia for ENT and maxillo facial surgery, the range of surgical procedures performed and the implication for perioperative anaesthetic care [Cross Ref Paeds]	A,C	1
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<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
EN_HS_01	Demonstrates the ability to critically evaluate the pre-operative condition and plan appropriate optimisation for patients with significant ENT pathology and/or concomitant disease [ASA 3 or 4] requiring complex surgery	A	1,2,3,4
EN_HS_02	Demonstrates the ability to provide comprehensive safe peri-operative anaesthetic care to patients requiring complex ENT and maxillo-facial surgery including but not exclusively: <ul style="list-style-type: none"> <li>▪ Those in which the airway presents particular difficulty, such as those requiring laryngectomy</li> <li>▪ Complex middle ear surgery</li> <li>▪ Complex cancer surgery</li> </ul>	A,C,M	1,2,3,4
EN_HS_03	Demonstrates the ability to induce anaesthesia by the inhalational route for a significant number of both adult and paediatric patients	A,D	1
EN_HS_04	Demonstrates the ability to manage both elective and emergency list of complex cases, such as thyroidectomy or middle ear surgery; possibly mixed with more common procedures, intermediate supervision and a mixture of adults and children	A,M	1,2,3,4
EN_HS_05	Demonstrates provision of safe peri-operative anaesthetic care for patients where preservation of the facial nerve is required e.g. parotid surgery	A,C,D	1,2,3,4
EN_HS_06	Demonstrates the ability to perform surgical airway techniques [S] [Cross ref critical incidents; cardio-respiratory arrest]	A,D,S	1,2
EN_HS_07	Demonstrates the ability to use jet ventilation safely and effectively when needed in both the emergency and elective situation [Cross Ref; airway management]	A,D	1
EN_HS_08	Where available, demonstrates provision of safe perioperative anaesthetic care for emergency ENT surgery, including bleeding tonsil under distant supervision	A, C, M	1,2,3,4
EN_HS_09	Demonstrates the ability to be an effective member of a multi-disciplinary team, managing all elective and emergency cases/lists in these surgical sub-specialties, safely and effectively. This implies demonstrating essential generic communication, teamwork, leadership and professional skills, as well as those specific to the perioperative anaesthetic care of the patients	L,M	1,2,3,4
EN_HS_10	Demonstrates effective communication skills with patients and relatives particularly when allaying anxiety in patients who recognise that their surgical/medical condition is a severe risk to life, or when things have not gone well	A,M	1,2,3,4
EN_HS_11	Demonstrates the ability to supervise and teach less experienced trainees in all aspects of ENT, maxillo-facial and dental anaesthesia whilst recognising the limitations of their expertise	A,D,M	1,2



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

The majority of trainees are expected to complete this unit satisfactorily during a year of higher general duties and it is expected that this unit can be delivered in many of the non-specialist hospitals that are part of many, if not all, Schools of Anaesthesia.

### Learning outcomes:

- To supervise more junior colleagues providing peri-operative anaesthetic care for general surgery, gynaecology, urology
- To anaesthetise patients of all ASA grades for complex surgery
- To consolidate/recall anaesthetic implications of the elderly

### Core clinical learning outcomes:

- Demonstrates the ability to provide safe and effective peri-operative anaesthetic care to high risk emergency surgical cases, including those with potential for massive haemorrhage [e.g. the ruptured aortic aneurysm]
- Demonstrates the ability to provide safe and effective peri-operative anaesthetic care for patients requiring complex lower abdominal and/or bariatric surgery
- Working within a multi-disciplinary team, demonstrates the necessary communication, teamwork, leadership, professional and practical [anaesthetic] skills needed to manage patients on elective and emergency general surgery, urology and gynaecology lists, safely and effectively

Knowledge			
Competence	Description	Assessment methods	GMP
GU_HK_01	Recalls / describes an evidence based approach to the management of complex ASA I-IV patients for elective and emergency major non-cardiac, non-neurological surgery, including, but not exclusively, the management of patients with significant comorbidity, the elderly, recent cardiac surgery, drug-eluting stents and organ system failure [e.g. cirrhosis/dialysis dependence]	A,C	1,2
GU_HK_02	Discusses the principles and interpretation of novel techniques for assessing coagulation, such as thromboelastography	A,C	1,2
GU_HK_03	Critically evaluates the recommendations from NCEPOD reports and discusses the ways in which these influence care of the non-elective surgical patient	A,C	1,2,3,4

Skills			
Competence	Description	Assessment methods	GMP

GU_HS_01	Demonstrates focussed preoperative evaluation of patients of all ASA grades who are at risk of post-operative morbidity, including the implementation of risk stratification methods such as scoring systems and measures of functional capacity [including basic interpretation of cardiopulmonary exercise testing results]	D,A,C,M	1,2,3
GU_HS_02	Demonstrates effective contribution to surgical decision making including the risks and benefits of surgery, and fertility issues	A,C,M	1,2,3,4
GU_HS_03	Demonstrates safe and effective peri-operative anaesthetic care to patients of all ASA grades requiring major intra-abdominal surgery covered in this unit of training under distant supervision including, but not exclusively: <ul style="list-style-type: none"> <li>• Those requiring complex colo-rectal, gynaecological and urological surgery</li> <li>• Those requiring bariatric surgery</li> <li>• Those requiring high risk emergency surgery, including those with potential for massive haemorrhage [e.g. the ruptured aortic aneurysm [Cross Ref vascular]]</li> </ul>	A,C,L,M	1,2,3,4
GU_HS_04	Demonstrates the safe and appropriate use of equipment used to manage major blood loss during surgery, including but not exclusively rapid infusion and cell saver devices	A,C,L	1,2,3
GU_HS_05	Demonstrates the ability to be an effective member of a multi-disciplinary team managing elective and emergency general surgery, urology and gynaecology lists, safely and effectively. This implies demonstrating essential generic communication, teamwork, leadership and professional skills, as well as those specific to the perioperative anaesthetic care of the patients	L,M	1,2,3,4
GU_HS_06	Demonstrates the ability to participate effectively in the post-operative care of the patient as part of a multi-disciplinary team	A,C	1,2,3,4
GU_HS_07	Demonstrates the ability to supervise and teach less experienced trainees in all aspects of complex major colorectal, gynaecological and urological surgery	D,A,C,M	1

## Management of respiratory and cardiac arrest\*

This unit is one of the three higher mandatory units that all trainees must complete satisfactorily during higher training [the others are Airway management and Perioperative Medicine]. It is expected that this unit can be delivered in most hospitals.

### Learning Outcome:

- Develop expertise by building on the knowledge, understanding and skills gained during intermediate training

### Core clinical learning outcomes:

- The management of patients requiring cardio-respiratory resuscitation [with distant supervision] by:
  - Demonstrating the ability to lead a multidisciplinary resuscitation team in the initial assessment and management through to definitive care in the Intensive Care Unit if successful [including necessary transfer]
  - Leading the debrief sessions for both staff and relatives in a sensitive, compassionate and constructive manner

### Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RC_HK_01	Discusses the legal principles of resuscitation, advanced directives and DNAR orders	A,C	1,2,3,4
RC_HK_02	Discusses factors affecting prognostication and the indications for withdrawal of support	A,C	1,2,3,4

### Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RC_HS_01	Demonstrates the ability to gain a surgical airway [Cross reference Intensive Care] [S]	D,S	1,2
RC_HS_02	Demonstrates the ability to provide comprehensive clinical care throughout the resuscitation attempt and during further care if indicated	D,A,S	1,2,3,4
RC_HS_03	Demonstrates the ability to initiate and manage therapeutic hypothermia when indicated	D	1
RC_HS_04	Demonstrates team leadership and the ability to make end of life decisions and when to cease active treatment in a compassionate and caring manner, including leading the discussion on the appropriateness, or otherwise, of withdrawing treatment with both staff and relatives	D,A	1,2,3,4

## Non-theatre

It is expected that the majority of trainees will complete this unit during higher training as many of the competencies can be achieved in the course of completing a number of other units, both general and specialist.

### Learning outcomes:

- Develop expertise by building on the knowledge, understanding and skills gained in the intermediate curriculum
- Become more independent in managing patients in a greater variety of out of theatre environments, including remote sites, under distant supervision [See section 6.2 for greater detail about Remote Site supervision]

### Core clinical learning outcome:

- To deliver safe peri-procedure anaesthesia/sedation to adult patients outside the operating theatre, including remote sites, under distant supervision, as described in Section 6.2

Knowledge			
Competence	Description	Assessment Methods	GMP
DI_HK_01	Discusses in-depth, the peri-procedure [diagnostic or therapeutic, elective or emergency] anaesthetic/sedation needs for complex ASA 1-4 patients that may take place outside the operating theatre, including remote sites [See section 6.2], including but not exclusively in the following settings: The Radiology suites, Radiotherapy and ECT	C,E	1,2,3,4

Skills			
Competence	Description	Assessment Methods	GMP
DI_HS_01	Demonstrates the team leadership and communication skills necessary to effectively manage cases/lists in any non-theatre environment to the benefit of patients and the organisation	A,C,D,M	1,2,3,4
DI_HS_02	Demonstrates the ability to critically evaluate the pre-operative condition and suitability of patients with significant co-morbidities for such procedures	A,C,D,M	1,2,3,4
DI_HS_03	Demonstrates the ability to supervise and teach less experienced trainees, whilst recognising their limitations	A,C,D,M	1,2,3,4

## Obstetrics

The majority of trainees are expected to complete this unit satisfactorily during a year of higher general duties and it is expected that this unit can be delivered in many of the non-specialist hospitals that are part of many, if not all, Schools of Anaesthesia, provided that they have a consultant-led obstetric unit.

