



THE CCT IN ANAESTHETICS

III: Competency Based

Intermediate Level (Specialty Training (ST) Years 3 and 4)

Training and Assessment

A manual for trainees and trainers

Edition 1: January 2007

Amendment 1: April 2009

1st Edition dated: January 2007

Replacing The CCST in Anaesthesia III Edition 2 dated: April 2003

This edition of *The CCT in Anaesthetics III: Intermediate Level Training and Assessment* revises the *CCST in Anaesthesia III: SpR 1 and 2 Training and Assessment 2nd Edition* dated April 2003.

The term “sub-specialty” to describe the options available at the intermediate level of training has been replaced with “special interest” to conform with PMETB terminology.

The majority of the other changes have been made to reflect the introduction of seamless training in August 2007.

Amendment 1 dated: 1 August 2008

Amendments are minor and reflect the experience gained in the first year of the new programme and the publication of ***Modernising Medical Careers: The Gold Guide to Specialty Registrar Training***.

Because the titles of trainees keep on changing as MMC evolves, the term Specialty Registrar (StR) is used throughout these manuals to encompass trainees in Fixed Term Specialty Training Appointments (FTSTA) and those with contracts as Core Trainees (CT) and Specialist Registrars (SpR).

StR1 = CT1 = FTSTA1
StR2 = CT2 = FTSTA 2
StR4 = SpR2
StR5 = SpR3
StR6 = SpR4

Amendment 2 dated: 6 April 2009

This amendment introduces an optional higher level syllabus for:

- Conscious sedation for dentistry



PREFACE

This is the third volume in a series of four training guides published by the Royal College of Anaesthetists (RCoA) which describe the programme of training leading to a Certificate of Completion of Training (CCT) in Anaesthetics.

***The CCT in Anaesthetics I: General Principles* contains generic material that is relevant to all parts of the training programme. Part III must be read in conjunction with Part I.**

The manuals were originally published as *The CCST in Anaesthesia* following consultation and feedback from Specialist Societies, Regional Advisers, RCoA Tutors, Programme Directors, RCoA Council Members and individual anaesthetists which was reviewed and developed by working parties that reported to the RCoA Training Committee and College Council. This edition was approved by the Postgraduate Medical Education and Training Board on 18 January 2007.

The RCoA Training Committee consists of members from College Council, the lead Dean for anaesthesia, the Bernard Johnson Advisers for flexible trainees and overseas trainees, and representatives from England, Northern Ireland, Scotland and Wales, the Regional Advisers and the Intercollegiate Board for Intensive Care Medicine.

The RCoA will be pleased to receive comments on this Intermediate Level Training Programme from both trainers and trainees. These should be addressed to the Medical Secretary of the RCoA Training Committee at medsec@rcoa.ac.uk.

This manual is reviewed regularly with an implementation date for any changes being not less than 6 months after their publication date. Please work from the latest version.

Occasionally Council or the Training Committee have to take decisions that may affect the immediate interpretation or application of specific topics in these manuals. These will be published in *Guidance for Trainers* and, if necessary, earlier by letter to all Regional Advisers, College Tutors and Programme Directors.

ACKNOWLEDGEMENTS

The Royal College of Anaesthetists acknowledges the wide support that it has received from groups and individuals in the development of this programme of Competency Based Training. In particular, several templates were based upon the Northern Schools of Anaesthesia Training Manual edited by Dr J D Greaves and Prof C P Dodds.

Assistance and advice received from specialist societies and other bodies in the writing of all four manuals is acknowledged in *The CCT in Anaesthesia I: General Principles*.

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1: INTRODUCTION

This manual replaces all existing Royal College of Anaesthetists (RCoA) documentation on intermediate level training and the Final FRCA Examination Syllabus. It should be read in conjunction with *The CCT in Anaesthetics, I: General Principles*.

This manual sets out the intermediate level knowledge skills and attitudes required of any trainee before he/she is eligible to start higher and advanced level training and it prescribes the competencies which have to be 'signed up' allowing, however, considerable latitude as to how this can be done.

Whilst theoretically it would be possible in applying assessment, to break down every sub-component of an anaesthesia procedure and provide a checklist assessment of each detail, it is neither practical nor profitable to do so. Furthermore, such a methodology would remove the assessment of the total task, which carries the important aspects of decision-making, attitude to the patient and response to events as they occur. It is also not possible for every trainee to have exposure to identical patients, so there has to be an in-built factor that relies on the common sense of an experienced trainer to know what is acceptable. Consequently, the majority of assessments in the workplace are directed towards broader categories and topics.

This manual also contains the syllabus for the formal assessment of knowledge i.e. the Final FRCA Examination or a prospectively approved equivalent qualification. The material is arranged under the headings *Knowledge, Skills and Attitudes*, in individual clinical and basic science sections. This format inevitably results in the same topic appearing in more than one place, similarly there is inevitable cross-over between the knowledge and skills lists.

Sections on the attitudes to patient care (which include behaviour) are included for each unit of training. Each section relating to clinical practice also has a list of 'Workplace Training Objectives'. These are intended to assist the trainees' self-directed learning and to indicate the important aspects of clinical practice that they could be expected to demonstrate and answer simple questions on in order to satisfy their workplace assessments.

Abbreviations To save repetition a list of commonly used abbreviations is given in *The CCT in Anaesthetics I: General Principles*, Appendix A.

2: ENTRY TO INTERMEDIATE LEVEL TRAINING

In order to start intermediate level training trainees must have completed all the necessary competencies for basic level training in anaesthesia and ICM, including passing the Primary FRCA Examination or a prospectively approved exempting qualification and must have been issued with a *Basic Level Training Certificate*.

ACCS trainees Trainees who entered the anaesthetic CCT programme via ACCS may have acquired some or all of the intermediate level ICM competences at the expense of basic level anaesthesia competences. The exact balance will depend on the ACCS training provided for them. This imbalance should not prevent the progression of these trainees from ST2 to ST3, but the "missing" anaesthetic competences must be acquired at an early stage of ST3 and before starting intermediate level training. These arrangements must be recorded on the *BLTC*.

3: THE INTERMEDIATE LEVEL TRAINING PROGRAMME

3.1: Implementing competency-based intermediate level training

The basis of competency and outcome based training is the concept that having acquired the basic knowledge and skills trainees will be introduced to the intermediate level “key units of training” in ST years 3 and 4 before progressing to higher and advanced level skills and knowledge as generalists or sub-specialists during ST years 5, 6 and 7. The College is committed to this pattern of training and it cannot be modified without re-negotiation with the PMETB.

Occasionally, due to local circumstances, some schools may need flexibility in the implementation of the programme. The College accepts therefore, that some flexibility of timing should be allowed within ST years 3, 4 and 5 without destroying the fundamental concepts that have been agreed with the PMETB.

The College will consider requests from Schools for the deferral of particular key units of training from ST years 3 and 4 to ST year 5. Such deferrals may only occur after formal agreement between the School and the College, are time limited and are subject to regular review. *The CCT in Anaesthetics III: Intermediate Level Training and Assessment* therefore takes into account that certain units of higher training may have to occur during intermediate level training and that some intermediate level “key units of training” may have to be signed off during higher level training.

Where a deferral has been agreed for a specific School, this must be available to all trainees within the School but deferrals will not be available on the basis of requests from individual trainees in other Schools.

3.2: Training programme

The syllabuses for the various components of the intermediate level training programme are listed in Appendix A. They are set out in the same order of knowledge, skills and attitudes together with the workplace training objectives required. In many instances the local requirements necessary to support training are also listed.

Appendix A Sections 21 to 24 relating to applied basic science only list knowledge for obvious reasons.

When assessing a trainee’s competency it is not expected that the assessor should cover all aspects of the knowledge lists in detail: the latter are there as a guide to aid the trainee’s study and, together with the supporting applied basic science, will continue to be assessed in the Final Examination of the RCoA.

Appendix A Section 1 lists additional Generic Knowledge and Skills which may, or may not, have been covered within the various units of training, but which should not be omitted. Knowledge and skills relating to the airway are particularly emphasised here. Similarly Appendix A Section 2 covers aspects of Academic / Research training which are relevant to the whole of intermediate level training.

The RCoA relies on the good sense of its assessors when 'signing trainees off'. It is recognised that, as with consultant practice, there are individual variations in ability, aptitude and application. What is required of the assessor is a confirmation that the trainee has been trained in the relevant aspect of practice and has attained a minimum standard that would be

acceptable to other trainers. Further guidance on assessment is contained in Section 6 of The CCT in Anaesthetics I: General Principles.

3.3: Intensive Care Medicine (ICM)

The syllabus requirements for ICM are listed so as to be compatible with most of the requirements set out by the Intercollegiate Board for Training in Intensive Care Medicine (IBTICM). By the end of ST year 5 trainees must have received six months training in ICM at intermediate level of which a minimum of 3 months must have been completed during ST years 3 and 4. The training should be to the IBTICM's standards for "Step 1 Training"¹, including the IBTICM's requirement that training must be in three-month blocks.

If an individual trainee for any reason² wants the training in ICM, within the anaesthetic CCT programme to be recognised by the IBTICM as "Step 1 Training" then that training must conform *in every respect* to the IBTICM's standards for "Step 1 training". Trainees in this position are strongly advised to contact the IBTICM Secretary for advice before starting ICM training at intermediate level.

3.4: Assessment

Assessment of trainees will be done in the workplace and by RCoA examinations in accordance with the principles laid out in Section 6 of The CCT in Anaesthetics, Part I: General Principles:

- Examination assessments will mainly test the knowledge base across anaesthesia, critical care and pain management with the associated applied basic science. The methods of assessment are described in the College's Examination Regulations.³ A blueprint mapping the component parts of the Final FRCA Examination against the CCT competences is at Appendix C.
- 'Workplace Assessments' (carried out by the RCoA Tutor or other designated consultants who meet the criteria to be trainers⁴) will concentrate primarily on clinical skills, attitudes and behaviour together with a confirmation that the trainee has a practical understanding of the knowledge base across anaesthesia, critical care and pain management. A blueprint mapping the CCT intermediate level competences against the standard workplace based assessment tools that could be used to assess them is at Appendix D. Updated guidance on their use can be found in the training pages of the RCoA website.

3.5: Moving to higher and advanced level training

At the end of their intermediate level training the trainee must have obtained The Intermediate Level Training Certificate (ILTC) before moving to higher and advanced level training; this requires:

- passing all the required 'Workplace Assessments';

¹ "Step 1 Training" is the 6 months "Intermediate Training" in ICM. The other components of "Intermediate Training" are 6 months training in medicine and 3 months Basic Level training in ICM, all conforming in every respect to the IBTICM's standards. The usual reason for a trainee wanting to obtain "Step 1 Training" recognised by the IBTICM is that they intend to pursue a career commitment to ICM, sessional or full-time.

² Such reasons may be the intention to work towards a joint CCT in anaesthesia and ICM or to obtain IBTICM certification of their training at the Board's "Intermediate" or "Advanced" level; n.b. the Board's definitions and use of the terms intermediate and higher training differ slightly from those used to describe training leading to a CCT solely in anaesthesia.

³ *Primary and Final Examinations for the FRCA: Regulations*. This is available on the RCoA website at <http://www.rcoa.ac.uk>

⁴ See *The CCT in Anaesthesia, I: General Principles* Appendix D.

- demonstrating acceptable attitudes and behaviour; and
- passing a formal assessment of knowledge i.e. the Final FRCA Examination or a prospectively approved equivalent qualification.

4: OBJECTIVES OF INTERMEDIATE LEVEL TRAINING

The units of intermediate level training for individual special interest subject areas, set out in Appendix A of this manual are not intended to be the basis of a comprehensive programme which must be completed by every trainee. Some units of training, however, are key components for the training of trainees at intermediate level.

4.1: Key units

Although it is competence that will be judged, nevertheless in these key special interest areas, it is necessary that trainees have the equivalent of at least one month (but not normally more than 3 months)⁵ of training in each during their years of intermediate level training. Whether these are continuous blocks or a series of shorter attachments will depend on local arrangements. It is intended that trainees should receive an initial exposure to anaesthetic practice in all these fields. The six '*Key Units of Training*' are as follows:

- Cardiac / Thoracic anaesthesia
- Intensive Care Medicine
- Neuroanaesthesia
- Obstetric anaesthesia
- Paediatric anaesthesia
- Pain management

4.2: General units

There are also seven '*General Units of Training*' which are widely available, in which it is expected that all trainees will receive appropriate intermediate level training and in which formal 'Workplace Assessments' will take place:

- Day surgery
- ENT
- General surgery / Gynaecology / Urology (+/- Transplantation)
- Orthopaedic anaesthesia
- Regional anaesthesia
- Trauma and accidents
- Vascular anaesthesia

4.3: Additional units

Finally there are five '*Additional Units of Training*' which may or may not be available depending on the distribution and availability of services locally. It is expected that trainees will receive intermediate level training in at least some of these special interest areas and, on occasion, one or more specialist units of training could be linked together. For instance, maxillo-facial / dental, ENT and some experience with plastic surgery might be linked in a single head and neck unit of training and then assessed as a single entity:

- Diagnostic imaging, anaesthesia & sedation
- Maxillo-facial / Dental
- Ophthalmic surgery
- Plastics / Burns
- Miscellaneous

⁵ For ICM blocks must be of 3 months duration – see Section 3.3.

4.4: Professionalism

Training in professional knowledge, skills, attitudes and behaviour includes:

- communication skills, attitudes and behaviour;
- the responsibilities of professional life;
- teaching and medical education;
- health care management;
- information technology; and
- medical ethics and law.

The competencies that have to be achieved by the end of the full CCT programme are described in *The CCT in Anaesthetics Part I: General Principles* Appendixes E to J. The level at which these skills should be taught, acquired and assessed depends on the progress and level of training of each trainee, and the arrangements in place within individual Schools of Anaesthesia. There is considerable overlap in the competencies described in each of the areas listed above. Guidance on the competencies to be achieved by trainees during their intermediate level training is given below:

Communication skills, attitudes and behaviour During intermediate level training trainees will be expected to build on the competencies already acquired during their basic training and be able to;

- obtain informed consent for the anaesthetic management plan
- convey potentially distressing or disappointing information to the patient in a way that is consistent with the principles of breaking bad news, such as cancellation of surgery, poor prognosis or withdrawal of active therapy (throughout this section the term “patient” is taken to include guardians and, where relevant, relatives);
- help the patient deal with any complications that may have arisen, including preparation for future anaesthetic interventions (for example, difficult intubation, adverse drug reactions); and
- in his/her relations with other health care staff to:
 - convey the key components of the management plan, including back up contingency plans (Plan B, Plan C etc)
 - be assertive when promoting the patient’s interests
 - provide support to the other members of the team, including emotional support following critical incidents or major incidents.

The responsibilities of professional life During intermediate level training trainees will be expected to build on the competencies already acquired during their basic training and to widen their professional obligations to include more complex aspects of behaviour associated with the care of patients.

Teaching and medical education By the end of intermediate level training trainees should be able to teach under appropriate levels of supervision and assist with the assessment of basic level trainees, undergraduates and Foundation Year trainees in areas within their professional competence, including:

- planning teaching and learning;
- small group teaching;
- preparing and delivering lectures or presentations;
- using effective and appropriate teaching aids; and
- giving effective feedback.

Health care management During intermediate level training trainees should develop their knowledge and understanding of:

- the needs and behaviour of departmental managers and administrative staff
- the process of committees, including the committee and management structure at local level

- funding and contracting arrangements in secondary care
- the responsibilities of the Trust senior management;
- risk management and relevant legislation such as equal opportunities and Health and Safety;
- relevant Trust policies, including Dignity and Respect, in the workplace
- the organisational structure of the NHS, at local and national level
- complaints – how they arise and how they are managed
- understand the responsibilities of a doctor towards his/her patients and colleagues, in particular in the area of fitness to practice;
- the role of the Postgraduate Deanery in training and the responsibilities of Clinical Tutors within the postgraduate education organisation ;
- the roles and responsibilities of Consultant staff involved in training, Regional Advisers, Programme Directors and College Tutors

Information technology By the end of intermediate level training all trainees should build on the competencies contained in the European Computer Driving Licence including:

- setting up and using database programs for audit and research
- using reference manager software in the production of manuscripts
- analysing research data with advanced statistical packages (ie SPSS)
- being familiar with theatre management systems;
- being aware of the issues surrounding data collection and analysis; and
- developing a growing awareness of medical informatics.

Medical ethics and law During intermediate level training trainees should develop their understanding of basic health care law, including:

- consent and withholding consent in children & the *Gillick* principle.
- the Coroner's court and when to refer.
- end of life decisions and criminal law:
 - limits of treatment.
 - withdrawing and withholding treatment.
 - sedation/analgesia & "double effect".
- ethical principles governing research.

4.5: Delivery of training

In recognising the difficulties that Schools of Anaesthesia might experience in providing training in some special interest areas, the College accepts that for each trainee the programme of training will be a mosaic, incorporating elements from these various units of training to a greater or lesser extent. Inevitably there will be overlap, for instance, the skill of arterial cannulation could be learnt and assessed in any one of a number of the listed special interest subject areas. Similarly the knowledge relating to ventilation / perfusion in the lung may be learnt as part of thoracic anaesthesia or critical care. It is for the local trainers and the School of Anaesthesia to determine, within the constraints of local special interest arrangements, what is the appropriate balance.

For many units of training, the skills listed in the following sections may appear overly ambitious for a trainee at this stage of training, but it should be remembered that their attainment relates to a trainee who has completed at least 4 years of training in anaesthesia, critical care and pain management. The curriculum will evolve and change both in scope and content, as anaesthetic practice evolves.

Some trainees will progress more quickly than others and if the local opportunities for training allow, then these 'fast-track' trainees may progress to cover aspects of training which others, progressing more steadily, will not be capable of covering until they start higher level training. Such variation is inevitable if training is to be based on competency rather than time. For

example, it may be that, exceptionally, some trainees will be able to complete a longer period in some units of training and some, who intend to proceed to a CCT in ICM, will thereby be able to complete 6 rather than 3 months of training during these years. Any such extensions must be based on the trainee's interests and capability and not be determined by the excessive needs of service. Alternatively, a trainee may be able to proceed to higher level training after less than two years of intermediate level training, although this might be limited by constraints on rotations.

4.6: Confirmation of training: *Intermediate Level Training Certificate (ILTC)*

All trainees progressing to ST year 5 are required to have the ILTC before they can start their higher level training. The ILTC confirms completion of intermediate level competency based training in anaesthesia and ICM. The certificate should be signed off by at least two designated consultants, one of whom must be the RCoA Tutor.

There are a number of 'Fundamental Transferable Skills' in which all trainees will need to obtain competency. To ensure that this has been achieved a list these skills is provided on the ILTC, but space has been left so that Schools, if they wish, can add additional skills to the certificate. Although some latitude is allowed in the way individual assessments are carried out, none is permitted in the wording or layout of the ILTC.

The ILTC can be downloaded from the secure pages of the RCoA website for local reproduction. Copies of completed certificates should be sent to the RCoA Training Department as a formal record of completion of intermediate level training.

Doctors wanting to return to higher level training after a break and who do not have an ILTC will be assessed individually by the local Regional Adviser prior to applying for higher level training. If appropriate the Regional Adviser will issue a letter in lieu of the ILTC.

5: METHODS OF IMPLEMENTING INTERMEDIATE LEVEL ASSESSMENTS, APPRAISALS AND REVIEWS

5.1: Assessment by examination

The structure of the Final Examination assessments is described in the RCoA booklet Primary and Final Examinations for the FRCA: Regulations.⁶

The Final Examination is a basic standard of knowledge that is expected of all trainees, irrespective of their ultimate specialist interests in anaesthesia. To be eligible to sit the FRCA Final examination trainees must have been awarded the *BLTC*. The College very strongly recommends that candidates should only sit the Final FRCA Examination or a prospectively approved equivalent qualification having completed at least one third of their intermediate level training.

The Final examination consists of multiple choice and short answer questions together with two structured oral examinations. In combination these assess:

- The knowledge and understanding (and some of the skills and attitudes) listed under the various 'units of training' in this manual
- The knowledge of medicine and surgery appropriate to the practice of anaesthesia, critical care and pain management
- The knowledge and understanding of those aspects of applied basic science (listed in Appendix A Sections 21 to 24) required to inform the clinical practice within intermediate level training and to underpin subsequent higher and advance levels of training.

A knowledge of the principles of the specialised areas of post-fellowship training is therefore required, but not the details of practice.

Trainees will be expected to demonstrate knowledge at an appropriate level under the following headings:

- Anaesthetic equipment.
- Preoperative assessment.
- Pre-medication.
- Pre-, per- and postoperative management of anaesthesia.
- The medical management of the surgical patient.
- Anaesthesia for patients with co-existing disease.
- Audit and quality control.
- Ethics, relevant legislation and the duty of care, consent, and information given to patients before anaesthesia.
- Applied Basic Science Candidates should be able to demonstrate a good understanding of human anatomy, physiology and pharmacology relevant to the practice of anaesthesia, critical care and pain management. The syllabus for the Primary FRCA examination is core knowledge. For the Final FRCA examination, application of this knowledge to clinical practice will be explored, for example this will include the knowledge of anatomy as demonstrated by endoscopic and imaging techniques.

A blueprint mapping the component parts of the Final FRCA Examination against the CCT competences is at Appendix C.

⁶This is available on the RCoA website at <http://www.rcoa.ac.uk>

5.2: Repeated failure to pass the FRCA Final examination

Guidance on how to handle trainees who have failed to pass the FRCA Final examination or a prospectively approved equivalent assessment of knowledge by the end of ST year 4 is described in Appendix B.

5.3: Workplace Assessments

- A blueprint mapping the CCT intermediate level competences against the standard workplace based assessment tools that could be used to assess them is at Appendix D. Updated guidance on their use can be found in the training pages of the RCoA website.

Assessment of clinical skills

- The RCoA tutor and other designated consultants who meet the criteria to be trainers can undertake the workplace assessments. The assessment tools described in *The CCT in Anaesthetics I: General Principles* Section 6 e.g. DOPS mini-CEX and CbD are intended to focus on the attainment of clinical skills, attitudes and behaviour together with a confirmation that the trainee has an understanding of the practical aspects of the knowledge base. A blueprint mapping the CCT basic level competences against the standard workplace based assessment tools that could be used to assess them is at Appendix F. Updated guidance on their use can be found in the training pages of the RCoA website.
- There is no expectation that every sub-component of a 'Skill' will be individually investigated and assessed, but rather that trainers will become confident, through their personal knowledge of the trainees, that the individual trainee has acquired sufficient competence in an area of practice to be signed off. If they cannot be signed off, the reason why should be identified, documented and advice given to the trainee.
- The RCoA accepts that the frequency and timing of workplace assessments will vary from hospital to hospital: this is inevitable because of the different types of hospital and the nature of work undertaken. Each hospital can choose the appropriate assessment tools to carry out assessments provided that the College Tutor or other designated consultant can, in good faith, sign to say that they have been completed. Whatever method is chosen four principles are important:
 1. The trainee's logbook must be kept up to date and reviewed.
 2. Both the trainee and the School of Anaesthesia and/or hospital must keep a copy of the outcome of every assessment.
 3. If the trainee does not meet the required standard the reasons must be given and documented.
 4. The sum of the assessments must allow the ILTC to be issued with confidence at the end of intermediate training.
- If a trainee does not meet the necessary standard on an individual assessment, they must be re-assessed at a later date. Whether this should consist of all or part of the assessment is left to the discretion of the assessor.

Assessment of attitudes and behaviour These are an integral part of the workplace assessments and are included in the individual units of training in Appendix A. In addition this assessment should be carried out at least annually in the format described in Section 6 of *The CCT in Anaesthetics I: General Principles* which also includes examples of attitudes and behaviour that might cause concern. Any problems identified must be discussed with the trainee.

Assessment of ICM competencies Unless otherwise specified by the IBTICM, ICM competencies are to be assessed using the assessment tools described in *The CCT in Anaesthetics I* Section 6.

5.4: Assessment of Locum and Fixed Term posts towards intermediate level training

The policy on recognising Fixed Term and Locum appointments towards intermediate training is detailed in *The CCT in Anaesthetics I: General Principles* Section 3.6.

5.5 Appraisals

Appraisals must be held and recorded as described in *The CCT in Anaesthetics I: General Principles* Section 6.4.

5.6: Annual Review of Competency Progression (ARCP)

The ARCP must be held and recorded as described in *The CCT in Anaesthetics I: General Principles* Section 6.9.

ARCP at the end of intermediate level training

- The ARCP at the end of intermediate level training is a major review that draws everything together, including examination results, and confirms that the totality of the objectives⁷ of intermediate level training (ST years 3 and 4), including the assessment of 'attitudes', has been achieved. Until these objectives have been met, there can be no entry into higher and advanced levels of training.
- This ARCP is intended to establish a provisional outline of the programme for higher and/or advanced level training.

The confirmation of satisfactory intermediate level training

- Intermediate level training must be completed in its entirety before higher and advanced level training can commence. There is no 'optional' time during this phase of training, unless arrangements have been agreed with a School to delay some units of intermediate level training and to bring forward certain higher units (see Section 3.1).
- Towards the end of intermediate level training, arrangements will be made for the completion of the ILTC confirming the satisfactory attainment of intermediate level training. It must be signed by the Royal College of Anaesthetists' Regional Adviser and another designated consultant. This will record:
 - the attainment of the various Fundamental Transferable Skills by the trainee;
 - any key units of training that the School of Anaesthesia has deferred to ST year 5;⁸ and
 - any units of higher training brought forward to ST year 4 with the approval of the School of Anaesthesia.
- A copy of this Certificate must be sent to the Training Department at the Royal College of Anaesthetist to indicate when the trainee will begin higher and advanced level training.
- Although some latitude is allowed in the way individual assessments are carried out, none is permitted in the wording or layout of the *Intermediate Level Training Certificate*.

⁷ This excludes any units of training that have been prospectively deferred to StR Year 5.

⁸ See Section 3.1.

5.7: The documentation of training by the trainee

To enable external evaluation to take place and to ensure that individual trainees are receiving an appropriately balanced training, it is essential that trainees maintain proper records.

The RCoA's requirements for the maintenance of Portfolios, logbooks and other records are set out in *The CCT in Anaesthetics I* Appendix P.

Trainees must ensure that all their workplace Assessments for individual units of training take place by reminding those responsible at the appropriate time. If however the trainee experiences unreasonable difficulty in arranging the necessary assessment they should communicate this to the College Tutor or, exceptionally, to the Regional Adviser.

6: SUPERVISION OF MORE JUNIOR STAFF BY TRAINEES

Clinical supervision of one trainee by another occurs and senior trainees must learn how to do this safely. A junior trainee may refer to a more senior trainee as their first line of advice and assistance. However, both trainees must be subject to supervision from a designated consultant.

There will be some occasions during highly specialised training when it will be inappropriate for senior trainees to act as supervisors as they themselves may then require direct supervision from a consultant.

APPENDIX A:

**THE CCT IN ANAESTHETICS
INTERMEDIATE LEVEL SYLLABUS
(ST years 3 and 4)**

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19.	Plastics / Burns	III – A - 42
20.	Miscellaneous	III – A - 44
21.	Applied physiology	III – A - 45
22.	Applied clinical pharmacology	III – A - 47
23.	Statistical basis of clinical trial management	III – A - 49
24.	Clinical measurement	III – A - 50

1: GENERIC KNOWLEDGE AND SKILLS

Listed here are generic aspects of knowledge and skills that may or may not have been covered within the various other units of training, but which should not be omitted. Knowledge and skills relating to the airway are particularly emphasised. As with other aspects of competence at intermediate level, these will generally represent a further development of the basic competencies in ST Years 1 and 2.