### Learning outcome:

- Capture the maturation process by building on the experience gained in intermediate training and achieve a greater emphasis on undertaking more complex obstetric cases

### Core clinical learning outcomes:

- To be able to provide the appropriate anaesthetic management for any patient who requires emergency obstetric anaesthesia
- To be able to provide elective anaesthetic services to the obstetric unit [excepting those patients with unusual problems who would normally be referred to a specialist centre]

### Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
OB_HK_01	Discusses the limitations of a non specialised maternity unit and appropriate referral to a tertiary unit	C	1
OB_HK_02	Discusses current advances and controversies in obstetrics	C	1, 2

### Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
OB_HS_01	Demonstrates the ability to assess women with factors complicating pregnancy	A,C	1,2,3,4
OB_HS_02	Demonstrates the ability to construct a safe and effective plan for the management of a women with factors complicating pregnancy	C	1,2,3,4
OB_HS_03	Demonstrates the ability to be an effective part of a multidisciplinary team	A,M	1,2,3,4
OB_HS_04	Demonstrates the ability to manage an elective caesarean section list effectively, to the benefit of patients and the organisation	A,M	1,2,3,4
OB_HS_05	Demonstrates the ability to manage an elective or emergency caesarean section for placenta praevia	A,D	1,2
OB_HS_06	Demonstrates skill in managing emergencies including pre-eclampsia, eclampsia, major haemorrhage	A,C,D,M	1,2,3,4

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
OB_HS_07	Demonstrates the skills required to provide safe and effective regional anaesthesia using a variety of techniques including spinal, epidural, combined spinal-epidural and rectus sheath blocks in both normal and 'difficult' backs	A,D	1,2
OB_HS_08	Demonstrates the ability to deliver safe and effective general anaesthesia to the obstetric patient, both in elective and emergency settings, including the ability to anticipate, recognise and manage the expected and unexpected difficult airway	A,M	1,2,3,4
OB_HS_09	Demonstrates skill in allaying anxiety and helping mothers deal with disappointment	A,M	1,2,3,4
OB_HS_10	Demonstrates effective communication with patients and relatives/partners, including when things have not gone well	A,M	1,2,3,4
OB_HS_11	Demonstrates skill in providing information about analgesia and anaesthesia to pregnant women, with or without complicating factors, to midwives and other professional groups	A,D,M	1,2,3,4
OB_HS_12	Demonstrate ability to supervise and teach less experienced trainees in all aspects of obstetric anaesthesia	A,D,M	1,2
OB_HS_13	Participates in local processes for monitoring the standards of practice	M	1,2,3,4

## Orthopaedic surgery

The majority of trainees are expected to complete this unit satisfactorily during a year of higher general duties and it is expected that this unit can be delivered in many of the non-specialist hospitals that are part of many, if not all, Schools of Anaesthesia.

### Learning outcomes:

- Captures the maturation process by building on the knowledge, understanding and skills gained during intermediate training
- To consolidate/recall anaesthetic implications of the elderly
- Become more independent in managing anaesthesia for complex orthopaedic surgery as demonstrated by requiring less consultant guidance and supervision

### Core clinical learning outcome:

- Provide comprehensive safe perioperative anaesthetic care to all ASA 1-4 adult patients for all types of elective and emergency orthopaedic/trauma surgery to the limbs, pelvis and spine [excluding scoliosis surgery] with distant supervision

### Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
OR_HK_01	Recalls / describes an evidence based approach to the management of complex ASA I-IV patients for elective and emergency major orthopaedic [including spinal] surgery, including, but not exclusively, the management of patients with significant comorbidity, the elderly, recent cardiac surgery, drug-eluting stents and organ system failure	A,C	1,2

### Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
OR_HS_01	Demonstrates the ability to critically evaluate the pre-operative condition, plan appropriate optimisation and deliver safe perioperative anaesthetic care to all adult patients however complex requiring routine and emergency orthopaedic surgery	A,C,D,M	1,2,3,4
OR_HS_02	Demonstrates the team leadership and communication skills necessary to manage major orthopaedic surgical emergencies	A,M	3,4
OR_HS_03	Demonstrates the ability to supervise and teach less experienced trainees in all aspects of elective and emergency orthopaedic surgery	A,D,M	1,2,3
OR_HS_04	Demonstrate the ability to provide comprehensive safe peri-operative anaesthetic care for: <ul style="list-style-type: none"> <li>• Spinal surgery including scoliosis surgery.</li> <li>• Pelvic fracture surgery</li> <li>• Fixation of long bone fractures in the multiply injured patient</li> </ul>	A,D	1,2,3,4

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
OR_HS_05	Demonstrates the ability to manage both elective and emergency orthopaedic surgical sessions effectively to the benefit of patients and the organisation	A,D,M	1,2,3,4
OR_HS_06	Demonstrates effective communication skills with patients and relatives particularly when allaying anxiety in patients who recognise that their surgical/medical condition is a severe risk to life, or when things have not gone well	A,M	1,2,3,4
OR_HS_07	Demonstrates the ability to supervise and teach less experienced trainees in all aspects of anaesthesia for orthopaedic surgery, whilst recognising the limitations of their expertise	A,D,M	1,2



## Perioperative Medicine\*

This unit is one of the three higher mandatory units that all trainees must complete satisfactorily during higher training [the others are Management of respiratory and cardiac arrest].

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. Demonstrating the ability to lead a medical preoperative assessment clinic is a mandatory component of this unit of training.

### Learning outcomes:

- To deliver high quality preoperative assessment, investigation and management of all patients for elective and emergency surgery
- To deliver high quality individualised anaesthetic care to all patients, focusing on optimising patient experience and outcome
- To plan and implement high quality individualised post-operative care for all patients
- To take a leadership role in the multidisciplinary team in delivering perioperative care

### Preoperative care:

#### Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_HK_01	Describes strategies for prehabilitation and patient optimisation and the limits of such strategies	C	1
POM_HK_02	Demonstrates comprehensive knowledge of enhanced recovery pathways and their limitations	C	1
POM_HK_03	Explains the relevance of assessments of the patient's functional cardiorespiratory capacity to perioperative decision making	A,C	1
POM_HK_04	Describes how quality improvement principles could be used to develop local services	C	2,3
POM_HK_05	Critically analyses evidence related to perioperative practice	C	1
POM_HK_06	Explains the importance of primary and social care in perioperative pathways	C	3
POM_HK_07	Describes the effects of ethnicity on disease processes	C	1,3,4

#### Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_HS_01	Demonstrates a holistic and patient centred approach to care	A,L,M	3
POM_HS_02	Makes complex clinical decisions in the face of uncertainty	A,L,S	1,2,3
POM_HS_03	Uses risk scoring systems to inform communication with patients and colleagues	A,C,L	1,3
POM_HS_04	Discusses treatment options and risks with patients, including those with complex comorbidities, taking into account their individual needs and requirements	A,L	3,4
POM_HS_05	Takes a collaborative approach to perioperative decision making with colleagues	A,L,M	3
POM_HS_06	Communicates effectively with patients and colleagues as part of integrated care	A,L,M	3
POM_HS_07	Leads a medical preoperative assessment clinic (with appropriate supervision)	L	1,3,4
POM_HS_08	Contributes sensitively to discussions with patients, relatives and colleagues when significant uncertainty exists with regards to the benefits of a proposed procedure versus the burdens of treatment	A,L	3,4

### **Intraoperative care:**

#### **Knowledge**

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_HK_08	Describes the evidence base for and limitations of Goal-Directed Therapy	A,C	1
POM_HK_09	Interprets the evidence of the use of advanced haemodynamic monitoring	A,C	1
POM_HK_10	Summarises the evidence regarding the impact of anaesthetic technique on patient outcome	A,C	1
POM_HK_11	Describes techniques to minimise deviations in physiological parameters that may affect outcome	A,C	1
POM_HK_12	Describes a coherent fluid management strategy including the use of blood products	A,C	1,2

#### **Skills**

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_HS_09	Demonstrates mastery of anaesthetic techniques for patients with complex comorbidities	A,D,S	1
POM_HS_10	Uses depth of anaesthesia monitoring effectively	A,C	1
POM_HS_11	Takes steps to minimise the risk of accidental awareness under general anaesthesia	A,C	1,2
POM_HS_12	Implements strategies to avoid post-operative cognitive dysfunction	A,C	1

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_HS_13	Demonstrates an appropriate leadership role in patient safety and quality improvement within an organisation	A,L,S	2,3
POM_HS_14	Anticipates and acts to pre-empt complications during surgery	A,L,S	1,3
POM_HS_15	Uses Goal-directed Therapy in clinical practice	A,S	1
<b>Postoperative care:</b>			
<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_HK_13	Evaluates the benefits and limitations of perioperative patient pathways	C	1,2
POM_HK_14	Describes the importance of pain management in perioperative outcomes including enhanced recovery pathways	C	1
POM_HK_15	Describes evidence-based methods of optimising circulating volume in the postoperative patient	C	1
<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
POM_HS_16	Shows leadership and communicates sensitively with patients regarding complications and adverse events and co-ordinates appropriate actions	A,L,M,S	3,4
POM_HS_17	Prescribes postoperative medications and therapy to optimise recovery and minimise length of stay	A,L	1
POM_HS_18	Takes an active role in the post-operative multidisciplinary team	A,L,M,S	3
POM_HS_19	Demonstrates the ability to recognise when standard pathways should be adapted and tailored to individual need	A,L	1,2

## Regional

It is expected that this unit will often be completed in conjunction with the higher unit in orthopaedic surgery.