1.1: Knowledge

In:1.1.1	Anaesthetic and monitoring equipment:
In:1.1.2	standards
In:1.1.3	care, cleaning, disinfecting and sterilisation (particularly airway equipment)
In:1.1.4	potential defects and problems
In:1.1.5	safety precautions and checking
In:1.1.6	Anaesthesia in abnormal environments:
In:1.1.7	altitude
In:1.1.8	in pressure chambers / at depth
In:1.1.9	low temperature
In:1.1.10	Problems for patients and staff of:
In:1.1.11	age (anaesthesia and the elderly)
In:1.1.12	obesity
In:1.1.13	smoking
In:1.1.14	alcoholism
In:1.1.15	drug dependency and addiction
In:1.1.16	hepatitis B & C carriers
In:1.1.17	HIV and AIDS
In:1.1.18	variant CJD
In:1.1.19	pacemakers
In:1.1.20	Hazards for patients and staff of:
In:1.1.21	anaesthetic drugs and pregnancy
In:1.1.22	electricity and electrocution
In:1.1.23	diathermy
In:1.1.24	sharps injury
In:1.1.25	pollution by anaesthetic gases
In:1.1.26	fires and explosions
In:1.1.27	Intravenous fluid replacement
In:1.1.28	blood transfusion
In:1.1.29	Jehovah's Witnesses
In:1.1.30	blood substitutes
In:1.1.31	disseminated intravascular coagulation
In:1.1.32	colloid / crystalloid
In:1.1.33	Posture and positioning
In:1.1.34	lateral position
In:1.1.35	prone position
In:1.1.36	Trendelenberg position
In:1.1.37	lithotomy
In:1.1.38	peripheral nerve damage
In:1.1.39	prevention of deep vein thrombosis

<i>Airway Management</i>	
In:1.1.40	Anatomy of the airway
In:1.1.41	Physiology of airway and airway reflexes
In:1.1.42	Pharmacology relevant to the airway:
In:1.1.43	control of secretions
In:1.1.44	control of airway reflexes in conscious sedation
In:1.1.45	effect of anaesthetic drugs on airway reflexes
In:1.1.46	reducing the prevalence and sequelae of gastro-oesophageal reflux
In:1.1.47	Evaluation of the airway:
In:1.1.48	history
In:1.1.49	general examination
In:1.1.50	specific predictive tests
In:1.1.51	special investigations
In:1.1.52	Airway strategy:
In:1.1.53	aspiration risk
In:1.1.54	predicted difficult direct laryngoscopy
In:1.1.55	predicted difficult mask inflation
In:1.1.56	known abnormal / narrowed tracheo-bronchial tree
In:1.1.57	unexpected difficult ventilation
In:1.1.58	unexpected difficult intubation
In:1.1.59	can't intubate / can't oxygenate
In:1.1.60	Preoxygenation – techniques / purpose
In:1.1.61	Confirmation of position of tracheal tube within trachea
In:1.1.62	Monitoring of ventilation by pressure changes, gas flows and capnography
In:1.1.63	Application of cricoid force in a rapid sequence induction
In:1.1.64	Cricoid force induced difficulties with airway management
In:1.1.65	Airway equipment - difficult airway trolley
In:1.1.66	Tracheostomy tubes, types, fixation and care
In:1.1.67	Conscious sedated (awake) intubation:
In:1.1.68	preparation of patient
In:1.1.69	topical anaesthesia
In:1.1.70	nerve blocks
In:1.1.71	laryngoscopy, bronchoscopy
In:1.1.72	specialised tubes
In:1.1.73	The obstructed airway:
In:1.1.74	recognition
In:1.1.75	immediate treatment of acute obstruction
In:1.1.76	anaesthetic management of acute and chronic obstruction
In:1.1.77	flexible nasendoscopy and imaging
In:1.1.78	Emergency cricothyrotomy
In:1.1.79	needle
In:1.1.80	purpose built cannula >4 mm ID
In:1.1.81	surgical
In:1.1.82	Extubation strategies - routine, predicted and unexpected difficulty
In:1.1.83	Complications of difficult airway management
In:1.1.84	Follow-up care of patient, documentation and patient information
In:1.1.85	Surgical approach to the airway - indications, techniques, conduct
In:1.1.86	Percutaneous cricothyrotomy and tracheostomy

1.2: Skills

In: 1.2.1	Recognition of the difficult airway
In: 1.2.2	when to ask for help
In: 1.2.3	Failed rapid sequence intubation
In: 1.2.4	performance of recognised 'drills' for failed intubation / ventilation
In: 1.2.5	Alternative methods of intubation
In: 1.2.6	other laryngoscopy blades and bougies
In: 1.2.7	low skill fiberoptic intubation e.g. via laryngeal mask or specialised airway
In: 1.2.8	Placement and checking of double lumen tubes
In: 1.2.9	Anaesthetic techniques for laryngoscopy, bronchoscopy and tracheostomy
In: 1.2.10	Extubation in abnormal airway
In: 1.2.11	Clinical review of patient to detect and treat airway instrumentation damage
In: 1.2.12	Interpretation of CT, MRI imaging and flow-volume loops
<i>Additional desirable clinical skills to be learnt primarily in the non-clinical environment (skills laboratory / manikin / simulator) but supplemented by some clinical experience. The availability of equipment to display the fiberoptic image on a screen will also extend the opportunities for clinical teaching.</i>	
In: 1.2.13	Awake intubation:
In: 1.2.14	indications
In: 1.2.15	use with the compromised airway
In: 1.2.16	Fiberoptic intubation through the nose and mouth with and without concurrent ventilation
In: 1.2.17	Fibre-endoscopy skills to:
In: 1.2.18	visualise tracheo-bronchial tree
In: 1.2.19	confirm placement of single and double lumen tubes
In: 1.2.20	intubate through the laryngeal mask
In: 1.2.21	Blind and fiberoptic assisted intubation via the intubating laryngeal mask
In: 1.2.22	Elective trans-tracheal ventilation to aid difficult intubation
In: 1.2.23	Retrograde intubation - blind and fiberoptic assisted
In: 1.2.24	Placement bronchial blockers
In: 1.2.25	Specialised bougies and airway exchange catheters
In: 1.2.26	Use of the combitube or other supraglottic balloon device
In: 1.2.27	Emergency cricothyrotomy:
In: 1.2.28	landmarks
In: 1.2.29	insertion of needle / cannula
In: 1.2.30	confirmation of position within trachea
In: 1.2.31	fixation
In: 1.2.32	pressures required for adequate gas flows
In: 1.2.33	ventilation through cannula / catheter
In: 1.2.34	complications
In: 1.2.35	Application of 30 N cricoid force

2: ACADEMIC / RESEARCH

An understanding of the scientific basis of anaesthetic practice is essential. This unit of training effectively underwrites the understanding and education of trainees in all the other aspects of the training that they will receive during intermediate level training. Even if separate time is not allocated, the concepts identified here should be fundamental to the education of trainees at this stage of training

2.1: Knowledge

In: 2.1.1	The scientific basis of clinical practice
In: 2.1.2	The methodology and processes of clinical and laboratory research including the ethical considerations raised by research, the importance of study design in clinical research and the importance of statistical analyses
In: 2.1.3	The audit cycle
In: 2.1.4	The major national audit processes, including National Confidential Enquiry into Patient Outcomes and Deaths (NCEPOD)
In: 2.1.5	Critical Incident Reporting:
In: 2.1.6	purpose and value
In: 2.1.7	methods – local / national
In: 2.1.8	anonymity – pros and cons

2.2: Skills

In: 2.2.1	Able to locate published research in a systematic manner
In: 2.2.2	Critically interpret and evaluate the value of published clinical research
In: 2.2.3	Plan and prepare a presentation and present to a live audience.

2.3: Attitudes and behaviour

In: 2.3.1	Maintain an inquisitive, questioning approach to clinical practice
In: 2.3.2	Cultivate an evidence-based practice
In: 2.3.3	Awareness of and detachment from vested interests or entrenched views
In: 2.3.4	Develop a readiness to both listen and explain
In: 2.3.5	Demonstrate a willingness to teach and learn
In: 2.3.6	Develop an informed critical approach to the scientific literature

2.4: Workplace training objectives

In: 2.4.1	Trainees should gain competency in the critical interpretation and evaluation of published clinical research and be able to assess the benefit of applying the results of research to clinical practice.
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Recommended local requirements to support training

- A suitably experienced consultant or clinical academic
- Library and computing facilities
- Regular academic meetings

3: CARDIAC / THORACIC ANAESTHESIA

This is an intermediate level 'Key Unit of Training' in which trainees should spend the equivalent of at least 1 month of training and, normally, not more than 3 months.

It is recognised that for intermediate level training there will, due to the distribution of specialist units, be considerable variability in the degree of experience available to individual trainees. Through attachments and links between Schools of Anaesthesia it is expected that the majority of trainees will receive at least one month of experience in this anaesthetic special interest area. However, where experience in this special interest is more freely available, a unit of training should be limited to 3 months within the intermediate level training programme.

3.1: Knowledge

<i>Cardiac Anaesthesia</i>	
In:9.1.1	Preoperative assessment and perioperative care of patients with cardiac disease
In:9.1.2	Induction and maintenance of anaesthesia for high risk cardiac procedures, including valve replacement
In:9.1.3	Antibiotic prophylaxis against subacute bacterial endocarditis
In:9.1.4	Problems of cardiopulmonary bypass
In:9.1.5	Postoperative cardiac critical care, including analgesia, sedation and ventilatory management
In:9.1.6	Significance of cardiac tamponade
In:9.1.7	Interpretation of ECG and CXR
In:9.1.8	Interpretation of invasive and non-invasive cardiovascular monitoring
In:9.1.9	Temperature control and patient rewarming methods
In:9.1.10	Coagulopathy
In:9.1.11	Cardiac pacing modes
In:9.1.12	Intra-aortic balloon counter pulsation
In:9.1.13	Understanding of the adult patient with congenital heart disease
In:9.1.14	A working knowledge of the following investigations:
In:9.1.15	stress testing
In:9.1.16	cardiac catheterisation
In:9.1.17	echocardiography – transthoracic / transoesophageal
In:9.1.18	radionuclide scan
<i>Thoracic Anaesthesia</i>	
In:9.1.19	Preoperative pulmonary function tests
In:9.1.20	Local and general anaesthesia for bronchoscopy including techniques of ventilation
In:9.1.21	Understanding of fiberoptic bronchoscopic techniques for airway management
In:9.1.22	Principles of one-lung anaesthesia
In:9.1.23	Management of a pneumothorax
In:9.1.24	Principles of underwater seals on chest drains
In:9.1.25	Postoperative care and analgesia after thoracic surgery

3.2: Skills

<i>Generic</i>	
In: 3.2.1	Internal jugular and subclavian venous cannulation
In: 3.2.2	Arterial cannulation
In: 3.2.3	Invasive pressure monitoring, including pulmonary artery catheters and interpretation of derived indices
In: 3.2.4	Postoperative analgesia by appropriate methods including local techniques

In: 3.2.5	Cardiopulmonary resuscitation and appropriate use of defibrillators
<i>Cardiac Anaesthesia</i>	
In: 3.2.6	Preoperative assessment of patients with valvular and with ischaemic heart disease
In: 3.2.7	Induction and maintenance of anaesthesia for elective coronary bypass
In: 3.2.8	Management of the patient during cardiopulmonary bypass
In: 3.2.9	Use of inotropes and vasodilators
In: 3.2.10	Anaesthesia for procedures in intensive care including emergency re-sternotomy, re-intubation, tracheostomy or cardioversion
<i>Thoracic Anaesthesia</i>	
In: 3.2.11	Preoperative assessment, preparation of patients with pulmonary disease
In: 3.2.12	Preoperative assessment, preparation of patients for thoracic surgery
In: 3.2.13	Induction and maintenance of anaesthesia for minor thoracic procedures, in particular, bronchoscopy and the use of the Sanders injector
In: 3.2.14	Use of single and double lumen endobronchial intubation
In: 3.2.15	Fibreoptic endoscopic confirmation of tube placement
In: 3.2.16	Induction and maintenance of anaesthesia for major thoracic procedures
In: 3.2.17	One lung ventilation

3.3: Attitudes and behaviour

In: 3.3.1	To communicate effectively with surgical colleagues / other members of the theatre team
In: 3.3.2	To be able to summarise a case to critical care staff
In: 3.3.3	Understand how to communicate with the intubated patient in intensive care
In: 3.3.4	To be able to recognise the need for senior help when appropriate
In: 3.3.5	Maintain accurate clinical records
In: 3.3.6	Presentation of material to departmental meetings and participation in clinical audit

3.4: Workplace training objectives

In: 3.4.1	By gaining experience in cardiothoracic anaesthesia, the trainee should also develop competency in the management of cardiovascular and pulmonary problems arising in non-cardiac surgical patients.
<i>Cardiac Surgery</i>	
In: 3.4.2	The trainee should develop the ability to assess the circulation and have experience in the use of inotropes and vasoactive agents to support of the circulation in patients with cardiac disease. They should also develop an understanding of the problems of extracorporeal circulation.
<i>Thoracic Surgery</i>	
In: 3.4.3	The trainee should understand the problems of one lung anaesthesia and develop experience in the placement of double-lumen tubes

Recommended local requirements to support training

Cardiac Surgery

- Cardiac surgery must take place in theatres equipped to a high standard for anaesthesia and monitoring with facilities for cardiopulmonary bypass and mechanical support of the circulation.
- Rapid access to biochemistry and haematology services.
- Each cardiac unit must have a consultant anaesthetist with dedicated responsibility for cardiac anaesthetic services.

- There must be appropriate support facilities provided.
- Extensive patient monitoring is required.
- Adequate critical care facilities must be provided.
- There must be resident medical staff cover of the intensive care unit.
- There must be an ongoing, adequately resourced, audit programme.

Thoracic Surgery

- On-site pulmonary function laboratory facilities must be available.
- Patients must be managed in an area, equipped and staffed to a high standard.
- Patients may routinely return to a high dependency care facility, however supporting intensive care facilities should also be easily accessible.
- Pain relief and other clinical protocols must be clearly defined.

4: INTENSIVE CARE MEDICINE

This is an intermediate level 'Key Unit of Training'. "Step 1" (previously Intermediate) Training in ICM requires 6 months of training within the specialty. All trainees in anaesthesia must receive a minimum of three months training in ICM during years ST Years 3 and 4.

This requirement is based on the recognition that knowledge and skills gained in critical care underpin the trainees' ability to gain competency in aspects of anaesthesia later in their training. The training should be to the IBTICM's standards for Step 1 Training. The second 3 months training in ICM would normally be obtained in ST Year 5. However, provided other 'units of training' in the ST Years 3 and 4 are not compromised, this second period can also be completed during this time. It is expected, however, that this will be the exception rather than the rule.

4.1: Knowledge

<i>General</i>	
In: 4.1.1	Trainees should have a good understanding of the diagnosis and management of the critically ill patient. All trainees should be familiar with the monitoring and life support equipment used in the treatment of critically ill patients. Trainees must be able to demonstrate their knowledge of practical invasive procedures, with an understanding of the principles and hazards involved and the interpretation of data from such procedures.
In: 4.1.2	Transport of the critically ill:
In: 4.1.3	assessment and organisation of transfer
In: 4.1.4	physiological consequences of acceleration
In: 4.1.5	problems of working in isolated environments
In: 4.1.6	Outreach care:
In: 4.1.7	early warning signs and symptoms
In: 4.1.8	infection and Multiple Organ Failure
In: 4.1.9	Sepsis and endotoxaemia:
In: 4.1.10	nosocomial infections
In: 4.1.11	assessment and management of oxygen delivery
In: 4.1.12	antibiotics and immunotherapy
In: 4.1.13	reperfusion injury and antioxidants
In: 4.1.14	Cardiovascular system to include
In: 4.1.15	pathophysiology and management of cardiogenic and hypovolaemic shock
In: 4.1.16	pulmonary embolism
In: 4.1.17	investigation and management of cardiac failure
In: 4.1.18	investigation and management of arrhythmias
In: 4.1.19	Respiratory system to include:
In: 4.1.20	airway care, including tracheal intubation and clearance of secretions
In: 4.1.21	Humidification
In: 4.1.22	management of tracheostomy and decannulation
In: 4.1.23	ventilators and modes of pulmonary ventilation (including non-invasive ventilation)
In: 4.1.24	management of acute and chronic respiratory failure
In: 4.1.25	management of severe asthma
In: 4.1.26	Nervous system to include:
In: 4.1.27	central nervous system infection
In: 4.1.28	acute polyneuropathy
In: 4.1.29	traumatic and non-traumatic coma
In: 4.1.30	Encephalopathies

<i>General (continued)</i>	
In: 4.1.31	cerebral ischaemia
In: 4.1.32	status epilepticus
In: 4.1.33	brain stem death
In: 4.1.34	Renal, Electrolyte and Metabolic Disorders to include:
In: 4.1.35	diagnosis, prevention and management of acute renal failure
In: 4.1.36	fluid, electrolyte and acid-base disorders
In: 4.1.37	body temperature
In: 4.1.38	adrenal and thyroid dysfunction
In: 4.1.39	Haematological Disorders to include:
In: 4.1.40	Coagulopathies
In: 4.1.41	immunocompromised patients
In: 4.1.42	Gastrointestinal Disorders:
In: 4.1.43	acute liver failure - diagnosis and management
In: 4.1.44	acute pancreatitis
In: 4.1.45	gut ischaemia
In: 4.1.46	gastrointestinal ulceration and bleeding
In: 4.1.47	translocation and absorption disorders
In: 4.1.48	Nutrition:
In: 4.1.49	enteral and parenteral nutrition: methods, nutrients, and complications
In: 4.1.50	Analgesia, Anxiolysis and Sedation
In: 4.1.51	Trauma:
In: 4.1.52	management of multiple injuries
In: 4.1.53	near-drowning
In: 4.1.54	burns and smoke inhalation
In: 4.1.55	Cardiopulmonary Resuscitation
In: 4.1.56	Management of Acute Poisoning:
In: 4.1.57	Paracetamol
In: 4.1.58	Aminophylline
In: 4.1.59	Digoxin
In: 4.1.60	Ecstasy
In: 4.1.61	Tricyclics
In: 4.1.62	Organ Donation
In: 4.1.63	Scoring Systems and Audit
In: 4.1.64	Ethics
<i>Paediatric (for optional 3 month module)</i>	
In: 4.1.65	Principal anatomical and physiological differences in neonates and infants
In: 4.1.66	Principal pharmacological differences in neonates and infants
In: 4.1.67	Sedation and analgesia in children
In: 4:1.68	Fluid management of medical and surgical emergencies
In: 4.1.69	Respiratory management: nasal CPAP, pressure controlled ventilation, High Frequency Oscillatory Ventilation
In: 4.1.70	Differential diagnosis of the collapsed neonate (cardiac, sepsis, metabolic, non-accidental injury)
In: 4.1.71	Common presentations of paediatric cardiac anomalies
In: 4.1.72	Management of paediatric medical conditions requiring critical care: septicaemia, bronchiolitis, epilepsy, diabetic ketoacidosis and basic working knowledge of other metabolic emergencies
In: 4.1.73	Principal psychological aspects of critically ill children

4.2: Skills

<i>General</i>	
In: 4.2.1	Arterial and central venous access

In: 4.2.2	Insertion of thoracic drain
In: 4.2.3	Insertion of oro- or naso- gastric tube
<i>Specific</i>	
In: 4.2.4	Recognition of the critically ill patient
In: 4.2.5	Insertion of flow directed pulmonary artery catheter
In: 4.2.6	Insertion of transvenous pacemaker
In: 4.2.7	Insertion of oesophageal Doppler probe
In: 4.2.8	Ultrasound visualisation of main veins
In: 4.2.9	Percutaneous tracheostomy
In: 4.2.10	Fibreoptic bronchoscopic clearance of sputum
In: 4.2.11	Peritoneal lavage
In: 4.2.12	Set up ventilator for adult suffering from severe ARDS
In: 4.2.13	Assist in prone positioning patient
In: 4.2.14	Assist in weaning patient from IPPV via assist/CPAP
<i>Paediatric (for optional 3 month module)</i>	
In: 4.2.15	Transferring critically ill children and working knowledge of specific relevant equipment
In: 4.2.16	Resuscitation of infants and children, including intubation and insertion of arterial and venous catheters and intra-osseous needles
In: 4.2.17	Selection of age and size appropriate materials for the above procedures

4.3: Attitudes and behaviour

In: 4.3.1	An awareness of the importance of communication skills and interpersonal relationships will be expected
In: 4.3.2	Obtaining consent / assent for procedures in the critical care unit
In: 4.3.3	Breaking bad news
In: 4.3.4	Requesting post mortem investigation
In: 4.3.5	Explaining need for unexpected / early discharge
In: 4.3.6	Introducing the concept of organ donation
<i>Paediatric (optional 3 month module)</i>	
In: 4.3.7	Importance of parental roles and family dynamics in paediatric intensive care
In: 4.3.8	Early initiation of child protection measures
In: 4.3.9	'Listening to the child' and 'Fraser Competence'

4.4: Workplace training objectives

In: 4.4.1	There will be variation in the experience and degree of competence that individual trainees will achieve in this initial period of ICM training. However, for example, they should be able to admit and manage a patient who has undergone major emergency for instance in vascular surgery or to admit and organise the early management of a patient suffering from severe respiratory failure complicated by acute renal failure.
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Recommended local requirements to support training

- There should be a separate designated facility (the Intensive Care Unit) for the care of the critically ill patient.
- There must be a sufficient number of intensive care and high dependency beds available to serve the designated population.
- The Critical Care Unit must be properly staffed and equipped for the care of such patients.
- All staff providing Critical Care, medical, nursing and paramedical must be appropriately trained.
- Critical Care services should be subject to clinical audit using the Intensive Care National

Audit and Research Centre Case Mix Program.

- Information on the provision of intensive care and high dependency care within a Trust (Augmented Care Period Dataset) must now be collected as part of the Contract Minimum Dataset.

5: NEUROANAESTHESIA

This is an intermediate level 'Key Unit of Training' in which trainees should spend the equivalent of at least 1 month of training and, normally, not more than 3 months.

Anaesthetic training for Neurosurgery and Neuroradiology will take place within designated specialist centres with the appropriate critical care facilities.

5.1: Knowledge

In: 5.1.1	Preoperative assessment and management of patients with neurological disease
In: 5.1.2	Anaesthesia for imaging relevant to the CNS
In: 5.1.3	Anaesthesia for MRI including problems of magnetic fields
In: 5.1.4	Anatomy of the skull and skull base
In: 5.1.5	Anatomy, physiological control and effect of drugs on cerebral blood volume and flow, ICP, CMRO ₂
In: 5.1.6	Principles of anaesthesia for craniotomy, to include vascular disease, cerebral tumours and posterior fossa lesions
In: 5.1.7	Anaesthetic implications of pituitary disease including endocrine effects (acromegaly) and trans-sphenoidal surgery
In: 5.1.8	Perioperative management of interventional neuroradiological procedures
In: 5.1.9	Anaesthesia for spinal column surgery and anaesthetic implications of spinal cord trauma
In: 5.1.10	Principles of immediate postoperative management including pain relief and special considerations with narcotics
In: 5.1.11	Principles of neurological monitoring
In: 5.1.12	Implications of prion diseases for the anaesthetist and other staff
In: 5.1.13	Anaesthetic and critical care implications of neuromedical diseases:
In: 5.1.14	Guillain-Barré syndrome
In: 5.1.15	myasthenia gravis - pharmacological management / thymectomy
In: 5.1.16	myasthenic syndrome
In: 5.1.17	dystrophia myotonica
In: 5.1.18	muscular dystrophy
In: 5.1.19	paraplegia and long-term spinal cord damage
In: 5.1.20	control of convulsions including status epilepticus
In: 5.1.21	Tetanus
In: 5.1.22	trigeminal neuralgia including thermocoagulation

5.2: Skills

In: 5.2.1	The trainee will be supervised during the provision of anaesthesia for:
In: 5.2.2	Planned
In: 5.2.3	intracranial surgery
In: 5.2.4	spinal surgery
In: 5.2.5	Emergency neurosurgery for
In: 5.2.6	head trauma
In: 5.2.7	Safe patient positioning – prone, park-bench (lateral)
In: 5.2.8	The trainee will be instructed in the non-surgical management of the head trauma patient
In: 5.2.9	Resuscitation and patient transfer
In: 5.2.10	Monitoring:
In: 5.2.11	insertion of arterial lines
In: 5.2.12	insertion of CVP lines
In: 5.2.13	techniques for detection and management of air embolism

In: 5.2.14	EEG and evoked potentials
In: 5.2.15	intracranial pressure measurement
In: 5.2.16	spinal drainage
In: 5.2.17	Critical Care:
In: 5.2.18	indications for ventilation
In: 5.2.19	the role of drugs
In: 5.2.20	management of raised intracranial pressure and manipulation of cerebral perfusion pressure
In: 5.2.21	fluid and electrolyte balance in neurocritical care
In: 5.2.22	Complications
In: 5.2.23	treatment of raised intracranial pressure
In: 5.2.24	cerebral protection and prevention of cerebral ischaemia
In: 5.2.25	management of patients for organ donation
In: 5.2.26	Neuroradiology
In: 5.2.27	practical aspects of patient management for CT and MRI
In: 5.2.28	anaesthetic considerations in interventional radiology

5.3: Attitudes and behaviour

In: 5.3.1	To understand the problems of obtaining consent in patients with impaired consciousness.
In: 5.3.2	To appreciate the limits of medical intervention
In: 5.3.3	To gain the ability to establish a rapport with the operating neurosurgeon and exchange information during surgery on aspects of changes in the patient's vital signs which are relevant to the operative procedure
In: 5.3.4	To communicate well with the nursing staff in the ICU, patients, relatives and other hospital staff
In: 5.3.5	To offer comfort to the patient and relatives when there is no prospect of survival
In: 5.3.6	To understand the requirements for organ donation

5.4: Workplace training objectives

In: 5.4.1	Trainees should gain an understanding of the principles of neuroanaesthesia and the associated neuro-critical care in order to manage, with safety, patients for routine operations on the brain and spinal cord. For patients with head injury, trainees should be able to manage their resuscitation, stabilisation and transfer.
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Recommended local requirements to support training

- Neuroanaesthesia should only take place in Neuroscience Centres.
- Staffing levels in the operating theatre should be sufficient to allow anaesthetists to work in teams during long operations.
- Interventional neuroradiology requires full neuroanaesthesia cover by consultants
- Neuro-critical care is a joint responsibility between neuroanaesthesia and neurosurgery; there should be specific sessions for neuroanaesthetists in Critical care.
- The provision of beds for neuro-critical care must be adequate, the ventilation of patients in other areas should only occur in exceptional circumstances.
- Operating theatres, Intensive Care Units (ICU) and neuroradiology facilities including scanners should all be in close proximity.

For patients with Head Injuries

- The care of head injured patients is an integral part of neuroanaesthesia. Specialist units accepting these patients need to make specific arrangements including protocols, staff training and rapid availability of facilities. Optimal management will improve outcome and

save resources in the long term.

- Local guidelines on the transfer of patients with head injuries should be drawn up between the referring hospital trusts and the neurosurgical unit which should be consistent with established national guidelines. Details of the transfer of the responsibility for patient care should also be agreed.
- Only in exceptional circumstances should a patient with a significantly altered conscious level requiring transfer for neurosurgical care not be intubated.

6: OBSTETRIC ANAESTHESIA

This is an intermediate level 'Key Unit of Training' in which trainees should spend the equivalent of at least 1 month of training and, normally, not more than 3 months.

Obstetric anaesthesia and analgesia is the only area of anaesthetic practice where two patients are cared for simultaneously. Pregnancy is a physiological rather than a pathological state. Patient expectations are high and the mother expects full involvement in her choices of care. The majority of the workload is the provision of analgesia in labour and anaesthesia for delivery. Multidisciplinary care for the sick mother is increasingly important and highlighted.

6.1: Knowledge

In: 6.1.1	Anatomy and physiology of pregnancy
In: 6.1.2	Physiology of labour
In: 6.1.3	Placental structure and mechanisms affecting drug transfer across the placenta
In: 6.1.4	Basic knowledge of obstetrics
In: 6.1.5	Gastrointestinal physiology and acid aspiration prophylaxis
In: 6.1.6	Pharmacology of drugs relevant to obstetric anaesthesia
In: 6.1.7	Pain and pain relief in labour
In: 6.1.8	Emergencies in obstetric anaesthesia:
In: 6.1.9	pre-eclampsia, eclampsia, failed intubation, major haemorrhage,
In: 6.1.10	maternal resuscitation, amniotic fluid embolus, total spinal
In: 6.1.11	Use of magnesium sulphate
In: 6.1.12	Incidental surgery during pregnancy
In: 6.1.13	Assessment of fetal well being in utero
In: 6.1.14	Thromboprophylaxis
In: 6.1.15	Feeding / starvation policies
In: 6.1.16	Influence of common concurrent medical diseases
In: 6.1.17	Management of twin pregnancy
In: 6.1.18	Management of premature delivery
In: 6.1.19	Maternal morbidity and mortality
In: 6.1.20	Management of difficult or failed intubation
In: 6.1.21	Maternal and neonatal resuscitation
In: 6.1.22	Legal aspects related to fetus

6.2: Skills

In: 6.2.1	Assessment of pregnant woman presenting for anaesthesia / analgesia
In: 6.2.2	Epidural / subarachnoid analgesia for labour
In: 6.2.3	Management of complications of regional block and of failure to achieve adequate block
In: 6.2.4	Epidural and subarachnoid anaesthesia for Caesarean Section, and other operative deliveries
In: 6.2.5	Conversion of analgesia for labour to that for operative delivery
In: 6.2.6	General anaesthesia for Caesarean Section
In: 6.2.7	Airway management
In: 6.2.8	Management of the awake patient during surgery
In: 6.2.9	Ability to ventilate the newborn with bag and mask
In: 6.2.10	Anaesthesia for interventions other than delivery
In: 6.2.11	Post-delivery pain relief
In: 6.2.12	Management of accidental dural puncture and post-dural puncture headache
In: 6.2.13	Recognition of sick mother
In: 6.2.14	High dependency care of obstetric patients
In: 6.2.15	Optimisation for the 'at risk' baby

6.3: Attitudes and behaviour

In: 6.3.1	To be aware of local guidelines in the obstetric unit
In: 6.3.2	To communicate a balanced view of the advantages, disadvantages, risks and benefits of various forms of analgesia and anaesthesia appropriate to individual patients
In: 6.3.3	To communicate effectively with partner and relatives
In: 6.3.4	To help deal with disappointment
In: 6.3.5	To be involved in the initial management of complaints
In: 6.3.6	To communicate effectively with midwives
In: 6.3.7	To obtain consent appropriately
In: 6.3.8	To keep good records
In: 6.3.9	To identify priorities
In: 6.3.10	To attempt by conscientious care to recognise problems early
In: 6.3.11	To allocate resources and call for assistance appropriately
In: 6.3.12	To be aware of local audits and self audit

6.4: Workplace training objectives

In: 6.4.1	Within the obstetric team, the trainee should play a full part; communicating effectively about anaesthetic and analgesic techniques used in obstetrics and developing organisational skills. They should consolidate clinical management of common obstetric practice but recognise and treat common complications exercising proper judgement in calling for help.
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Recommended local requirements to support training

- Training should normally be provided in units carrying out at least 2,000 deliveries annually.
- There should be at least 1 consultant anaesthetic session allocated for every 500 deliveries. (In units with a frequent turnover of inexperienced trainees, with a higher than average epidural or Caesarean Section rate and/or a substantial number of high risk cases, sessions above this minimum will be required).
- Local protocols should be available to guide trainees in the management of common obstetric emergencies based on the individual units staffing and local support.
- Appropriately trained assistance for the anaesthetist (to NVQ level 3 in Operating Department Practice or in possession of the appropriate ENB qualification) must be locally available whenever a trainee anaesthetist is required to manage a patient during an operative delivery. The person providing this assistance to the anaesthetist should have no other duties at that time.
- Access for patients to critical care facilities must be immediately available at all times.
- Appropriate anaesthetic 'bench books' should be available within the delivery suite.