### **Learning outcomes:**

- Captures the maturation process and continues to develop understanding and skills gained at the intermediate level
- Demonstrate proficiency in managing the regional techniques learnt during that time under distant supervision
- Increase the range of block techniques practiced
- Increased understanding of, and skill in, the use of ultrasound in regional anaesthesia
- Take appropriate opportunities to use regional anaesthesia as part of the anaesthetic technique when clinically indicated
- Become skilled in performing some more complex blocks with distant supervision
- Has appropriately integrated regional anaesthetic practice into the range of clinical alternatives within their practice

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

- Demonstrates ability to perform both lower and upper limb plexus/regional blocks with distant supervision
- Always considers the option of regional anaesthesia in appropriate clinical contexts

## **Knowledge**

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
RA_HK_01	Discusses the principles, practice and complications of continuous catheter techniques for peripheral nerve blocks	A,C	1,2
RA_HK_02	Discusses the principles, practice and complications of the use of continuous spinal anaesthetic blockade	A,C	1,
RA_HK_03	Discusses the principles of the use of ultra sound for guiding nerve/plexus blocks and the insertion of catheters including, but not exclusively: Explaining the mechanisms by which hyperechoic, hypoechoic and anechoic images are obtained Explaining the difference and uses of 'B' mode [bright] and 'M' mode [Motion] ultrasound	A,C	1,

Skills			
Competence	Description	Assessment method	GMP
RA_HS_01	<p>Demonstrates the ability to develop a peri-operative management plan and perform safely and effectively a number of the following blocks under distant supervision using either/or peripheral nerve stimulation or ultrasound guidance [those marked with an asterisk are considered essential, the remainder are optional]:</p> <ul style="list-style-type: none"> <li>• Peripheral nerve blocks [e.g. femoral nerve]*</li> <li>• Brachial plexus*</li> <li>• Deep cervical plexus blocks</li> <li>• Supra and infra clavicular blocks</li> <li>• Intercostal nerve blocks</li> <li>• Thoracic epidural anaesthesia*</li> <li>• Lumbar plexus blocks</li> <li>• Sciatic blocks</li> <li>•</li> </ul>	A,D	1,2,3,
RA_HS_02	Demonstrates clinically relevant sonoanatomy of the brachial & lumbosacral plexus [upper and lower limb] with reference to performing recommended regional anaesthetic techniques	A,D	1,2
RA_HS_03	Can demonstrate local anaesthetic injection and circumferential spread around the intended nerve / plexus	A,D	1
RA_HS_04	Demonstrates correct needling technique using either an in or out of plane approach with ultrasound [Cross ref vascular and intensive care]	A,D	1
RA_HS_05	Demonstrates good communication skills when managing patients who requires regional blockade and the staff responsible for surgical and nursing care	A,D,M	1,2,3,4,
RA_HS_06	Demonstrates ability to lead discussions on appropriateness of a regional technique for surgery and post-operative analgesia	A,D	1,2,3,4,
RA_HS_07	Demonstrates the ability to co-ordinate and manage a list with suitable patients for regional blockade including liaising with surgeons, theatre nursing and anaesthetic staff	A,D,M	1,2,3,4,
RA_HS_08	Demonstrates the ability to supervise and teach regional anaesthetic techniques to less experienced trainees, whilst recognising the limitations of their expertise	A,D,M	1,2,3,4

## Sedation

This is an important unit of training, as it covers core skills required by all anaesthetists [including those with a major commitment to ICM]. It is expected that the competencies/minimum learning outcomes will be gained during the course of higher training through ST year 5 and 6, rather than as a dedicated block.

### Learning outcomes:

- To be able to deliver pharmacological sedation to patients of all ages, safely and effectively
- To be able to teach and supervise more junior colleagues in the provision of conscious sedation

### Core clinical learning outcome:

- Demonstrates the ability to provide safe and effective sedation to any patient using whatever drugs required, by whatever route

### Knowledge

<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CS_HK_01	Discusses how multiple drug use may enhance sedation techniques, whilst detailing how this increases risks	A,C,E	1,2,3

### Skills

<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
CS_HS_01	Demonstrates focused preoperative evaluation of patients of all ASA grades who are at risk of perioperative morbidity/mortality, ensuring engagement of patients in open and compassionate discussions	A,C,D,M	1,2,3,4
CS_HS_02	Demonstrates the ability to contribute to clinical decision making including the risks and benefits of specific procedures that require the use CS to ensure they are completed successfully	A,C,D,M	1,2,3,4
CS_HS_03	Demonstrates the ability to select sedation techniques appropriate to management in patients of all ages, including those with significant co-morbidities [i.e. any ASA grade]	A,C,D	1,2,3
CS_HS_04	Demonstrates the ability to administer and monitor sedation techniques to all patients [identified in CB_HS_01 above] for appropriate clinical procedures, safely and effectively	A,D	1,2,3
CS_HS_05	Demonstrates the ability to supervise and teach safe conscious sedation techniques to less experienced trainees	A,D	1,2,3

## Transfer medicine

The majority of trainees undertaking this level are expected to complete it during a year of higher general duties. It shares common competencies with the Trauma/stabilisation and ICM units and it is expected that the competencies/learning outcomes can be achieved during the course of a six to twelve month general duties block, without can be delivered as a dedicated unit, in many of the non-specialist hospitals that form part of many, if not all, Schools of Anaesthesia.

**Training note: Any trainee who has successfully completed a Helicopter Crew Course or equivalent may be assumed to have the competencies listed relating to helicopter transfer**

### Learning outcome:

- Capture the maturation process by building on the knowledge, understanding and skills gained during intermediate training

### Core clinical learning outcomes:

- Demonstrates the ability to lead a multidisciplinary team undertaking the initial assessment and stabilisation of patients, prioritising their early treatment
- Demonstrates the leadership and clinical management skills needed to lead teams delivering safe and effective intra-/inter hospital transfer of any patient, however complex, and for prolonged journeys within the UK if required, by either land or air.
- Demonstrates an understanding of the roles and responsibilities of teaching and supervising those undergoing training in the transfer of patients

Knowledge			
Competence	Description	Assessment methods	GMP
TF_HK_01	Discusses the special requirements of inter-hospital transfer by helicopter	C	1,2,3,4
TF_HK_02	Demonstrates a basic understanding of HEMS legislation	C	1
TF_HK_03	Describes the effects of flight on: <ul style="list-style-type: none"> <li>• Patient's physiology</li> <li>• Monitors / equipment</li> <li>• Medical staff</li> </ul>	C	1
TF_HK_04	Discusses the key aspects of safety relating to helicopter transfer: <ul style="list-style-type: none"> <li>• Loading / unloading a patient</li> <li>• Securing a patient during transfer</li> <li>• Personal safety</li> </ul>	C	1,2
TF_HK_05	Discusses the drills required during common emergencies on helicopters	C	1,2,3,4

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
TF_HK_06	Discusses the principles of communication with flight crew and correct radio procedures	C	1,2
TF_HK_07	Discusses the principles of handover following helicopter transfer	C	1,2
TF_HK_08	Discusses the importance of team working and outlines the roles and responsibilities of the medical, ambulance and aircrew	C	2,3,4
TF_HK_09	Discusses the key qualities of leadership required in those undertaking transfers, including the safe management of complex or prolonged transfers by land or air	C	1,2,3,4
TF_HK_10	Discusses the key issues in basic radio communication	C	1,2
TF_HK_11	Discusses the importance of audit/quality improvement projects of the transfer process, reporting of critical incidents during air transfer and research	C	1,2,3
TF_HK_12	Understands the basics of crew resource management	C	1,2,3,4
TF_HK_13	Discusses the issues regarding supervision of arranging patient transfers	C	1,2,3,4
TF_HK_14	Demonstrates the ability to plan teaching of trainees the basic levels of competencies for intra-hospital transfer	C	1

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
TF_HS_01	Demonstrates leadership in the clinical management of any patient requiring transfer to another area/hospital for further management	A,D,M	1,2,3,4
TF_HS_02	Demonstrates the ability to teach the basic competencies of intra-hospital transfer to trainees	A,D,M	1,2,3,4
TF_HS_03	Demonstrates the ability to supervise more junior trainees undertaking intra-hospital transfers	A,D,M	1,2,3,4
TF_HS_04	Demonstrates the necessary organisational and communication skills required to effect the transfer of patients in a timely and efficient manner	A,C,M	3,4
TF_HS_05	Demonstrates the ability to communicate effectively in a compassionate, non-discriminatory and understanding manner when communicating with patients and relatives/carers when organising transfers	A,M	3,4
TF_HS_06	Demonstrates leadership of the multi-disciplinary team undertaking the transfer	A,D,M	2,3,4
TF_HS_07	Demonstrates the ability to package a patient for transfer by helicopter	A,D,M	1,2,3,4
TF_HS_08	Demonstrates the correct use of communication by radio	A,D	1
TF_HS_09	Demonstrates basic crew resource management skills	A,D,M	1,2,3,4



<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
TF_HS_10	Demonstrates a willingness to participate in audit/quality improvement projects, critical incident reporting and research	M	1,2,3,4

## Trauma and stabilisation

The majority of trainees are expected to complete this unit satisfactorily during a year of higher general duties. It is expected that it can be delivered in many of the larger non-specialist hospitals that form part of many, if not all, Schools of Anaesthesia, although time in a specialist 'trauma centre' would provide valuable additional training

### Learning outcome:

- Captures the maturation process by building on the knowledge, understanding and skills gained during intermediate training
- To supervise more junior colleagues providing the anaesthetic care to the multiply injured patient from arrival in the Emergency Department and on through definitive treatment
- To acquire knowledge, skills and experience in treating the most complex of clinical cases

### Core clinical learning outcomes:

- The safe management of patients with multiple injuries from arrival in hospital and onwards through definitive treatment with distant supervision by:
  - Demonstrating the ability to lead a multidisciplinary trauma team in the initial assessment and stabilisation of the multi-trauma patient and prioritise early further treatment
  - Delivering safe anaesthetic management for all multiply injured patients for ongoing assessment and early/definitive treatment

Knowledge			
Competence	Description	Assessment methods	GMP
MT_HK_01	Discusses the role of pre-hospital care of multiply injured patients including triage and modes of transport to hospital	A,C	1,2,3,4
MT_HK_02	Explains the importance of good communication networks with the out of hospital emergency services	A,C	1,2,3,4
MT_HK_03	Outlines the importance of major incident planning within hospitals and the roles and responsibilities of members of the anaesthetic team.	C	1,2

Skills			
Competence	Description	Assessment methods	GMP
MT_HS_01	Demonstrates ability to lead a multi-disciplinary trauma team, co-ordinating and delivering the early hospital care of all types of complex multiply injured patients including the primary survey, resuscitation and secondary survey and appropriate HDU/ICU admission	A,C,M	1,2,3,4

Skills			
Competence	Description	Assessment methods	GMP
MT_HS_02	Demonstrates the ability to lead and/or deliver the safe perioperative anaesthetic care to all multiply injured patients including HDU/ICM admission if required for continued care	A,C,M	1,2,3,4
MT_HS_03	Demonstrates the ability to identify common abnormalities on the CT scans in patients with head injury, including but not limited to: <ul style="list-style-type: none"> <li>• Extradural haematoma</li> <li>• Subdural haematoma</li> <li>• Intracerebral haematoma</li> <li>• Skull fractures</li> <li>• Diffuse axonal injury</li> <li>• Subarachnoid blood</li> <li>• Abnormalities of the ventricular system</li> </ul>	A,C	1,2
MT_HS_04	Demonstrates the ability to teach, supervise and feedback on all aspects of trauma care to less experienced trainees	A,C,M	1,3
MT_HS_05	Demonstrates good communication skills with all members of the trauma team when leading the clinical care of the multiply injured patient and seek prompt and active advice from specialties not involved in the initial resuscitation when needed	A,M	2,3
MT_HS_06	Demonstrates the ability to: <ul style="list-style-type: none"> <li>• Recognise when the patient's needs exceed local resources and specialist expertise and that transfer for further definitive care is necessary</li> <li>• Recognise the need to debrief and undertake in an ordered and understanding manner</li> <li>• Manage end of life decisions in the multiply injured patient in a compassionate, non-discriminatory and understanding manner, communicating effectively with both relatives and the staff providing immediate care, whilst respecting spiritual and ethnic diversity</li> </ul>	A,C,M	1,2,3,4

## Vascular Surgery

Whilst it is an 'optional unit' at the Intermediate level, it is hoped that many trainees will be able to access this unit satisfactorily during a year of higher general duties. It shares a number of important competencies with the higher general, urology and gynaecology unit [this includes reference to emergency vascular surgery] and the non-theatre unit.