7: PAEDIATRIC ANAESTHESIA

This is an intermediate level 'Key Unit of Training' in which trainees should spend the equivalent of at least 1 month of training and, normally, not more than 3 months.

Paediatric anaesthesia and pain management includes everything from healthy children in DGHs to the sickest premature babies in tertiary referral centres and in paediatric intensive care units (PICU).

It is not expected that all trainees will be able to gain experience with neonates and preterm babies during ST Years 3 and 4. In considering the listed competencies required, it should be recognised that these will generally relate more to *Knowledge* rather than to *Skills*.

However, those who intend to progress to a post with an interest in paediatric anaesthesia may be able to gain access to more paediatric training during these years, when their *Skills* should begin to include those areas listed under *Knowledge: Neonates*.

7.1: Knowledge

<i>General</i>	
In: 7.1.1	Anatomical and physiological characteristics which affect anaesthesia and the changes which take place during growth from neonate to a young child
In: 7.1.2	Paediatric medical and surgical problems including major congenital abnormalities, congenital heart disease and syndromes e.g. Down's and their implications for anaesthesia
In: 7.1.3	Starvation and hypoglycaemia
In: 7.1.4	Preoperative assessment and psychological preparation for surgery
In: 7.1.5	Anaesthetic equipment and the differences from adult practice
<i>Children and Infants</i>	
In: 7.1.6	Anaesthetic management of children for minor operations and major elective and emergency surgery
In: 7.1.7	Management of recovery
In: 7.1.8	Management of postoperative pain, and nausea and vomiting in children
In: 7.1.9	Management of acute airway obstruction including croup and epiglottitis
<i>Neonates</i>	
In: 7.1.10	Anatomical, physiological and pharmacological differences to the older child / adult
In: 7.1.11	Preoperative assessment
In: 7.1.12	Anaesthetic techniques and thermoregulation
In: 7.1.13	Analgesia
In: 7.1.14	Neonatal equipment and monitoring
In: 7.1.15	Anaesthetic problems and management of important congenital anomalies including those requiring surgical correction in the neonatal period (tracheo-oesophageal fistula, diaphragmatic hernia, exomphalos, gastroschisis, intestinal obstruction, pyloric stenosis)
In: 7.1.16	Special problems of the premature and ex-premature neonate
In: 7.1.17	Resuscitation of the newborn
<i>PICU</i>	
In: 7.1.18	Principles of paediatric intensive care: management of the commoner problems, ventilatory and circulatory support, multi-organ failure
In: 7.1.19	Principles of safe transport of critically ill children and babies

7.2: Skills

<i>Children and Infants</i>	
In: 7.2.1	Resuscitation – Basic life support (BLS) and advanced life support (ALS) at all ages
In: 7.2.2	Preoperative assessment and preparation
In: 7.2.3	Techniques of induction, maintenance and monitoring for elective and emergency anaesthesia
In: 7.2.4	Selection, management and monitoring of children for diagnostic and therapeutic procedures carried out under sedation
In: 7.2.5	Maintenance of physiology: glucose, fluids, temperature
In: 7.2.6	Strategies and practice for the management of anaesthetic emergencies in children: loss of airway, laryngospasm, failed venous access, suxamethonium apnoea and anaphylaxis including latex allergy.
In: 7.2.7	Postoperative pain management including the use of local and regional anaesthetic techniques, simple analgesics, NSAIDs and use of opioids (including infusions and PCA)
In: 7.2.8	Communication with paediatric patients and their family

7.3: Attitudes and behaviour

In: 7.3.1.	To understand consent in children: the law, research, restraint
In: 7.3.2.	To communicate with parents (carers) and children throughout the surgical episode

7.4: Workplace training objectives

In: 7.4.1	The trainee should develop a wide knowledge of the anaesthetic needs of children and neonates. By the end of intermediate level training they should, as be able to organise and manage safely a list of straightforward paediatric cases over the age of 3 years with available consultant cover. They should understand the potential hazards of paediatric anaesthesia and have had as much practical training as is possible in planning for the management of such events.
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Recommended local requirements to support training

- Trainers for the initial period of training should be spending not less than the equivalent of one full operating session a week in paediatric anaesthesia
- Anaesthesia for children requires specially trained staff and special facilities
- Provision should be made for parents to be involved in the care of their children
- Adequate assistance for the anaesthetist by staff with paediatric training and skill should be available
- Paediatric anaesthetic equipment must be available where children are treated

7.5: Training in Child Protection

Anaesthetists of all grades may encounter children who have suffered physical and/or sexual abuse in various situations:

1. Resuscitation of a critically ill child who has sustained an injury under circumstances that cannot wholly be explained by natural circumstances or is consistent with intentional trauma or abuse
2. In the paediatric intensive care unit e.g. following severe head injury, where the above needs to be considered

3. When called upon to anaesthetise a child for a formal forensic examination, possibly involving colposcopy, sigmoidoscopy and the collection of specimens. This may also include medical photography/video records.
4. Rarely a child may tell the anaesthetist about abuse (“disclosure”)
5. During the course of a routine pre-op examination or surgical procedure, the anaesthetist or surgeon notes unusual or unexplained signs which may be indicative of physical or sexual abuse

In all these situations, it is essential that health care professionals, including the anaesthetist, act in the best interests of the child.

7.5.1: Knowledge

In:7.5.1.1	Situations in which abuse of children may present
In:7.5.1.2	Signs indicative of a possible need to safeguard the infant or child
In:7.5.1.3	Awareness of local CP procedures

7.5.2: Skills

In:7.5.2.1	Clearly communicates concerns (including documentation).
In:7.5.2.2	Ability to manage the child and their parents in a sensitive, appropriate manner

7.5.3 Attitudes and behaviour

In:11.5.3.1	Understands need to communicate concerns within team
In:11.5.3.2	Asks for senior and/or paediatrician support when appropriate

7.5.4 Workplace and training objectives

In:11.5.4.1	Demonstrates knowledge of local safeguarding children procedures
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7.5.5 Additional Notes

It is suggested that this training can be achieved in a 1 hour scenario based discussion or PBL format. In addition all trainees should be familiar with the RCoA/APA/RCPCH Guideline *Child Protection and the Anaesthetist: Safeguarding Children in the Operating Theatre*.

General principles-What to do if child abuse or neglect is suspected

- *Good communication is essential.* Anaesthetists are advised not to intervene alone, and suspicions should be discussed with the individual identified in the local guideline. In particular it would *not* be appropriate to institute or initiate formal *examination* whilst the child is anaesthetised, as separate consent is required.
- Further management needs to be agreed in conjunction with the paediatrician, surgeon and anaesthetist. Consideration needs to be given to:
 - Informing the parents (except in the case of fabricated or fictitious illness and child sexual abuse)
 - Further assessment
 - Informing social services and/or the police
- Full documentation is essential.
- The paediatrician should lead this process, and may seek advice from the Named or Designated Doctor for child protection.

Duties of the Anaesthetist

- To act in the best interests of the child
- To be aware of the child's rights to be protected
- To respect the rights of the child to confidentiality
- To contact a paediatrician with experience of child protection for advice (On call paediatrician for Named or Designated Doctor/Nurse)
- To be aware of the local child protection mechanisms
- To be aware of the rights of those with parental responsibility

8: PAIN MANAGEMENT, ACUTE & CHRONIC

This is an intermediate level 'Key Unit of Training' in which trainees should spend the equivalent of at least 1 month of training and, normally, not more than 3 months.

The recommendations for training are in addition to the knowledge, skills, attitudes and workplace training objectives described for basic level training. Topics that are already included in the lists for basic level training are treated in greater depth during intermediate level training.

8.1 Knowledge

In: 8.1.1	Anatomy, physiology, pharmacology and basic psychology relevant to pain management
In: 8.1.2	Mechanisms of pain: somatic, visceral and neuropathic pain
In: 8.1.3	Consequences of peripheral nerve injury, spinal cord injury and deafferentation
In: 8.1.4	Assessment and measurement of acute pain
In: 8.1.5	Techniques for control of acute pain: postoperative and post-traumatic - including children and neonates, the elderly, and patients who are handicapped, unconscious or receiving critical care
In: 8.1.6	Application of pharmacological principles to the pain control: conventional analgesics and adjuvant analgesics; side effects; problems of drug dependency and addiction
In: 8.1.7	Opioid and non-opioid medication, opioid infusions, patient controlled analgesia
In: 8.1.8	Other medication used to manage chronic pain: antidepressants, anticonvulsants, antiarrhythmics and other adjuvant medication
In: 8.1.9	Pharmacology of local anaesthetics
In: 8.1.10	Principles of neural blockade for pain management: peripheral nerve, plexus, epidural and subarachnoid blocks; sympathetic blocks including stellate, coeliac plexus and lumbar sympathetic blocks; neurolytic agents and procedures; implanted catheters and pumps for drug delivery
In: 8.1.11	Non-pharmacological methods of pain control. The principles of stimulation induced analgesia: transcutaneous electrical nerve stimulation and acupuncture
In: 8.1.12	The role of other treatment modalities; physical therapy, surgery, psychological approaches, rehabilitation approaches, pain management programmes
In: 8.1.13	Assessment of patients with chronic pain and of pain in patients with cancer
In: 8.1.14	Understanding of the principles of chronic pain management in the pain clinic setting
In: 8.1.15	Understanding of the importance of psychology and pain
In: 8.1.16	Management of severe pain and associated symptoms in palliative care
In: 8.1.17	Principles and ethics of pain research

8.2: Skills

In: 8.2.1	Assessment and management of acute pain: postoperative, post-traumatic and non-surgical acute pain
In: 8.2.2	Management of acute pain including special clinical groups: infants, patients with opioid dependence or tolerance, non-surgical acute pain (e.g. sickle cell disease crisis), patients who are handicapped or with impaired consciousness
In: 8.2.3	Explanation of analgesic methods: oral; sublingual; subcutaneous, IM; IV; inhalational analgesia, patient controlled analgesia, epidural; regional techniques and local blocks; possible side effects and complications
In: 8.2.4	Neural blockade: brachial plexus blocks, paravertebral nerve block, intrathecal and epidural drug administration for acute and cancer pain
In: 8.2.5	Management of side effects of pain relieving medication and procedures
In: 8.2.6	Basic assessment of patients with chronic pain

In: 8.2.7	Recognition of neuropathic pain
In: 8.2.8	Prescription of medication for chronic pain including antidepressants and anticonvulsants
In: 8.2.9	Use of stimulation induced analgesia: transcutaneous electrical nerve stimulation
In: 8.2.10	Basic assessment and management of pain in patients with cancer

8.3: Attitudes and behaviour

In: 8.3.1	Listens to patients and their relatives
In: 8.3.2	Provides explanations in a way that patients and relatives can understand
In: 8.3.3	Appropriate communication with staff
In: 8.3.4	Enlists help / advice from other professionals when appropriate
In: 8.3.5	Awareness of role in a multi-professional team
In: 8.3.6	Awareness of ethnic, cultural and spiritual issues in pain
In: 8.3.7	Keeps adequate records

8.4: Workplace training objectives

In: 8.4.1	Able to assess and manage acute pain for patients after most types of surgery including cardiothoracic, neurosurgery and paediatric surgery
In: 8.4.2	Able to provide explanation of analgesic methods: oral, sublingual, subcutaneous, IM, IV drugs, inhalational analgesia, patient controlled analgesia, epidural and regional techniques; possible side effects and complications
In: 8.4.3	Able to institute appropriate action for patients with unrelieved pain in the immediate postoperative period and unrelieved non-surgical acute pain on the wards
In: 8.4.4	Able to establish priorities and formulate a treatment plan
In: 8.4.5	Able to diagnose and institute initial management for neuropathic pain
In: 8.4.6	Able to demonstrate technical proficiency with procedures from the skills list
In: 8.4.7	Able to work as a part of a multi-professional team

Recommended local requirements to support training

- Pain Management Services should be planned as an integrated programme although staffing and equipment resources for acute and non acute pain may differ
- Acute and non-acute pain management in all hospitals requires:
 - Appropriate facilities, consultant sessional allocation and equipment
 - Responsibility for the management of pain to be undertaken by appropriately trained consultants
 - Liaison between pain management, palliative care services and other specialties to provide an inter-disciplinary approach in all areas
 - Ongoing education in the understanding of pain, its presentation and management, for all grades and disciplines caring for patients
 - The provision of inter-disciplinary programmes which will improve patient rehabilitation whilst reducing pain and use of other health care resources
- Specific arrangements must be made for the treatment of children
- The services of investigation departments must be readily available and information concerning their services easily available to both staff and patients.

9: VASCULAR ANAESTHESIA

This is an intermediate level 'General Unit of Training' in which it is expected that all trainees will gain appropriate training.

Developments in interventional radiology are changing the range of elective vascular procedures taking place in the operating theatre. However, the demands for the anaesthesia and critical care of patients undergoing emergency vascular procedures, make it highly desirable that trainees receive appropriate training in this special interest if at all possible.