### **Learning outcome:**

Builds on the knowledge and understanding gained at the intermediate level and obtain perioperative anaesthetic experience managing patients with vascular disease.

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

- To anaesthetise patients for carotid endarterectomy and aortic aneurysm surgery with indirect supervision

### **Knowledge**

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
VS_HK_01	Explains the principles of research developments in peri-operative management of coexisting diseases	A,C	1,2,3,4
VS_HK_02	Describes the methods of assessment of cardiovascular and respiratory disease and their use and limitations preoperatively, including advice on the risks of surgery relative to its benefits	A,C	1,2
VS_HK_03	Describes National and international guidelines for management of patients with coexisting cardiac and respiratory disease	A,C	1
VS_HK_04	Explains the methods of risk stratification including scoring systems	A,C	1,2
VS_HK_05	Explains the advantages and disadvantages of using regional and combined GA/regional techniques for major vascular surgery	A,C	1,2,3,4
VS_HK_06	Describes techniques for pre-optimisation of patients undergoing vascular surgery	A,C	1,2
VS_HK_07	Explains the use of functional monitors during carotid artery surgery	A,C	1

### **Skills**

<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
VS_HS_01	Demonstrates the pre-operative assessment of vascular patients with coexisting disease	A,D,M	1,2,,3,4
VS_HS_02	Performs the pre-operative optimisation of high risk vascular patients	A,C,D,M	1,2

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
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

## Paediatrics

This is an essential unit of higher training, which all trainees are normally expected to complete. As a minimum, at least 4 weeks must be undertaken in the higher years of training. Ideally it should be completed as a dedicated block.

### Learning outcomes:

- Capture the maturation process by building on the knowledge, understanding and skills gained during intermediate training
- Become more independent in managing paediatric anaesthesia as demonstrated by requiring less consultant guidance and supervision
- Be competent at managing complications that arise in paediatric anaesthesia without immediate consultant support

### Core clinical learning outcomes:

- Be able to resuscitate and stabilise a sick baby or child prior to transfer to a specialist centre
- Provide perioperative anaesthetic care for common surgical conditions, both elective and emergency, for children aged 3 years and older with distant supervision

This section is to be undertaken in the latter years of specialist anaesthetic training. Trainees may achieve many of these higher level competencies in the early years [ST3/4] of speciality training but in order to have contemporaneous skills in paediatric anaesthesia at completion of specialty training [CCT] it is essential that at least one month of paediatric higher training takes place during ST6/7

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
PA_HK_01	Undertakes a critical discussion about the problems and risks inherent in anaesthesia for former premature babies and children with significant co-morbidity	A,C	1,2,3,4
PA_HK_02	Undertakes a critical discussion about the commoner problems of paediatric intensive care, including ventilatory and circulatory support, upper airway problems and trauma.	A,C	1,2,3,4
PA_HK_03	Provides a clear explanation of the current local and national guidelines for provision of paediatric services	C	1,2,3,4

<b>Skills in relation to children aged 3 years and older (unless specified):</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
PA_HS_01	Demonstrates the ability to provide safe perioperative anaesthetic care [including both inhalational and intravenous induction techniques] for children over the age of 3 years with distant supervision	A,D	1,2

PA_HS_02	Demonstrates the ability to provide safe peri-operative anaesthetic care for children less than 3 years of age under direct supervision	A,D	1,2,3,4
PA_HS_03	Demonstrates ability to manage children with difficult venous access	A,D	1,2,3,4
PA_HS_04	Demonstrates the ability to manage the airway in children and babies of all ages safely and effectively	A,D	1,2
PA_HS_05	Demonstrates the correct management of fluids, electrolytes, glucose and temperature peri-operatively.	A,C,D	1,2
PA_HS_06	Demonstrates the ability to manage acute pain in children safely and effectively, including the use of local and regional anaesthetic techniques, the use of opioids (including infusions and PCA/NCA where these are used), adjuvant NSAIDs and simple analgesics	A,C,D,M	1,2,3,4
PA_HS_07	Demonstrates the ability to provide safe and effective caudal epidural and peripheral nerve blockade without direct supervision	A,C,D,M	1,2,3,4
PA_HS_08	Demonstrates the ability to provide safe and effective anaesthetic management of the young child [less than 5 years of age] with a full stomach	A,D,M	1,2,3,4
PA_HS_09	Demonstrates the ability to provide safe and effective anaesthesia for children over the age of 3 years for diagnostic radiological procedures	A,D,M	1,2,3,4
PA_HS_10	Demonstrates effective management of anaesthetic emergencies in children e.g.: acute airway obstruction, croup and acute epiglottitis, inhaled foreign body, loss of airway, laryngospasm, malignant hyperthermia, anaphylaxis [including latex allergy] [S]	A,D,S,M	1,2,3,4
PA_HS_11	Demonstrates ability to provide safe transport of critically ill children and babies [S]	A,D,S,M	1,2,3,4
PA_HS_12	Demonstrates appropriate engagement in compassionate, authoritative discussions with patients, parents and/or carers and gives a balanced judgement of the estimated risks and likely complications of anaesthesia	A,M	1,2,3,4
PA_HS_13	Demonstrates ability to take responsibility and appropriate action when non-accidental injury is suspected	A,C,M	1,2,3,4

The RCPCH Adolescent Health Project (Module 3 and 4) can be found at: <http://www.rcpch.ac.uk/Education/Adolescent-Health-Project>

## Optional units

### Pain medicine

This is an optional higher unit of training. It is a progression from Basic and Intermediate training and is essential for all trainees who wish to progress to Advanced Pain Medicine Training. In addition, the College and the Faculty of Pain Medicine recommend that these higher competencies are the minimum required for a trainee to consider a future consultant post with an interest in Acute Pain [See also further guidance on Leads for Acute Pain Medicine in the Advanced Pain section].

#### **Learning Outcome:**

- To build on the competencies achieved at basic and intermediate level

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

- Fully competent in the assessment and management of acute surgical, acute non-surgical and acute on chronic pain in all patients and in all circumstances, including infants, children, the older person, the cognitive impaired, those with communication difficulties, the unconscious and critically ill patient
- To have knowledge and skills in the management of chronic and cancer pain
- To be an effective member of a multi-professional pain management service

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PM_HK_01	Explains the advanced principles of neural blockade to include autonomic blocks, in acute and chronic pain	A,C,E	1,2
PM_HK_02	Lists and explains the assessment and management principles of chronic and acute on chronic pain in a multi-professional context in inpatient and outpatient settings	A,C,E	1,2,3
PM_HK_03	Explains the advanced assessment and management principles of cancer pain in a multi-professional context	A,C,E	1
PM_HK_04	Explains the principles and describes the applications and side effects of physiotherapy and other physical therapies used for treating pain	A,C,E	1,2
PM_HK_05	Describes the psychological mechanisms in pain and techniques for their management including cognitive behavioural approaches	A,C,E	1,2
PM_HK_06	Explains the place of surgery in the management of pain	A,C,E	1,2
PM_HK_07	Explains the importance of disability and incapacity, and factors influencing their assessment	A,C,E	1,2,3,4



<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PM_HK_08	Explains the importance of psychological, social and ethical issues around good Pain Medicine	C,E	1,2,3,4
PM_HK_09	Explains the role of social services, rehabilitation and other support services	A,C,E	1

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
PM_HS_01	Demonstrates techniques of assessment and management principles of pain in a multi-professional context	A,C,E	1,3
PM_HS_02	Demonstrates the ability to recognise patients with pain who have psychological problems and who require psychological evaluation	A,C,E	1,3,4
PM_HS_03	Demonstrates the ability to perform, within the context of a full and appropriate pain management plan the following activities, including but not limited to: <ul style="list-style-type: none"> <li>• Manage an acute pain ward round</li> <li>• Assessment of a complex non-postoperative inpatient referral [eg cancer pain, sickle cell, abdominal/pelvic pain]</li> <li>• Epidural injection under x-ray control</li> <li>• Teaching to use a TENS machine</li> <li>• Peripheral nerve blockade under ultrasound guidance</li> </ul>	A,D,E,L	1,2,3
PM_HS_04	Demonstrates the need to ensure continuity of care, including ability to communicate effectively with patients, relatives and professionals in primary or secondary health care or in other organisations	A,C,E	1,2,3,4
PM_HS_05	Demonstrates an ability to assess incapacity and disability in patients with pain	A,C,E	1,3
PM_HS_06	Demonstrates the ability to become an effective member of a multi-professional pain medicine service	M,E	1,2,3,4

## Paediatric intensive care medicine

### Learning outcome:

- At the end of a period of higher paediatric intensive care medicine training an anaesthetist should be able to manage, as a member of a skilled team, the critically ill or injured child presenting in the district general hospital. As defined in the DH report – ‘The critically ill and injured child in the DGH’

### Core Clinical Learning Outcomes:

- To recognise the signs and symptoms of clinical deterioration in infants and children which might lead to a PICU admission
- To institute, as a member of a skilled team, appropriate resuscitative measures to manage acute deterioration and stabilise the critically ill and injured infant and child prior to transfer to a PICU
- To understand the principles and hazards of transferring, when appropriate (eg acutely deteriorating head injury) a critically ill and injured paediatric patient to an appropriate referral centre for further management.