9.1: Knowledge

In: 9.1.1	Resuscitation and management of major vascular accidents
In: 9.1.2	Management of the patient with atherosclerotic disease
In: 9.1.3	Management of the patient for major vascular surgery
In: 9.1.4	Management of patients for endovascular radiological procedures (stenting etc)
In: 9.1.5	Management of carotid artery surgery
In: 9.1.6	Management of phaeochromocytoma
In: 9.1.7	Sympathectomy
In: 9.1.8	Postoperative management and critical care
In: 9.1.9	Postoperative analgesia
In: 9.1.10	Anaesthesia for non-cardiac surgery in patients with cardiac disease
In: 9.1.11	Effects of smoking on health
In: 9.1.12	Morbidity and mortality of vascular surgery
In: 9.1.13	Massive blood transfusion, strategies for blood conservation, red cell salvage
In: 9.1.14	Consequences of aortic cross-clamping and renal protection

9.2: Skills

In: 9.2.1	Preoperative assessment
In: 9.2.2	Insertion of invasive monitoring
In: 9.2.3	Interpretation of information from monitoring
In: 9.2.4	Management of massive blood loss
In: 9.2.5	Maintenance of normothermia
In: 9.2.6	Recognition and management of complications
In: 9.2.7	Postoperative care

9.3: Attitudes and behaviour

In: 9.3.1	Sympathetic explanation of risks and benefits of surgery and anaesthesia
In: 9.3.2	Preoperative optimisation
In: 9.3.3	Teamwork with surgeons throughout perioperative period
In: 9.3.4	Anticipation of problems
In: 9.3.5	Recognition of need for help
In: 9.3.6	Clarity of instructions for postoperative care

9.4: Workplace training objectives

In: 9.4.1	Trainees should demonstrate competency in assessing cardiac and pulmonary function in patients with limited exercise tolerance, in the management of significant blood loss and in the use of drugs to support the heart and circulation.
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Recommended local requirements to support training

- Investigative facilities for cardiac and pulmonary function must be available
- Surgeons must be available with vascular expertise
- Anaesthetist with regular vascular list
- Vascular emergencies dealt with routinely
- Intensive Care / HDU facilities must be available

10: DAY SURGERY

This is an intermediate level 'General Unit of Training' in which it is expected that all trainees will gain appropriate training.

Training should take place within a dedicated Day Surgery Unit where the management of cases as an outpatient is not compromised by elective or other operations taking place for in-patients.

10.1: Knowledge

In: 10.1.1	Anaesthetic pre-assessment clinics
In: 10.1.2	Instructions to patients, anaesthetic and social
In: 10.1.3	Regional analgesia appropriate to day cases
In: 10.1.4	General anaesthesia appropriate to day cases
In: 10.1.5	Appropriate drugs for day cases
In: 10.1.6	Recovery assessment
In: 10.1.7	Postoperative analgesia

10.2: Skills

In: 10.2.1	Instructions to patient:
In: 10.2.2	Transport
In: 10.2.3	accompanying person who can drive if in own car
In: 10.2.4	home not more than 1 hour away from day stay unit
In: 10.2.5	level of care overnight
In: 10.2.6	telephone availability
In: 10.2.7	Anaesthesia:
In: 10.2.8	regional or local anaesthesia
In: 10.2.9	local topical anaesthesia or sedation
In: 10.2.10	general anaesthesia
In: 10.2.11	recognise those unsuitable for day case management
In: 10.2.12	General Anaesthesia:
In: 10.2.13	to limit the loss of physiological stability and to achieve rapid recovery
In: 10.2.14	to select where appropriate analgesics and muscle relaxants used during outpatient GA to recognise when a patient is sufficiently recovered to return home supervised
In: 10.2.15	Use of protocols or guidelines

10.3: Attitudes and behaviour

In: 10.3.1	Good communication with nursing staff, patients, relatives and other hospital staff
In: 10.3.2	The development of a professional and reassuring manner in order to allay patient anxieties

10.4: Workplace training objectives

In: 10.4.1	The trainee must understand and apply agreed protocols with regard to patient selection and other aspects of care, and also appreciate the importance of minimising postoperative complications such as nausea and pain, in patients who are returning home the same day.
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Recommended local requirements to support training

- Clear guidelines must exist for appropriate patient selection for day case surgery, these will include consideration of social factors
- Day surgery units will have a consultant in charge who chairs a multi-disciplinary management team
- Specific arrangements must be made for the treatment of children
- All patients must be assessed during the recovery phase for the adequacy of analgesia and fitness for discharge
- Clear written discharge criteria must be established
- Full written records must be maintained
- Specific instructions and information must be available for patients, their relatives and community services

11: EAR, NOSE AND THROAT (OTORHINOLARYNGOLOGY)

This is an intermediate level 'General Unit of Training' in which it is expected that all trainees will gain appropriate training.

11.1: Knowledge

In: 11.1.1	Preoperative assessment, particularly prediction of a difficult intubation
In: 11.1.2	Management of patients of all ages to include patients with: stridor; intubation difficulties; sleep apnoea; concomitant diseases
In: 11.1.3	Local techniques and surface analgesia
In: 11.1.4	Acute ENT emergencies (e.g. bleeding tonsils, croup, epiglottitis, foreign bodies) Laryngoscopy and bronchoscopy
In: 11.1.5	Knowledge of special tubes, gags and equipment for microlaryngoscopy, bronchoscopy, laser surgery (e.g. Venturi devices, ventilating bronchoscope and fiberoptic bronchoscopy)
In: 11.1.6	Middle ear surgery including hypotensive techniques
In: 11.1.7	Major head and neck surgery (including laryngectomy)
In: 11.1.8	Emergency airway management including tracheostomy
In: 11.1.9	Use of helium
In: 11.1.10	Postoperative management

11.2: Skills

<i>Preoperative</i>	
In: 11.2.1	Recognise the importance of preoperative assessment with particular attention to:
In: 11.2.2	age (paediatric / adult / elderly)
In: 11.2.3	concomitant disease GI tract
In: 11.2.4	patients with sleep apnoea, stridor and intubation difficulties
In: 11.2.5	Discuss the anaesthetic procedures with the patient and/or relatives (if a child is involved)
In: 11.2.6	Discuss special requirements with the surgical team
In: 11.2.7	Acute ENT emergencies such as bleeding tonsil bed, croup / epiglottitis
In: 11.2.8	Prepare all appropriate drugs, appropriate masks, airways, tracheal tubes, bougies, laryngoscopes, throat packs
In: 11.2.9	Use of appropriate disposable equipment to prevent transmission of nvCJD
<i>Peroperative</i>	
In: 11.2.10	Provide smooth anaesthesia / analgesic / surgical operating conditions
In: 11.2.11	Cope with parental presence in the anaesthetic room
In: 11.2.12	Use the appropriate tracheal tube or laryngeal mask
In: 11.2.13	Use of special tubes, gags and goggles (laser surgery)
In: 11.2.14	Techniques available for microlaryngoscopy and bronchoscopy (Venturi devices and ventilating bronchoscope)
In: 11.2.15	Hypotensive anaesthetic techniques, when appropriate
In: 11.2.16	To use invasive monitoring (arterial, CVP, urinary) for major surgical procedures on the head and neck
<i>Postoperative</i>	
In: 11.2.17	Extubation procedures to avoid laryngospasm
In: 11.2.18	Oxygen therapy
In: 11.2.19	Appropriate postoperative analgesia
In: 11.2.20	Postoperative fluid balance
In: 11.2.21	Maintain venous access after operation, if required
In: 11.2.22	Postoperative anti-emetics

11.3: Attitudes and behaviour

In: 11.3.1	Develop an understanding of the needs of the surgeon when operating on a shared airway but the absolute importance of not compromising patient safety.
In: 11.3.2	To support and guide recovery and other staff taking responsibility for the unconscious patient who has undergone surgery to the airway.

11.4: Workplace training objectives

In: 11.4.1	To develop confidence in the anaesthetic management of adults and children undergoing surgery to the airway.
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Recommended local requirements to support training

- Surgery is undertaken on patients of all ages from neonates to the elderly. Ear Nose and Throat units must have a paediatric facility with trained paediatric nurses
- Upper airway problems are commonplace, equipment and expertise for fiberoptic intubation must be available
- Rapid access to an experienced and efficient emergency service is required.
- Access to beds for intensive or high dependency care must be available when required

12: GENERAL SURGERY / GYNAECOLOGY / UROLOGY (+/- TRANSPLANTATION)

This is a 'General Unit of Training' in which it is expected that all trainees will gain appropriate intermediate level training .

Anaesthesia for general surgical procedures forms the backbone of specialist anaesthesia. Knowledge skills and attitudes learned during basic level training should be enhanced and refined as increased responsibility is taken by the trainee.

12.1: Knowledge

<i>General surgery</i>	
In: 12.1.1	Relevant anatomy and physiology for common surgical procedures
In: 12.1.2	Anaesthesia for complex GI surgery including intrathoracic procedures
In: 12.1.3	Emergency anaesthesia for general surgery
In: 12.1.4	Carcinoid syndrome / tumours
In: 12.1.5	Endocrinology; diseases relevant to hepatobiliary, pancreatic, splenic surgery
In: 12.1.6	Management of thyroid (and parathyroid) surgery
In: 12.1.7	Starvation / obesity
In: 12.1.8	Metabolism; nutrients, carbohydrates, fats, proteins, vitamins, minerals
<i>Gynaecology</i>	
In: 12.1.9	Relevant anatomy and physiology
In: 12.1.10	Endocrinology relating to gynaecology
In: 12.1.11	Preoperative assessment
In: 12.1.12	Laparoscopic surgery
In: 12.1.13	Gynaecological procedures during pregnancy
<i>Urology</i>	
In: 12.1.14	Anatomy of the renal tract
In: 12.1.15	Blood flow, GFR, plasma clearance
In: 12.1.16	Tubular function, urine formation and micturition
In: 12.1.17	Assessment of renal function
In: 12.1.18	Disturbances of fluid balance, oedema and dehydration
In: 12.1.19	Management of acid-base abnormalities
In: 12.1.20	Renal failure and its management
In: 12.1.21	Plasma electrolyte disturbances
In: 12.1.22	Anaesthesia on spinal injuries patients for urological procedures
In: 12.1.23	TUR syndrome
<i>Transplantation</i>	
In: 12.1.24	Principles and complications of Immunosuppression
In: 12.1.25	Specific anaesthetic problems associated with renal transplantation
In: 12.1.26	Anaesthetic management of patients with transplanted organs

12.2: Skills

<i>General surgery</i>	
In: 12.2.1	Preoperative assessment and resuscitation of emergency surgical patient e.g. trauma, obstruction and perforation
In: 12.2.2	Postoperative analgesia e.g. regional and field blocks
In: 12.2.3	Assessment of need for ICU and HDU admission
In: 12.2.4	Assessment of the elderly and children
In: 12.2.5	Laparoscopic surgery
In: 12.2.6	TIVA

<i>Gynaecology</i>	
In: 12.2.7	Regional techniques
In: 12.2.8	Laparoscopic surgery
<i>Urology</i>	
In: 12.2.9	Regional techniques
In: 12.2.10	Major procedures – e.g. nephrectomy, cystectomy

12.3: Attitudes and behaviour

<i>General surgery</i>	
In: 12.3.1	Can assess preoperative patients effectively and resuscitate appropriately
In: 12.3.2	Links with other staff showing ability to co-ordinate a team
<i>Gynaecology</i>	
In: 12.3.3	Shows appropriate attitude and behaviour to the female patient
<i>Transplantation</i>	
In: 12.3.4	Understands the ethical implications of transplantation

12.4: Workplace training objectives

In: 12.4.1	The trainee should demonstrate the required professional judgement in assessing and managing the risk of aspiration, in deciding the urgency of a case against any delay necessary for resuscitation and in assessing the requirement for postoperative critical care.
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13: ORTHOPAEDIC ANAESTHESIA

This is an intermediate level 'General Unit of Training' in which it is expected that all trainees will gain appropriate training.

13.1: Knowledge

In: 13.1.1	Preoperative assessment with particular reference to the problems of children, the elderly and patients with co-existing disease or injury such as congenital syndromes, rheumatoid arthritis or vertebral fractures
In: 13.1.2	Special airway problems especially in the rheumatoid patient and those with cervical spine injury or pathology
In: 13.1.3	Emergency anaesthesia for fractures
In: 13.1.4	Resuscitation and management of patients with multiple injuries
In: 13.1.5	Routine anaesthesia for joint replacement surgery, arthroscopy, fractured bones, dislocations and tendon repair
In: 13.1.6	The problems that may result from the use of tourniquets and of cement
In: 13.1.7	Problems of operations in the prone position
In: 13.1.8	Anaesthesia for spinal surgery (including scoliosis)
In: 13.1.9	Perioperative analgesia, including use of regional analgesia
In: 13.1.10	Prevention, recognition and management of potential postoperative complications, including prophylaxis, recognition and management of deep venous thrombosis & pulmonary embolus, and fat embolus
In: 13.1.11	Other specific complications of orthopaedic surgery including continuing blood loss, compartment syndromes, neurovascular deficit, complications due to difficulty of access to patients who may be on traction, in hip spicas, plaster jackets, and the problems of pressure areas

13.2: Skills

In: 13.2.1	Airway assessment and management in the patient with rheumatoid arthritis
In: 13.2.2	Safe positioning of patient, particularly in lateral and prone positions
In: 13.2.3	Assessment and management of major blood loss
In: 13.2.4	Correct application and use of tourniquets

13.3: Attitudes and behaviour

In: 13.3.1	Provides explanations of anaesthesia for orthopaedic surgery in a way that patients can understand
In: 13.3.2	Gentle handling of patient during positioning and performance of general or regional anaesthesia
In: 13.3.3	Enlists help / advice from other professionals when appropriate

13.4: Workplace training objectives

In: 13.3.4	Anaesthesia for orthopaedic lists enables trainees to attain competency in ensuring the smooth and efficient running of an operating list; liaising with other staff, avoiding delays and reassuring patients. They should demonstrate their ability to employ safe but effective methods for postoperative pain relief. In addition they should develop awareness of the potential hazards and complications of orthopaedic surgery.
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Recommended local requirements to support training

As well as the requirements for adequately staffed and equipped operating theatres, there must be provision of adequate recovery facilities, and access to an HDU if there is massive blood loss, severe hypothermia, or postoperative compromised lung function. An ICU will be needed if ventilation is required.

14: REGIONAL ANAESTHESIA

Regional techniques are integral components of anaesthesia in the UK now, but the College recognises that it is inappropriate to expect that every trainee will become competent in every possible block technique, although they must be competent in all the generic aspects of block performance. Schools of Anaesthesia will vary in the range of blocks to which trainees can be exposed, but the basic level curriculum has indicated that all trainees should become competent in spinal and epidural block, with training in certain other blocks being appropriate at that stage if possible. During intermediate level training 1-2 trainees should increase their experience of regional techniques and, where opportunities allow, should increase the range of block techniques in which they become competent. The skills section below indicates the techniques which are considered most appropriate for this stage of training, experience of the various techniques normally being gained during relevant special interest attachments. Assessments should be as outlined in Section 1.2 for spinal & lumbar epidural blocks, and trainees must recognise that they should not attempt blocks until they have received supervised training, and passed the relevant assessment.