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PI_HK_01	Describes the principal anatomical and physiological differences in neonates, infants and children	A,C,D	1
PI_HK_02	Describes the principle pharmacological differences in neonates, infants and children	A,C,D	1
PI_HK_03	Describes/recalls recognised Paediatric ICM techniques of sedation and analgesia in children	A,C,D	1
PI_HK_04	Describes/recalls the management of fluids and electrolytes in medical and surgical emergencies in neonates, infants and children	A,C,D	1
PI_HK_05	Describes/recalls respiratory management of infants & children using but not limited to nasal CPAP, pressured controlled ventilation, High Frequency Oscillatory Ventilation	A,C,D	1
PI_HK_06	Describes/recalls differential diagnosis for the collapsed neonate caused by but not limited to cardiac abnormality, sepsis, metabolic abnormality or non-accidental injury	A,C,D	1
PI_HK_07	Describes/recalls common presentations of paediatric cardiac anomalies; causes of cardiac arrest and how management differs from adults	A,C,D	1
PI_HK_08	Describes/recalls the management of paediatric medical conditions requiring critical care including but not limited to: septicaemia, bronchiolitis, status epilepticus, asthma and upper airway obstruction [including foreign body and infective causes] diabetic ketoacidosis and basic working knowledge of other metabolic emergencies	A,C,D	1

PI_HK_09	Describes/recalls the causes of coma and loss of consciousness in children	A,C,D	1
PI_HK_10	Describes/recalls the management of severe trauma in children including but not limited to isolated head injuries and raised intra-cranial pressure	A,C,D	1
PI_HK_11	Describes/recalls the principles of the psychological aspects of critically ill or injured children	A,C,D	1
PI_HK_12	Describes/recalls the importance of parental roles and family dynamics in paediatric intensive care	A,C,D,M	1,3,4
PI_HK_13	Describes/recalls the equipment required for intra and inter-hospital transfer for critically ill or injured children	A,C,D	1,2,3,4
PI_HK_14	Describes/recalls the management of children and parents/carers for end of life care and child death procedures in Trusts	A,C,D,M	1,3,4

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PI_HS_01	Demonstrates the intra and inter-hospital transfer of critically ill or injured children	A,D,M	1,2,3,4
PI_HS_02	Demonstrates the resuscitation of infants and children and their admission to intensive care. Including intubation, insertion of arterial and central venous catheters, and intra-osseous needles [Resuscitation standard to APLS/EPLS guidelines]	A,D	1,2,3
PI_HS_03	Demonstrates the correct selection of equipment for different ages and sizes of patients for procedures in PI_HS_02	A,D	1,2
PI_HS_04	Demonstrates early initiation of child protection measures	A,D,M	1,2,3,4
PI_HS_05	Demonstrates an understanding of the principles of 'listen to the child' and Gillick competence' as applied to PICM	A,D,M	1,2,3,4

## Ophthalmic

This is one of the eight optional units in higher training. It is recognised that, as for Intermediate training, it may not be available to all trainees as it will be dependent upon the distribution and availability of local services.

### Learning Outcomes:

- Captures the maturation process by building on the knowledge, understanding and skills gained during intermediate training, so developing the diversity of skills that allow optimal conditions for ophthalmic surgery and the best results for the ophthalmic patient
- Becomes more independent in managing anaesthesia for complex ophthalmic surgery as demonstrated by requiring less consultant guidance and supervision

### Core clinical learning outcomes:

- Provide comprehensive anaesthetic care to all ASA 1-4 adult patients for all types of elective and emergency ophthalmic surgery with distant supervision
- The ability to perform sub-Tenon's and peribulbar blocks with distant supervision

### Knowledge

Competence	Description	Assessment methods	GMP
OP_HK_01	Discusses the perioperative anaesthetic care for orbital surgery including: <ul style="list-style-type: none"> <li>• surgery for tumours of the eye and orbit</li> <li>• advanced reconstructive oculoplastic surgical techniques</li> </ul>	A,C	,2,3,4
OP_HK_02	Discusses techniques for post-operative pain relief in patients undergoing major reconstructive oculoplastic surgery	A,C	1

### Skills

Competence	Description	Assessment methods	GMP
OP_HS_01	Demonstrates the ability to critically evaluate the pre-operative condition, plan appropriate optimisation and deliver perioperative anaesthetic care to all adult patients however complex requiring routine and emergency ophthalmic surgery	A,C	1,2,3,4
OP_HS_02	Demonstrates the ability to provide safe perioperative anaesthetic care for children requiring ophthalmic surgery [Ref Paeds]	A,C	1,2,3,4
OP_HS_03	Demonstrates the ability to perform peribulbar and sub-Tenon's blocks	A,D	1
OP_HS_04	Demonstrates the ability to provide safe and effective sedation for ophthalmic procedures	A,D	1,2
OP_HS_05	Demonstrates effective communication with and understanding of the needs of the surgeon for optimal operating conditions	A,M	1,3

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
OP_HS_06	Demonstrates team leadership and the ability to teach others	A,M	1,3
OP_HS_07	Demonstrates briefing and debriefing skills	A,M	1,3
OP_HS_08	Demonstrates the ability to provide safe peri-operative anaesthetic care for the elderly requiring ophthalmic surgery	A,C	1,2,3,4

## Plastics/Burns

This is one of the eight optional units in higher training. It is recognised that, as for Intermediate training, it may not be available to all trainees as it will be dependent upon the distribution and availability of local services.

**Plastics:** This surgical service may be more available and trainees may be able to gain experience in this area of practice. Major reconstructive surgery [including free-flap grafting] may be linked with other units of training such as ENT and maxillo-facial surgery.

**Burns:** As severe burns, may be initially admitted to many Emergency departments it is therefore important that trainees gain a good understanding of their initial resuscitation prior to transfer to a specialist unit, which may also involve the trainee. There are some cross competencies with Trauma and Stabilisation.

Following on for the above, this unit contains important generic skills and it is hoped that trainees will be able to access appropriate training opportunities to complete it successfully during ST years 5-7.

### **Learning outcomes:**

- Obtain intermediate level competences for both plastics and burns [if possible] if not already completed
- Become more independent in the management of major plastic reconstructive cases including free-flap surgery
- Understands the principles of perioperative management of burns patients for grafting & related procedures

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

- Anaesthetise ASA 1-3 adult patients for major reconstructive plastic surgery [e.g. breast reconstruction with pedicled flap with distant supervision]

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment methods</i>	<i>GMP</i>
PL_HK_01	Describes appropriate anaesthetic techniques for major plastic surgical cases including free-flap surgery	A,C	1
PL_HK_02	Explains the principles of anaesthesia for primary and secondary cleft lip and palate repair [if not completed in paediatric training]	A,C	1,2
PL_HK_03	Describes the recognition & appropriate management of the plastic surgical patient with a potentially difficult or compromised airway including	A,C	1,2
PL_HK_04	Describes local protocols for the transfer of burns patients to specialist regional centres	C	1,2

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>GMP</i>
<b>Plastics</b>			
PL_HS_01	Demonstrates the ability to provide safe perioperative anaesthetic care for major plastic surgical cases including free-flap surgery	A,D,M	1,2,3,4
PL_HS_02	Provides a management plan for the post-operative care of a patient who has undergone plastic surgery including the methods of assessment of adequacy of blood flow in reconstructive flaps	A,C	1,2
<b>Burns (if clinical placement and/or simulator-based training available)</b>			
PL_HS_03	Demonstrates correct management of a patient with a severe inhalational injury		
PL_HS_04	Demonstrates the ability to provide safe perioperative anaesthetic care to burns patients requiring surgery including dressing changes, grafting & related procedures	A,D,M	1,2,3,4

## Anaesthesia in developing countries

This is an optional unit of training; see section 12.7 for detailed information about the delivery of this unit

### Learning outcomes:

- To gain knowledge, skills and experience of the peri-operative anaesthetic care of patients in a developing country
- To support the speciality of anaesthesia by providing teaching and training to anaesthetists, theatre staff and medical students in a developing country.
- To understand the level of competency, skill and support that is required to sustain safe and effective provision of anaesthesia in a resource poor setting.

<b>Knowledge</b>				
<i>Competence</i>	<i>Description</i>	<i>Delivery</i>	<i>Assessment Methods</i>	<i>GMP</i>
AD_HK_01	Describes the anaesthetic equipment used in developing countries, and its maintenance	SD	C	1,2
AD_HK_02	Lists anaesthetic drugs commonly used in developing countries in the peri-operative period	SD	C	1,
AD_HK_03	Describes health delivery in the country or countries to be visited and the associated challenges	SD, DC	C	1,
AD_HK_04	Describes the politics, customs and culture of the country or countries to be visited	SD, DC	C	1
AD_HK_05	Lists the diseases occurring in the country or countries to be visited which may influence delivery of anaesthesia and peri-operative care	SD, DC	C	1
AD_HK_06	Explains the difficulties and opportunities delivering education to medical and other health workers	SD, DC	C, M	1
AD_HK_07	Describe the factors which contribute to or detract from the safe conduct of surgery and anaesthesia in the country/ies to be visited	SD, DC	C	1

<b>Skills</b>				
<i>Competence</i>	<i>Description</i>		<i>Assessment methods</i>	<i>GMP</i>
AD_HS_01	Demonstrates peri-operative management of patients undergoing a wide range of surgical procedures, including paediatrics, obstetrics, trauma, emergencies and sick patients requiring post-operative care in HDU/ITU environment		D,C,A,M	1,2,3,4
AD_HS_02	Demonstrates peri-operative management of patients with concurrent morbidity including infectious diseases such as HIV, TB and malaria		D,C,A,M	1,2,3,4
AD_HS_03	Demonstrates the use of anaesthetic equipment used in resource poor contexts (eg draw-over apparatus) including simple maintenance		D,C,A,M	1,2
AD_HS_04	Demonstrates the use of alternative systems for oxygen delivery, including oxygen concentrators		D,C,A,M	1,2



AD_HS_05	Demonstrates the use of drugs such as ketamine, diazepam, halothane and ether	D,C,A,M	1,2
AD_HS_06	Demonstrates the safe administration of regional anaesthesia and peripheral nerve blocks using limited resources	D,C,A,M	1,2
AD_HS_07	Demonstrates safe peri-operative monitoring of patients with limited resources	C,A,M	1,2
AD_HS_08	Demonstrates management of a recovery area with limited resources	C,A,M	1,2,3
AD_HS_09	Demonstrates the management of acute pain with limited resources	C,A,M	1,2,3,4
AD_HS_10	Demonstrates the management of patients for surgical and medical conditions in a HDU/ITU environment with limited resources	C,A,M	1,2,3,4
AD_HS_11	Demonstrates the appropriate use of asepsis, infection control and sterilisation of equipment	C,A,M	1,2
AD_HS_12	Demonstrates safe application of cross matching blood and transfusion	C,A,M	1,2
AD_HS_13	Demonstrates ability to teach and train anaesthetic clinical officers, doctors, theatre staff and medical students with limited educational resources	M	1,2,3,4
AD_HS_14	Demonstrates ability to maintain a high standard of documentation in an unfamiliar clinical cultural environment	C,M	1,2
AD_HS_15	Demonstrate understanding of providing the best care possible whatever the environment	C,M	1,2,3,4
AD_HS_16	Demonstrate the ability to assess the clinical environment, suggest appropriate changes, and work towards implementing them	C,M	1,2,3,4
AD_HS_17	Demonstrate awareness of issues surrounding safety and security in the country to be visited	C,M	1,2,3,4

At the end of this unit the trainee will:

- be able to provide safe anaesthesia in a challenging environment with limited resources to a wide variety of patients, including those with extreme and very advanced pathology.
- have enhanced his/her experience and competence in the fields of paediatrics, obstetrics and trauma, where available
- have experienced working and living in a multi-cultural and, frequently, multi-lingual environment and will have developed an approach to planning and practice which emphasises effective communication and team management.
- have undertaken teaching and training to personnel from diverse cultural, linguistic and educational backgrounds.

## Conscious sedation in dentistry

This optional unit of training should only be undertaken once the advanced unit of conscious sedation has been completed. It is anticipated that not all Schools of Anaesthesia will be able to deliver this unit of training, as there are a limited number of trainers proficient in delivering the necessary supervision and training.

### Learning Outcomes:

- Gain mastery in this special interest area of practice by building on all the principles, knowledge and skills learnt and developed in the advanced CS unit of training
- To develop the necessary skills and knowledge to use conscious sedation techniques for dentistry appropriately in the hospital and non-hospital setting
- To understand the spectrum of behavioural and pharmacological techniques of pain and anxiety control for dentistry as an adjunct to local anaesthesia
- To understand the limitations of working in the isolation of the non-hospital environment

Knowledge			
Competence	Description	Assessment Methods	GMP
CD_HK_01	Discusses the importance of published guidance for the use of conscious sedation use in dentistry	A,C	1,2,3,4
CD_HK_02	Discusses the causes of dental pain and describes the mechanisms of pain transmission in the oro-facial region	A,C	1
CD_HK_03	Discusses the use of local anaesthesia for dentistry and describes techniques and complications	A,C	1,2
CD_HK_04	Explains the complexity of treatment need and how this may influence clinical management		2
CD_HK_05	Describes the definition and development of dental anxiety and phobia	A,C	1,2,3
CD_HK_06	Explains the importance of being able to recognise the signs and symptoms of dental anxiety and describes the assessment of its severity [e.g. Modified Dental Anxiety Score [MDAS]]	A,C	1,2
CD_HK_07	Outlines the role of behavioural strategies for management of dental anxiety including, but not exclusively: <ul style="list-style-type: none"> <li>• Communication including the use of appropriate language</li> <li>• Positive reinforcement</li> <li>• Distraction and the environment</li> <li>• Desensitisation and tell/show/do</li> <li>• Modelling techniques</li> <li>• Cognitive behavioural therapy [CBT]</li> </ul>	A,C	1,2,3,4
CD_HK_08	Explains the role of pharmacological techniques in the spectrum of pain and anxiety control for dentistry as an adjunct to and not a substitute for effective local anaesthesia and good behavioural management	A,C	1,2
CD_HK_09	Discusses the range of standard and alternative sedation techniques available for out-patient dental practice as defined in	A,C	1,2,3

Knowledge			
Competence	Description	Assessment Methods	GMP
	published guidance, the different routes of administration and their role in the management of the anxious patient		
CD_HK_10	Explains the importance of thorough preoperative preparation of dental out-patients, the consent process and aftercare, focusing on medical, social and psychological assessment and evaluation of risk	A,C	1,2,3,4
CD_HK_11	Discusses the place of intravenous infusions and TCI in out-patient dental practice	A,C	1,2
CD_HK_12	Discusses the limitations imposed by working in the isolation of the non-hospital environment including: <ul style="list-style-type: none"> <li>• The need to ensure that each component of the premises [e.g. waiting room, surgery, recovery area] is appropriate to the sedation technique[s] used</li> <li>• The importance of robust patient selection including, but not exclusively: dental, psychological, medical and social assessment, and that it be undertaken in advance of actual treatment and include a valid consent process</li> <li>• Awareness that staff and equipment available must meet the needs of both the technique [including monitoring] and its possible complications; awareness of the need to ensure that resuscitation equipment is regularly checked, maintained and includes all the drugs and equipment necessary for advanced life support</li> </ul>	A,C	1,2,3,4
CD_HK_13	Discusses the inherent risks associated with the use of infusions and/or multiple drugs with synergistic actions, the potential of narrow therapeutic index and reduced margin of safety and the danger of such techniques when not used in a setting equipped with full resuscitation and general anaesthetic facilities	A,C	1,2,3,4
CD_HK_14	Discusses the following in relation to the use of conscious sedation in children for dentistry in the out-patient/non-hospital setting [cross ref paed]: <ul style="list-style-type: none"> <li>• The recommendation that inhalational sedation [nitrous oxide/oxygen], titrated to the individual child's needs, is suitable for use in dental out-patient/non-hospital settings</li> <li>• Intravenous sedation for children should only be provided in an environment with facilities equivalent to those found in NHS hospitals</li> <li>• That children undergoing intravenous sedation must be managed by staff who have received appropriate training</li> <li>• Anaesthetic staff administering sedation to children should have been trained equivalent to that detailed in the 'higher level' paediatric anaesthesia section of the curriculum [Cross ref paed]</li> </ul>	A,C	1,2,3,4
CD_HK_15	Describes why all staff involved in out-patient dental sedation practices need to understand: <ul style="list-style-type: none"> <li>• The implications of sedation for medically compromised patients, with particular regard to limitations imposed by the non-hospital environment</li> <li>• How to monitor sedated patients including the use of commonly used sedation scoring systems</li> <li>• The need for robust recovery and discharge criteria and the importance of appropriate escort arrangements</li> <li>• The principles of the Mental Capacity Act 2005 in relation to special care dentistry</li> </ul>	A,C	1,2,3

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>GMP</i>
CD_HK_16	Discusses the specific complications associated with conscious sedation techniques for dentistry and their management	A,C	1,2
CD_HK_17	Discusses how general anaesthesia may have a role in the management of the anxious or phobic dental patient	A,C	1,2,3

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
CD_HS_01	<p>Demonstrates an understanding that conscious sedation for dentistry in the dental practice setting requires:</p> <ul style="list-style-type: none"> <li>• Recognition that it is very different from the sedation delivered by anaesthetists in the hospital setting</li> <li>• An ability to select, assess and determine suitability of patients for treatment under conscious sedation, including the ability to decide which patients may be treated in the non-hospital setting and those whose interests would be best served by referral to a hospital facility</li> <li>• An ability to communicate effectively with patients and be sympathetic to their anxieties or phobia</li> <li>• An ability to work as a member of a multi-professional team, showing good communication skills</li> <li>• An appreciation of the importance of regular update and team scenario training of the management of sedation-related complications and medical emergencies</li> </ul>	A,C,M	1,2,3,4
CD_HS_02	Demonstrates skill in titrating drug[s] to a recognised end-point, avoiding the risks implicit in over-sedation in the remote dental out-patient setting, and the need for the same level of care and monitoring as general anaesthesia should this occur	A,C	1,2,3,4
CD_HS_03	<p>Demonstrates mastery in the peri-procedural care of patients when using any of the following standard conscious sedation techniques [including an ability to teach less experienced trainees]:</p> <ul style="list-style-type: none"> <li>• Inhalation sedation using nitrous oxide and oxygen</li> <li>• Intravenous sedation using midazolam alone</li> <li>• Oral / transmucosal benzodiazepine</li> </ul>	A,C,M	1,2,3,4
CD_HS_04	<p>Demonstrates mastery in the peri-procedural care of patients when using any of the following alternative conscious sedation techniques [including an ability to teach less experienced trainees]:</p> <ul style="list-style-type: none"> <li>• Any form of conscious sedation for patients under the age of 12 years other than nitrous oxide / oxygen inhalation</li> <li>• Benzodiazepine plus any other agent with sedative effects [e.g. opioid, propofol, ketamine]</li> <li>• Propofol either alone or with any other agent [e.g. benzodiazepine, opioid, ketamine]</li> <li>• Inhalation sedation using any other agent other than nitrous oxide / oxygen</li> <li>• Techniques simultaneously combining two or more routes of administration</li> </ul>	A,C,M	1,2,3,4

<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
CD_HS_05	Demonstrates mastery in the peri-procedural care of patients requiring the use of infusion or TCI pumps	A,C	1,2
CD_HS_06	Demonstrates maturity in clinical decision-making such that unnecessary complications are avoided by the use of timely interventions, or abandonment of a technique, when it has proved problematic or unsuccessful	A,C,M	1,2,3,4
CD_HS_07	Demonstrates the necessary maturity and clinical leadership required to lead the multi-disciplinary team in the management of unexpected medical emergencies that may arise in an isolated out-patient dental surgery whenever CS is used as a treatment	A,C,M	1,2,3,4
CD_HS_08	Demonstrates the ability to design, complete and evaluate audits/quality improvement projects related to this area of clinical practice	M	1,2
CD_HS_09	Demonstrates active participation in educational programmes within this field of practice	M	1
CD_HS_10	Demonstrates active participation, engagement and leadership where appropriate in inter-disciplinary team meetings developing safe and effective patient management services in this area of practice	A,C,M	1,2,3,4