If training in these blocks is not available it should be deferred to ST Years 3 / 4 / 5, or even until after achievement of CCT if an individual subsequently wishes to practice them.

14.1: Knowledge

In: 14.1.1	Basic sciences applied to regional anaesthesia: anatomy, physiology and pharmacology
In: 14.1.2	Advantages / disadvantages, risks / benefits and indications / contra-indications
In: 14.1.3	Assessment, preparation and management of the patient for regional anaesthesia
In: 14.1.4	The principles of minor and major peripheral nerve blocks (including cranial nerve blocks) and central neural blocks
In: 14.1.5	Desirable effects, possible side effects and complications of regional anaesthesia
In: 14.1.6	Management of effects and complications

14.2: Skills

In: 14.2.1	Assessment and preparation of the patient for regional anaesthesia, to include discussion of anaesthetic options (i.e. regional versus general)
In: 14.2.2	Management of the patient receiving a regional block during surgery (whether awake or as part of a 'balanced' anaesthetic technique) and during labour
In: 14.2.3	Management of the patient receiving regional techniques in the postoperative period, including liaison with surgeons, acute pain teams, and ward staff
In: 14.2.4	Central nerve blocks:
In: 14.2.5	Spinal anaesthesia
In: 14.2.6	Epidural block (lumbar & sacral)
In: 14.2.7	Combined spinal /epidural
In: 14.2.8	Major nerve block – able to perform at least one method for upper and lower limb surgery respectively:
In: 14.2.9	Brachial plexus – one technique at least
In: 14.2.10	[<i>deliberate deletion</i>]
In: 14.2.11	Sciatic
In: 14.2.12	Femoral
In: 14.2.13	[<i>deliberate deletion</i>]
In: 14.2.14	Minor nerve block:
In: 14.2.15	Superficial cervical plexus block
In: 14.2.16	Trunk (penile, intercostal & inguinal blocks)
In: 14.2.17	Upper limb (elbow and distal)

In: 14.2.18	Lower limb (ankle & distal)
In: 14.2.19	Miscellaneous: Ophthalmic blocks, topical, IVRA, infiltration & intra-articular
In: 14.2.20	Recognition and management of the adverse effects of regional anaesthesia

[Note: Thoracic epidural and deep cervical plexus blocks are ST Year 5, 6 and 7 competencies. A fuller range of 'major' nerve block techniques would be appropriate during these years also if the relevant training and experience are available. Cranial nerve, cervical epidural, paravertebral, lumbo-sacral and autonomic block competencies are appropriate only to senior trainees working towards competency in pain and other relevant special interests. Again, there should be formal assessment, along the lines already outlined, of each block before the trainee can be judged as competent.]

14.3: Attitudes and behaviour

In: 14.3.1	Provides explanations of regional techniques in a way that patients can understand
In: 14.3.2	Understands patients' anxieties about regional techniques, especially the stress of undergoing surgery while conscious
In: 14.3.3	Recognises need for communication with staff about use of regional block
In: 14.3.4	Handles patients gently during performance of regional block
In: 14.3.5	Meticulous attention to safety and sterility during performance of regional blocks
In: 14.3.6	Enlists help / advice from other professionals when appropriate

14.4: Workplace training objectives

In: 14.4.1	Trainees should take appropriate opportunities to use regional anaesthesia in patients undergoing a range of operations in specialties such as orthopaedics, gynaecology, urology and plastic surgery in order to demonstrate their attainment of the listed requirements. All such cases should be fully detailed in the logbook.
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15: TRAUMA AND ACCIDENTS

This is a 'General Unit of Training' in which it is expected that all trainees will gain appropriate intermediate level training.

Many aspects of this unit of training will be closely linked with knowledge and skills covered in other units of training. The recommendations made here are therefore broadly stated. Increasingly anaesthetic trainees completing intermediate level training will have taken part in a course in Advanced Trauma Life Support (ATLS or equivalent) which will have fulfilled the requirements of this unit of training. For those trainees that have not had this opportunity, it is suggested that this unit of training be modelled along similar lines.

15.1: Knowledge

In: 15.1.1	Management of head injury, spinal injury and multiple trauma with major blood loss
In: 15.1.2	Major incident management, triage and anaesthesia in situations outside the hospital
In: 15.1.3	Transfer of the traumatised patient including emergency airway and pain management
In: 15.1.4	Management of the burned patient
In: 15.1.5	Immersion / drowning and near-drowning
In: 15.1.6	Hypothermia
In: 15.1.7	Trauma scoring systems

15.2: Skills

In: 15.2.1	Many of the skills required are those also associated with other specialties, but there is the additional requirement to be able to perform rapid assessments and to prioritise patients' needs
In: 15.2.2	Experience in transfers should be gained
In: 15.2.3	Management of allergy

15.3: Attitudes and behaviour

In: 15.3.1	Linking with other specialists to work in a team (this includes paramedic and ambulance personnel)
In: 15.3.2	Understanding and adherence to, agreed protocols
In: 15.3.3	Recognising the essential requirement for stabilisation prior to transfer
In: 15.3.4	To be able to organise and manage the safe transfer of the intubated / ventilated patient

15.4: Workplace training objectives

In: 15.4.1	The trainee should attain the ability to be an effective member of the trauma team and take an appropriate role in managing transfers
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Recommended local requirements to support training

- Every hospital should have a designated consultant anaesthetist to co-ordinate anaesthetic services for trauma
- In hospitals designated to receive major trauma patients there should be a defined trauma team to respond immediately whenever a patient with major injuries is admitted
- Hospitals designated to receive major trauma patients should have:
 - Access to core specialities at all times

- An intensive care unit
- Facilities for high dependency care
- Any hospital designated to manage major trauma in children should have staff with paediatric training and experience. There should be an agreed set of guidelines for the treatment of children
- There should be agreed guidelines for the referral and transfer of trauma patients

16: DIAGNOSTIC IMAGING, ANAESTHESIA & SEDATION

This is an intermediate level 'Additional Unit of Training' which may or may not be available to trainees depending on the distribution and availability of services locally.

The role of the anaesthetist in providing general anaesthesia and sedation together with physiological and pharmacological support for patients in the X-ray department is evolving rapidly. Trainees need to understand the benefits and risks particularly with regard to interventional procedures.

16.1: Knowledge

In: 16.1.1	Preanaesthetic preparation
In: 16.1.2	Techniques appropriate for adults and children for CT scanning, MR imaging and angiography
In: 16.1.3	Post-investigation care

16.2: Skills

In:22.2.1	Pre-anaesthetic preparation
In:22.2.2	Sedation and general anaesthetic techniques for:
In:22.2.3	angiography and interventional procedures
In:22.2.4	CT scanning, adults and children
In:22.2.5	Magnetic resonance imaging with respect to:
In:22.2.6	the isolated patient
In:22.2.7	the problems due to magnetic field
In:22.2.8	Post-investigation care

16.3: Attitudes and behaviour

In: 16.3.1	Establishing good communication and an understanding of their working needs with nursing staff, radiographers and radiologists
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16.4: Workplace training objectives

In: 16.4.1	Trainees should understand the implications of different interventional radiological procedures in their anaesthetic care of the patient and be able to establish safe anaesthesia or sedation within the confines and limitations of the X-ray department.
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Recommended local requirements to support training

The provision of anaesthetic and monitoring equipment together with assistance for the anaesthetist should be to a similar standard as is provided in the operating theatres for an equivalent case.

17: MAXILLO-FACIAL / DENTAL ANAESTHESIA

This is an intermediate level 'Additional Unit of Training' which may or may not be available to trainees depending on the distribution and availability of services locally.

Maxillo-facial surgery covers a range of procedures from simple dental extractions to complex resections and reconstructive procedures. The age range of patients is similarly wide, from childhood to the elderly.

17.1: Knowledge

In: 17.1.1	Preoperative assessment
In: 17.1.2	Day case / inpatient requirements
In: 17.1.3	Resuscitation facilities
In: 17.1.4	Anaesthesia for dental extractions (to include sedation and analgesic techniques)
In: 17.1.5	Paediatric anaesthesia
In: 17.1.6	Assessment and management of the difficult airway including fiberoptic intubation Anaesthesia for maxillo-facial surgery including the perioperative management of the fractured jaw and other major facial injuries.
In: 17.1.7	Postoperative management for all patients undergoing dental or maxillo-facial procedures

17.2: Skills

Many of the skills required for this unit of training are shared with ENT surgery

In: 17.2.1	Patient assessment for day-stay surgery, including children and the mentally and physically handicapped
In: 17.2.2	Pre and postoperative instructions for patients
In: 17.2.3	Talking to patients and explaining the anaesthesia proposed
In: 17.2.4	Choice of anaesthetic technique
In: 17.2.5	Potential problems and hazards of the shared airway
In: 17.2.6	Airway management including nasal masks, naso-pharyngeal airways, laryngeal mask airways, oral and nasal endotracheal intubation
In: 17.2.7	Working with dental and oral surgeons and their use of mouth props and packs
In: 17.2.8	Appropriate monitoring techniques and record keeping
In: 17.2.9	Recovery and patient assessment for discharge including regular audit of outcomes
In: 17.2.10	Management of emergencies
In: 17.2.11	Conscious sedation:
In: 17.2.12	Patient selection, assessment and suitability for treatment under sedation
In: 17.2.13	The techniques and drugs available including non-pharmacological methods
In: 17.2.14	Administration methods - oral, inhalational, intravenous, transmucosal, patient-controlled
In: 17.2.15	Monitoring and management of the sedated patient

17.3: Attitudes and behaviour

In: 17.3.1	Develop an understanding of the needs of the surgeon when operating on a shared airway but the absolute importance of not compromising patient safety
In: 17.3.2	To support and guide recovery and other staff taking responsibility for the unconscious patient who has undergone surgery to the airway

17.4: Workplace training objectives

In: 17.4.1	Trainees should develop confidence in the anaesthetic management of adults and children undergoing surgery to the airway.
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Recommended local requirements to support training

- Surgery is undertaken on patients of all ages from neonates to the elderly. There must be a paediatric facility with trained paediatric nurses
- Upper airway problems are commonplace, equipment and expertise for fiberoptic intubation must be available
- Rapid access to an experienced and efficient emergency service is required.
- Access to beds for intensive or high dependency care must be available when required

18: OPHTHALMIC ANAESTHESIA

This is an intermediate level 'Additional Unit of Training' which may or may not be available to trainees depending on the distribution and availability of services locally.

This specialty affords potentially very valuable training for trainees at intermediate level. The age range of the patients and the wide adoption of local anaesthetic techniques are particular aspects that can be beneficial to the development of the trainee. However, it is recognised that only a proportion of trainees will be able to gain this experience in the ST Years 3 and 4.

18.1: Knowledge

In: 18.1.1	Preoperative assessment with particular reference to patients with co-morbidities
In: 18.1.2	Choice of local or general anaesthetic techniques in relation to the patient and surgery with particular reference to:
In: 18.1.3	strabismus surgery
In: 18.1.4	cataract surgery
In: 18.1.5	surgery for the detached retina
In: 18.1.6	Penetrating eye injury
In: 18.1.7	Control of intraocular pressure
In: 18.1.8	Action of anaesthetic drugs on the eye
In: 18.1.9	Anatomy relevant to local anaesthetic blocks
In: 18.1.10	Local analgesia
In: 18.1.11	topical anaesthesia
In: 18.1.12	risks of sharp needles in peribulbar and retrobulbar techniques
In: 18.1.13	sub-Tenon's block
In: 18.1.14	Problems of glaucoma surgery
In: 18.1.15	Postoperative care

18.2: Skills

In: 18.2.1	Assessment and preparation, including the use of day care facilities
In: 18.2.2	Anaesthetic management of patients for lachrymal surgery including syringing and probing and dacryocystorhinostomy
In: 18.2.3	Requirements for strabismus surgery, including knowledge of the oculocardiac reflex
In: 18.2.4	Control of intraocular pressure
In: 18.2.5	The use of topical preparations, possible effects and interactions
In: 18.2.6	Appropriate local anaesthetic methods
In: 18.2.7	Techniques of general anaesthesia for ophthalmic surgery
In: 18.2.8	Choice and use of appropriate method for airway maintenance under general anaesthesia
In: 18.2.9	Postoperative care

18.3: Attitudes and behaviour

In: 18.3.1	Understanding of the importance of the patient's general health and wishes to decisions relating to the choice of anaesthetic techniques
In: 18.3.2	Being an effective communicator with elderly patients in explaining the risks and benefits of general and local anaesthesia for eye surgery

18.4: Workplace training objectives

In: 18.4.1	Trainees should develop expertise in the administration of local anaesthesia for eye surgery trying to obtain competency in at least one block. They should also show the necessary medical knowledge and skill in the preoperative assessment of elderly patients.
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Recommended local requirements to support training

Availability of facilities, support staff including assistance for the anaesthetist and the anaesthetic and monitoring equipment must be to the standards set out in documents from the RCA and AAGBI.

19: PLASTICS / BURNS

This is an intermediate level 'Additional Unit of Training' which may or may not be available to trainees depending on the distribution and availability of services locally.

Whilst much plastic surgery takes place in specialist centres, there are often routine lists in other hospitals, this should enable most anaesthetic trainees to gain some intermediate level experience in this specialty. However severe burns, although initially admitted to many A&E departments will, following resuscitation, be transferred to a specialist unit. Training opportunities will therefore be limited, although the expectation is that many anaesthetists will be involved in the initial resuscitation of burns at a receiving hospital. It is recognised that training in this field will, in many cases, need to be supplemented by other teaching and instructional methods such as CD-ROM presentations.