## Military Anaesthesia

### Learning Outcomes:

- To equip the trainee with the additional knowledge and skills required to perform appropriate pre-hospital care, resuscitation, field anaesthetics and critical care within military environments
- To gain an understanding of the management of medical support to military operations

<b>Knowledge</b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>Delivery</i>	<i>GMP</i>
<b>Pre-hospital care</b>				
MA_HK_01	Explains military triage assessment and categories	A,C,D	SD, B, Dep, MERT, BATLS, MIMMS	1
MA_HK_02	Explains military major incident management	A,C,D	SD, Dep, MILITARY MIMMS	1
MA_HK_03	Recalls physiological hazards of transporting patients by air	A,C,D	SD, B, Dep, MERT, MOST, HEMS	1
MA_HK_04	Recalls aircraft features and aircrew procedures likely to impact on patient safety	A,C,D	SD, B, Dep, MERT, MOST, HEMS	1,2,3,4
MA_HK_05	Describes Medical Emergency Response Team equipment	A,C,D	SD, B, Dep, MOST, MERT, BATLS,	1,2

<b>Knowledge</b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>Delivery</i>	<i>GMP</i>
			HEMS	
MA_HK_06	Recalls casualty reporting systems	A,C,D	SD, Dep, BATLS, MERT, MOST	1
MA_HK_07	Describes Pre-Hospital Resuscitation Options including Principles of Damage Control Resuscitation	A,C,D	MERT, MOST, BATLS, HEMS	1,2,3,4
MA_HK_08	Describes Military Pre-Hospital Analgesia	A,C,D	MERT, MOST, BATLS	1,2
<b>In-hospital resuscitation and field anaesthetics</b>				
MA_HK_09	Recalls relevant trauma scoring systems and military audit projects	A,C,D	SD, B, Dep, MERT, STAT, TSAS, MOST	1,2
MA_HK_10	Explains the Surgeon General's current transfusion policy, including recombinant Factor VIIa policy	A,C,D	SD, MOST, CGO	1
MA_HK_11	Recalls the logistics of medical resupply and the maintenance of appropriate storage conditions	A,C,D	SD, Dep, MOST	1
MA_HK_12	Recalls indications for, and the safe use of emergency blood donor panels	A,C,D,S	SD, MOST, STAT	1,2,3,4
MA_HK_13	Describes field surgical team equipment, including tri-service anaesthetic apparatus (with paediatric adaptations) and operating tables, knowledge of rapid infusion devices, transport ventilators, broselow bag, regional anaesthesia equipment and PCA	A,C,D,S	Sim, Dep, DASC, MOST,	1

<b>Knowledge</b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>Delivery</i>	<i>GMP</i>
			MAPLS	
MA_HK_14	Explains field sterilisation and clinical waste disposal methods	A,C,D	SD, Dep, MERT, MOST, MAPLS, DASC	1,2
MA_HK_15	Explains understanding of ketamine	A,C,D	SD, Sim, Dep, MOST	1
MA_HK_16	Explains current Military Anaesthesia Concepts on dealing with a Difficult Airway in a Trauma setting	A,C,D,S	MOST, MERT	1,2,3,4
MA_HK_17	Recalls the principles of anaesthetics for damage control surgery	A,C,D,S	SD, Dep, MOST, DASC	1,2,3,4
MA_HK_18	Describes the use of near point coagulation testing RoTEM and its use in Damage Control Resuscitation	A,C,D,S	MOST	1,2
MA_HK_19	Management of the traumatic pelvis	A,C,D,A	MOST,B ATLS, MERT	1
MA_HK_20	Current concepts in the management of traumatic cardiac arrest	A,C,D,S	MOST, MERT, TRUE	1
MA_HK_21	Military Anaesthesia for Severe Burns	A,C,D,S	MOST, MERT	1
MA_HK_22	Military Anaesthesia for Head Injuries	A,C,D,S	MOST, MERT	1
MA_HK_23	Describes concepts of Blast and Ballistic in terms of Military Anaesthesia	A,C,D	MOST	1
MA_HK_24	Recalls the current methods for management of acute pain in the field including field hospital analgesia ladder, early prophylaxis of neuropathic pain	A,C,D	SD, Dep, MOST, CGOs	1,2,3
<b>Critical Care</b>				



<b>Knowledge</b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>Delivery</i>	<i>GMP</i>
MA_HK_25	Explains the capabilities and limitations of field critical care	A,C,D,I	SD, Dep, MOST, MAPLS, TRUE	1
MA_HK_26	Recalls preparation of patients for handover to an aeromedical transfer team	A,C,D,I	SD, Sim, Dep, MOST	1,2,3,4
MA_HK_27	Explains the role of the AELO in the evacuation process	A,C,D,I	SD, Dep, MOST	1
MA_HK_28	Recalls a basic understanding of CCAST equipment	A,C,D,I	SD, Dep, MOST	1
MA_HK_29	Recalls specific deployable medical assets such as field haemofiltration teams	A,C,D,I	SD, MOST	1
MA_HK_30	Discusses the management of Blast Lung	C,D,I	MERT, MOST	1
MA_HK_31	Knowledge of CBRN in the context of anaesthesia and damage control resuscitation	C,D,I	CBRN	1,2,3,4
MA_HK_32	Explains the repatriation process for KIA including appropriate liaison with SIB and UK coroners	A,C,D,I	SD, Dep, MOST, CGOs	1,2,3,4
<b>Battle Casualty Rehabilitation</b>				
MA_HK_33	Recalls the casualty reception process in the UK	A,C,D	SD, RCDM, MOST	1,2,3,4
MA_HK_34	Explains the rehabilitation process	C,D	SD, Headley Court	1,3,4
MA_HK_35	Recalls the chronic pain management options for battle casualties	A,C,D	SD, MOST, Headley Court	1,2,3
<b>Deployed Military Hospital Management</b>				

<b>Knowledge</b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>Delivery</i>	<i>GMP</i>
MA_HK_36	Describes a working knowledge of Joint Warfare Publication 4-03 – Medical Support to Operations	C,D	SD, JWP 4-03	1,2,3,4
MA_HK_37	Recalls clinical Guidelines for Operations (CGOs)	A,C,D,S	SD, B, Sim, Dep, MOST, CGOs	1,2,3,4
MA_HK_38	Explains the structure and responsibilities of the Defence Medical Services, Joint Medical Command, Surgeon General's Department, Land, Fleet and Air Commands.	C,D	SD, RCDM	1,2,3,4
MA_HK_39	Recalls the procurement process for new medical equipment	C,D	SD, SiG Equipment Meeting	1,2,3
MA_HK_40	Explains the role and responsibilities of a Field Hospital Clinical Director and the Commander Medical	C,D	SD, Dep, MOST	1,2,3,4
MA_HK_41	Explains the role of host nation, friendly-force medical facilities and non-government organisations	C,D	SD, Dep, MOST	1,2,3,4
MA_HK_42	Explains the role of UK Role 2 (light manoeuvre) and sea-based medical facilities	C,D	SD, MOST	1,2,3,4
MA_HK_43	Explains the operational medical entitlement matrix	C,D	SD, Dep, MOST	1
MA_HK_44	Describes medical communication systems	C,D	SD, Dep, MOST, MERT, RCDM	1,2,3
MA_HK_45	Recalls the field hospital major incident plan	C,D	SD, Dep, MIMMS	1,2,3,4
MA_HK_46	Overview of key issues around contingency operations, decisions when resources are limited, and the key ethical decisions required by the Deployed Clinical Director	C,D	MOST, MERT, MAPLS, MIMMS	1,2,3,4
MA_HK_47	Describes Military Clinical Governance Structure	C,D	Comple	1,2,3,4

<b>Knowledge</b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>Delivery</i>	<i>GMP</i>
			es audit or QuIP, TSAS and/or STAT Workshop	

<b>Attitudes and Behaviour</b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment Methods</i>	<i>Delivery</i>	<i>GMP</i>
MA_HAB_01	Applying the principles of Good Medical Practice in the field including the conduct of Healthcare Governance on operations	A,D,M,S	SD, Dep, MOST, STAT Workshop	1,2,3,4
MA_HAB_02	Demonstrates a broad understanding of the unusual ethical challenges and non-medical influences on hospital activity	A,D,M	SD, Dep, MOST, MAPLS	1,2,3,4
MA_HAB_03	Can apply appropriate risk assessment and management	A,C,D,M,S	SD, B, Dep, MOST, HEMS, DASC,CBRN,STAT Workshop	1,2,3,4
MA_HAB_04	Demonstrates ability to work within a military command structure*	A,D,M,S	Dep,RCDM,STAT Workshop	1,2,3,4
MA_HAB_05	Demonstrates knowledge of Advanced Leadership and Crew Resource Management (Human Factors)	A,D,M,S	MOST,DASC	1,2,3,4

<b>Skills<sup>1</sup></b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>Delivery</i>	<i>GMP</i>
<b>Pre-hospital Care</b>				
MA_HS_01	Demonstrates emergency skills in trauma with particular reference to emergency airway management including use of field cricothyroidotomy kit, insertion of chest drains and gaining central venous access	A, D, C	SD, B, Sim,	1,2

<sup>1</sup> Competences in marked \* may only be achievable on or after active service and are to be regarded as desirable rather than essential for the completion of the Unit

<b>Skills<sup>1</sup></b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>Delivery</i>	<i>GMP</i>
			BATLS, MERT	
MA_HS_02	Demonstrates application of the combat application tourniquet (CAT) and haemorrhage control compression dressing bandage	D	SD, B, Sim, BATLS, MERT	1
MA_HS_03	Demonstrates the use of Intra osseous rapid access devices	D	SD, B, Sim, BATLS, MERT	1
MA_HS_04	Demonstrates Novel haemostatic techniques such as Hemcon and QuikClot dressings	A, D	SD, B, Sim, BATLS, MERT	1
<b>In-hospital Resuscitation and Field Anaesthetics</b>				
MA_HS_05	Demonstrates provision of anaesthetics for elective, emergency and damage control surgery using current UK Military field anaesthetic equipment modules	A, C, D,S	SD, Sim, Dep, MOST, DASC	1
MA_HS_06	Demonstrates use of field and regional anaesthetics as an adjunct to acute pain management in the field	A,D,C,S	SD, Dep, MOST	1
MA_HS_07	Demonstrates use of field PCA equipment	D,S	SD, Dep, MOST	1,2
<b>Critical Care</b>				
MA_HS_08	Demonstrates packaging of casualties for safe aeromedical evacuation	C,D	SD, Sim, Dep, MOST	1,2,3,4
MA_HS_09	Demonstrates management of massive blood transfusion in a field hospital	A,C,D,S	SD, Sim, MOST, DASC	1,2,3,4
MA_HS_10	Demonstrates ability to assist the AELO with completion of evacuation signals and documentation*	D,M	SD,	1,2,3

<b>Skills<sup>1</sup></b>				
<i>Competence</i>	<i>Description</i>	<i>Assessment method</i>	<i>Delivery</i>	<i>GMP</i>
			Dep,RC DM	
<b>Battle Casualty Rehabilitation</b>				
MA_HS_11	Visit the Defence Medical Rehabilitation Centre and present a case report on an inpatient to your military Educational Supervisor	M, C	SD, Headley Court	1,3,4
MA_HS_12	Demonstrate patient progress by follow-up visit after 6 months*	M, C	SD, Dep	1,3,4
<b>Deployed Military Hospital Management</b>				
MA_HS_13	Draft a Statement of Requirement for a piece of new medical equipment	A,C,D	SD,Liaise with SiG Equipm ent Lead	1,2,3,4
MA_HS_14	Present a case at the weekly RCDM/Field Hospital Video Teleconference*	C, M	Dep, Visit RCDM for JTCCC	1,2,3,4
MA_HS_15	Present on a military medical topic at a CME meeting	C,M	SD, Dep, Present at STAT or TSAS	1,2,3,4
MA_HS_16	Demonstrate briefing ability by shadowing the Field Hospital Clinical Director for a day, present on his behalf at a Command Brief and deliver a backbrief to clinical staff*	C,M	Dep, Worksh op at STAT if unable to deploy	1,2,3,4

**Summary of Achievement:**

To ensure military anaesthetists are familiar with the additional equipment, environmental, management and logistic challenges they will encounter on deployment. By proposing strategies and preparing trainees for independent practice in the military environment, it will achieve the aims of a higher training unit. The unit is designed to be flexible enough to incorporate new developments, to provide a framework for maintaining knowledge and skills at all levels of seniority and to be deliverable in more peaceful times.

**Glossary of Terms:**

AELO	Aeromedical Evacuation Liaison Officer	SD	Study day, tutorial or pre-deployment training course
B	Battlefield Advanced Trauma Life Support Course	SIB	Special Investigation Branch (Royal Military Police)
CCAST	Critical Care Air Support Team	Sim	Simulator Session
Dep	Instruction and supervision on deployment	STAT	Society of Tri-Service Anaesthetists in Training
KIA	Killed in Action	TSAS	Tri-Service Anaesthetic Society
RCDM	Royal Centre for Defence Medicine		

MOST	Military Operational Surgical Training Course
HEMS	Helicopter Emergency Medical Service
MERT	Medical Emergency Response Team
DASC	Defence Anaesthesia Simulation Course
BATLS	Battlefield Advanced Trauma Life Support Course
MIMMS	Military Major Incident Medical Management and Support Course
MAPLS	Military Advanced Paediatric Life Support Course
CBRN	Chemical, Biological, Radiation, Nuclear Clinical Course
TRUE	True Military Echo Course
SiG	Special Interest Group

## Remote and rural anaesthesia

### Learning Outcomes:

- Application of the knowledge and understanding gained at CT1-2 and ST1-3 to the practice of anaesthesia in the remote and rural setting.
- Develop and modify the skills of administering general and regional anaesthesia to include a focus on the special difficulties presented by the remote and rural setting. This will include developing knowledge, skills and experience of the managing critical care services in a multidisciplinary team setting where resource may be limited.
- To develop an understanding of and skills in transfer medicine (paediatric and adult), neonatal resuscitation, chronic pain and palliative care suitable for a remote and rural location practice.
- Become more independent in managing all clinical and management issues as demonstrated by requiring less consultant guidance and supervision.

### Core clinical learning outcomes:

- Deliver perioperative anaesthetic care to ASA 1-4 patients in the remote and rural setting
- Lead the resuscitation, stabilisation and transfer of patients from the remote and rural centre to the referral centre (air transfer by helicopter or fixed wing, road transfer).
- Be an effective team member for delivery of acute services within a remote and rural centre.

### Specific training requirements:

Anaesthetic training in remote and rural practice should be delivered with a minimum of three months practice in a designated remote and rural centre. If transfer medicine is not provided for in the remote and rural centre, a period of training of no less than 2 weeks should be undertaken with a designated transfer team (adult and paediatric). A minimum of three months, up to a maximum of twelve months is recommended for the totality of training in remote and rural anaesthetic practice. Duration of the remote and rural training experience will be determined by the trainee's previous experience within the CCT programme; transfer medicine, pain and palliative care, and neonatal resuscitation may be provided for within the trainee's existing CCT programme. Training should be delivered in dedicated blocks of at least one month.

Knowledge			
Competence	Description	Assessment Method	GMP
RR_HK_01	Explains what is meant by a remote and rural location with respect to anaesthesia services	C	1,2,3,4
RR_HK_02	Outlines the differing epidemiology of disease patterns in remote and rural locations	C	1,2
RR_HK_03	Describes the difficulties in delivering a service in remote and rural locations	C	1,2,3,4
RR_HK_04	Explains the need to rationalise resources	C	1,2,

<b>Knowledge</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
RR_HK_05	Explains the physiology of transport medicine [See also Transfer Medicine and Pre-hospital care]	A, C	1
RR_HK_06	Outlines the principles of transfer medicine and describes the indications, the methodology and the practice	D, A, C	1,2,3
RR_HK_07	Explains the contra-indications to transfer	C	1,2,3,4
RR_HK_08	Outlines the principles of safe transport of critically ill children and neonates	D,C,A	1,2,3,4
RR_HK_09	Describes the management of neonatal resuscitation	D, A	1,2,3,4
RR_HK_10	Explains the impact of living and working in small communities where the ability to secure time away from work is limited	C, M	3,4
RR_HK_11	Describes the management structure for health care delivery in a remote and rural setting	C,	1,3,4
RR_HK_12	Explains the need to use generic skills achieved in previous training and adapted to remote and rural location	D,A,C	1,2,3,4

<b>Attitudes and Behaviour</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
RR_HAB_01	Ability to communicate well with patients (and relatives)and other team members (Skill)	M, D	3
RR_HAB_02	Recognises the need to use generic skills achieved in previous training and adapt to remote and rural location (Know)	D, A, C	1,2,3,4
RR_HAB_03	Demonstrates appreciation of the multiple roles undertaken by team members in remote locations (Skill)	M, C	3
RR_HAB_04	Demonstrates a high level of professional self reliance and independence (Skill)	M, C,	1,2,3,4
RR_HAB_05	Demonstrates understanding of when to seek more experienced help appropriately (Skill)	M, C	1,2,3
RR_HAB_06	Demonstrates willingness to be involved in management roles (Skill)	M	1,2,3,4
RR_HAB_07	Appreciates the important teaching role bestowed upon the anaesthetist in the remote and rural setting (Skill)	D, M	1,
RR_HAB_08	Develops links with the local community (skill)	M	3,4



<b>Skills</b>			
<i>Competence</i>	<i>Description</i>	<i>Assessment Method</i>	<i>GMP</i>
RR_HS_01	Demonstrates the assessment and optimisation of the patient (adults, child and neonates) requiring anaesthesia in or transfer from a remote and rural location	D,C,M	1,2,3,4
RR_HS_02	Demonstrates appropriate management of transfer of a patient (adult, child and neonate) to a referral centre	D,C,M	1,2,3
RR_HS_03	Demonstrates appropriate use of resources in the remote and rural location	C	1,2,3
RR_HS_04	Demonstrates a recognition of the importance of the leadership role	D,M	1,2,3,4
RR_HS_05	Demonstrates the provision of appropriate pain management in the remote and rural setting	D, A, C	1,3
RR_HS_06	Demonstrates participation in delivering high quality teaching on relevant anaesthesia topics to the multidisciplinary team	D,M	1
RR_HS_07	Demonstrates participation in the management of a remote and rural department	D,M	1,2,3,4
RR_HS_08	Demonstrates communication skills with patients, relatives and other team members	M,D	3
RR_HS_09	Demonstrates appreciation of the multiple roles undertaken by team members in remote locations	M,C	3
RR_HS_10	Demonstrates a high level of professional self reliance and independence	M,C	1,2,3,4
RR_HS_11	Demonstrates understanding of when to seek more experienced help appropriately	M,C	1,2,3
RR_HS_12	Demonstrates willingness to be involved in management roles	M	1,2,3,4
RR_HS_13	Demonstrates ability to forge links with the local community	M	3,4
RR_HS_14	Demonstrates an appreciation of the important teaching role bestowed upon the anaesthetist in the remote and rural setting	D,M	1

## Blueprint of workplace based assessments mapped against the higher 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	√	√		√
Day surgery	√	√	√	
Head, neck, maxillo-facial and dental	√	√	√	
General, urological and gynaecological surgery	√	√	√	
Management of respiratory and cardiac arrest	√		√	
Non-theatre	√		√	
Obstetrics	√	√	√	
Orthopaedic	√	√	√	
Perioperative medicine	√	√	√	
Regional	√	√	√	√
Sedation	√	√	√	
Transfer medicine	√	√	√	
Trauma and stabilisation	√	√	√	
Vascular	√	√	√	
Intensive care medicine	See Annex F			
Paediatric	√		√	
<b>Optional units</b>				
Pain medicine	√	√	√	√
Paediatric intensive care medicine	√		√	
Ophthalmic	√	√	√	
Plastics/Burns	√	√	√	
Anaesthesia in developing countries	√		√	
Conscious sedation in dentistry	√		√	
Military anaesthesia	√		√	
Remote and rural	√		√	

- \* Assessment for General Duties:
- Option of A-CEX or ALMAT for each unit blueprinted with both types of assessment
  - Minimum of 3 CBD