19.1: Knowledge

In: 19.1.1	Preoperative assessment
In: 19.1.2	Assessment and management of the difficult airway including fiberoptic intubation
In: 19.1.3	Day case / inpatient requirements
In: 19.1.4	Paediatric anaesthesia
In: 19.1.5	Postoperative management for patients who have undergone plastic surgical procedures with particular reference to free flaps
In: 19.1.6	Physiology of tissue blood flow
In: 19.1.7	Benefits and risks of hypotensive anaesthesia
In: 19.1.8	Pathophysiology of the patient with burns
In: 19.1.9	Resuscitation of the patient with burns with particular reference to fluid management
In: 19.1.10	Pathophysiology, assessment, diagnosis and management of injury due to heat and smoke inhalation

19.2: Skills

<i>Plastic surgery</i>	
In: 19.2.1	General and regional anaesthesia for plastic surgery including:
In: 19.2.2	anaesthesia for head and neck surgery
In: 19.2.3	anaesthesia for free flaps and reimplantation
In: 19.2.4	anaesthesia for cleft palate repair
In: 19.2.5	Specific problems of prolonged anaesthesia
In: 19.2.6	Manipulation and control of blood pressure to assist surgery
In: 19.2.7	Managing the acutely compromised airway including experience with trans-tracheal ventilation
In: 19.2.8	Prediction and management of the difficult intubation
In: 19.2.9	Selection of the appropriate method of airway maintenance, use of the LMA
In: 19.2.10	Techniques for continuous local anaesthesia
<i>Burns</i>	
In: 19.2.11	Resuscitation in the management of the patient with burns
In: 19.2.12	Recognition and treatment of airway problems
In: 19.2.13	Institution of intravenous fluid therapy and fluid replacement
In: 19.2.14	Analgesia
In: 19.2.15	Transportation requirements
In: 19.2.16	Temperature maintenance
In: 19.2.17	Monitoring
In: 19.2.18	insertion of lines
In: 19.2.19	problems with access

<i>Burns (continued)</i>	
In: 19.2.20	Responses to drugs in burned patients
In: 19.2.21	Recognition and management of the airway burn and initiating appropriate treatment

19.3: Attitudes and behaviour

In: 19.3.1	To be able to foresee potential problems and plan appropriately
In: 19.3.2	When using elective hypotensive techniques to maintain professional independence, recognising the absolute need to protect the patient's safety at all times and not to succumb to unreasonable pressure from the surgeon

19.4: Workplace training objectives:

In: 19.4.1	Trainees should develop skills in the management of the difficult airway, learn the value and limitations of hypotensive techniques and obtain a clear understanding of the priorities in the resuscitation of the patient with burns.
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Recommended local requirements to support training

Plastics

- The care of head & neck patients is an integral part of plastic anaesthesia. Specialist units accepting these patients need to make specific arrangements including protocols, staff training and rapid availability of facilities, especially access to HDU or ICU beds. Optimal management will improve outcome and save resources in the long term.

Burns

- Emergency anaesthetic assessment and treatment of burned patients may be required in any hospital with an A & E department. Guidelines should be available concerning immediate care and transfer to an appropriate Burn Care service.
- The critical care of burned patients is an integral part of burns anaesthesia services. Specialist departments accepting these patients need to make specific arrangements including protocols, staff training and rapid availability of facilities. Optimal management will improve outcome and save resources in the long term.
- Major burn anaesthesia should take place only in a Burns Centre or Burns Unit. Full consultant cover should be available.
- Paediatric burn cases, which constitute a major proportion of burn victims, require special facilities & staffing.
- Pain relief throughout the care process and especially for interventions is an integral part of burn anaesthesia provision.

20: MISCELLANEOUS

This is an intermediate level 'Additional Unit of Training' which may or may not be available to trainees depending on the distribution and availability of services locally.

There are a number of other aspects of the practice of anaesthesia, critical care and pain management which will, to a greater or lesser extent, be available to trainees within a specific training programme. Some are itemised here, others may be added.

20.1: Knowledge

In: 20.1.1	Electro-convulsive therapy (ECT)
In:26.1.1	Radiotherapy
In:26.1.2	Minimal access surgery
In:26.1.3	Perioperative management of a patient with sleep apnoea

20.2: Skills

In: 20.2.1	The ways in which anaesthetic techniques need to be modified to suit the requirements of particular environments, surgical techniques and patients with uncommon but potentially dangerous problems.
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20.3: Attitudes and behaviour

In: 20.3.1	Co-operation with other medical professionals in using anaesthetic skills to assist their work but only within the anaesthetist's responsibility to safeguard the patient.
In: 20.3.2	Recognising the ethical duty that the anaesthetist has to their patient.

20.4: Workplace training objectives

In: 20.4.1	Trainees should demonstrate adaptability in their approach to anaesthetic practice but recognise the essential importance of not compromising the safety of the anaesthetised patient whatever the external demands that are being made.
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21: APPLIED PHYSIOLOGY

21.1: Knowledge

Candidates are expected to be able to apply the basic knowledge of human physiology necessary to pass the Primary FRCA examination to the clinical practice of anaesthesia and Intensive care medicine. While all branches of physiology are of importance, it is recognised that clinical relevance dictates the topics selected for the examination.

In: 21.1.1	Haematological
In: 21.1.2	Anaemia
In: 21.1.3	Polycythaemia
In: 21.1.4	Immunity and allergy
In: 21.1.5	Inflammation
In: 21.1.6	Blood groups
In: 21.1.7	Alternative oxygen carrying solutions
In: 21.1.8	Abnormalities of coagulation and haemostasis
In: 21.1.9	Abnormal haemoglobins: sickle cell disease; thalassaemia
In: 21.1.10	Muscle Function
In: 21.1.11	Muscle contracture and malignant hyperthermia
In: 21.1.12	Disturbances in neuromuscular transmission
In: 21.1.13	Myopathies
In: 21.1.14	Cardiovascular
In: 21.1.15	Abnormal electrocardiogram and arrhythmias
In: 21.1.16	Cardiomyopathy and abnormal ventricular function
In: 21.1.17	Heart failure
In: 21.1.18	Hypovolaemia and shock
In: 21.1.19	Ischaemic heart disease
In: 21.1.20	Valvular defects
In: 21.1.21	Hypertension
In: 21.1.22	Common congenital heart defects
In: 21.1.23	Kidney and Body Fluids
In: 21.1.24	Disturbances of fluid balance, oedema and dehydration
In: 21.1.25	Management of acid-base abnormalities
In: 21.1.26	Assessment of renal function
In: 21.1.27	Renal failure and its management
In: 21.1.28	Diuresis
In: 21.1.29	Plasma electrolyte disturbances
In: 21.1.30	<i>Liver</i>
In: 21.1.31	Hepatic failure
In: 21.1.32	Jaundice
In: 21.1.33	Porphyria
In: 21.1.34	Respiration
In: 21.1.35	Disorders of respiratory mechanics, gas exchange and gas transport
In: 21.1.36	Disorders of the pulmonary circulation
In: 21.1.37	Respiratory failure and ventilatory support
In: 21.1.38	Effects of changes in ambient pressure
In: 21.1.39	Nervous System
In: 21.1.40	Consciousness and sleep
In: 21.1.41	Depth of anaesthesia
In: 21.1.42	Consequences of spinal cord injury and deafferentation
In: 21.1.43	Monitoring of spinal cord function under general anaesthesia
In: 21.1.44	Mechanisms of pain; somatic, visceral, neuropathic
In: 21.1.45	Control of cerebral circulation, intracranial and intraocular pressures
In: 21.1.46	Disorders of the autonomic nervous system

In: 21.1.47	Gastrointestinal Tract
In: 21.1.48	Nausea and vomiting
In: 21.1.49	Oesophageal reflux
In: 21.1.50	Obstruction
In: 21.1.51	Swallowing disorders
In: 21.1.52	The mucosal barrier
In: 21.1.53	Metabolism and Body Temperature
In: 21.1.54	Hormonal and metabolic response to trauma
In: 21.1.55	Hyperthermia and hypothermia
In: 21.1.56	Starvation / obesity
In: 21.1.57	Endocrinology
In: 21.1.58	Endocrine diseases of significance in anaesthesia
In: 21.1.59	Obstetrics and Paediatrics
In: 21.1.60	Principles of neonatal physiology
In: 21.1.61	Effects of prematurity
In: 21.1.62	Development in infancy and childhood
In: 21.1.63	Physiology of normal and abnormal pregnancy

22: APPLIED CLINICAL PHARMACOLOGY

22.1: Knowledge

This section requires a wider knowledge of drugs than in the Primary FRCA examination. For drugs used in anaesthesia and Intensive care medicine candidates will also be expected to be aware of new drugs which are undergoing evaluation and whose human application has been reported in the mainstream anaesthetic journals. There will be emphasis on the practical application of pharmacological and pharmacokinetic knowledge, and upon an appreciation of the hazards and limitation of individual techniques.

In: 22.1.1	General therapeutics. Pharmacological management of:
In: 22.1.2	Heart failure, coronary insufficiency and arrhythmias
In: 22.1.3	Hypertension, including hypertension in pregnancy
In: 22.1.4	Acute and chronic respiratory diseases
In: 22.1.5	Hepatic and renal failure
In: 22.1.6	Gastrointestinal disorders including modification of gastric contents
In: 22.1.7	Musculo-skeletal problems such as rheumatoid and osteoarthritis
In: 22.1.8	Myasthenia and muscle diseases
In: 22.1.9	Pituitary, adrenal and thyroid dysfunction
In: 22.1.10	Depression, anxiety states and schizophrenia
In: 22.1.11	Epilepsy
In: 22.1.12	Bacterial, fungal and viral infections
In: 22.1.13	Malignant disease
In: 22.1.14	Adverse reactions: Types of reactions: The yellow card system; Regulation of drug licensing
In: 22.1.15	Application of pharmacological principles to the practical management of anaesthesia:
In: 22.1.16	Premedication:
In: 22.1.17	The use of anxiolytics, sedatives and antisialogogues.
In: 22.1.18	Pro-kinetic and anti-emetic drugs.
In: 22.1.19	H ₂ and proton pump antagonists
In: 22.1.20	Inhalational anaesthesia:
In: 22.1.21	Control of alveolar tension during induction and recovery
In: 22.1.22	Control of anaesthetic depth and prevention of awareness
In: 22.1.23	Management of sedation techniques (including entonox)
In: 22.1.24	Environmental effects
In: 22.1.25	Intravenous anaesthesia:
In: 22.1.26	Methods for achieving specified plasma concentrations
In: 22.1.27	Bolus, infusion, and profiled administration
In: 22.1.28	Management of neuromuscular blockade:
In: 22.1.29	Techniques for the use and reversal of muscle relaxants
In: 22.1.30	Management of abnormal responses
In: 22.1.31	Regional anaesthesia:
In: 22.1.32	Choice of agent and technique
In: 22.1.33	Additives
In: 22.1.34	Systemic effects
In: 22.1.35	Avoidance of toxicity
In: 22.1.36	Prevention of postoperative nausea and vomiting
In: 22.1.37	Application of pharmacological principles to the control of acute pain
In: 22.1.38	(including intraoperative analgesia and postoperative pain management) and chronic pain.
In: 22.1.39	Pharmacological control of myocardial function, vascular resistance, heart
In: 22.1.40	rate and blood pressure
In: 22.1.41	Anticoagulant and thrombolytic therapies. Management of coagulopathies

In: 22.1.42	Pharmacological control of blood sugar
In: 22.1.43	Pharmacological problems in cardiopulmonary bypass. Cardioplegia
In: 22.1.44	Therapeutic problems associated with organ transplantation: heart, lung, liver kidney
In: 22.1.45	Management of malignant hyperthermia
In: 22.1.46	Pharmacological considerations in cardiopulmonary resuscitation, major
In: 22.1.47	trauma and exsanguinations
In: 22.1.48	Pharmacological control of severe infections
In: 22.1.49	Pharmacological treatment of severe asthma
In: 22.1.50	Effect of renal or hepatic impairment on drug disposition

23: THE STATISTICAL BASIS OF CLINICAL TRIAL MANAGEMENT

23.1: Knowledge

In: 23.1.1	Candidates will be expected to understand the statistical fundamentals upon which most clinical research is based. They may be asked to suggest suitable approaches to test problems, or to comment on experimental results. They will not be asked to perform detailed calculations or individual statistical tests.
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23.2: Data Collection and analysis

In: 23.2.1	Simple aspects of study design defining the outcome measures and the uncertainty of measuring them.
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23.3: Application to clinical practice

In: 23.3.1	Distinguishing statistical from clinical significance
In: 23.3.2	Understanding the limits of clinical trials
In: 23.3.3	The basics of systematic review and its pitfalls

23.4: Study design

In: 23.4.1	Defining a clinical research question
In: 23.4.2	Understanding bias
In: 23.4.3	Controls, placebos, randomisation, blinding exclusion criteria
In: 23.4.4	Statistical issues, especially sample size ethical issues

24: CLINICAL MEASUREMENT

24.1: Knowledge

The Final examination assumes knowledge of the Primary FRCA examination syllabus, with the addition of more sophisticated measurements. There is an emphasis on clinical applications of clinical measurement, such as indications, practical techniques and interpretation of acquired data. Candidates will be expected to understand the sources of error and the limitations of individual measurements.

In: 24.1.1	Assessment of respiratory function
In: 24.1.2	Assessment of cardiac function
In: 24.1.3	The electroencephalograph (EEG) and evoked potentials
In: 24.1.4	The electromyograph (EMG) and measurement of nerve conduction
In: 24.1.5	Assessment of neuromuscular function, peripheral nerve stimulators
In: 24.1.6	Principles and practice of in vitro blood-gas measurements. Interpretation of data
In: 24.1.7	Interpretation of biochemical data
In: 24.1.8	Interpretation and errors of dynamic pressure measurements including systemic, pulmonary arterial and venous pressures, intracranial, intrathoracic and intra-abdominal pressures
In: 24.1.9	Methods of measurement of cardiac output and derived indices; limitations and interpretation
In: 24.1.10	Principles of imaging techniques including CT, MRI and ultrasound. Doppler effect
In: 24.1.11	Interpretation and errors of capnography, oximetry and ventilatory gas analysis

APPENDIX B:

**GUIDELINES FOR MANAGING TRAINEES WHO HAVE NOT PASSED
THE INTERMEDIATE LEVEL ASSESSMENT OF KNOWLEDGE
(THE FINAL FRCA or equivalent)
BY THE END OF ST YEAR 4**

The Final FRCA Examination (or a prospectively approved equivalent qualification) assesses the knowledge required for progression from the intermediate to the higher level anaesthesia training programme. Trainees who have not been able to pass the Final FRCA Examination (or a prospectively approved equivalent) will not be able to progress to higher level training. Trainees are limited to the number of attempts they can have at the Final FRCA Examination (or a prospectively approved equivalent). The following action is advised when managing trainees who have not passed the Final FRCA Examination (or a prospectively approved equivalent) by the end of ST year 4.

- Providing there are no outstanding concerns in the other GMP domains, the ARCP panel may recommend “Outcome 3” allowing extra time, normally a maximum of one year, with the objective being to pass the assessment of knowledge⁹. Clearly additional objectives may also be agreed.
- Reasons for the examination failure should be explored carefully with the trainee who should receive appropriate help, support and guidance to achieve the objective of passing the examination. This would normally include guidance sessions organised by The Royal College of Anaesthetists. If there is a health issue underlying the examination failure, advice from an Occupational Health Physician should be sought regarding both the training and the timing of future examination attempts.
- If at the end of the extension the trainee has still not passed the assessment of knowledge he/she will be allowed to take one year (and one year only) “out of programme” whilst retaining his/her NTN. After successfully passing the assessment of knowledge whilst out of programme, the trainee would return to the next available slot in the rotation. During this year the trainee may continue to hold a training number but will not be in the clinical training programme.
- Failure to pass the assessment of knowledge at the end of this period will result in withdrawal from the training programme and loss of the training number.
- If the trainee subsequently passes the assessment of knowledge after having lost their NTN, the trainee will need to apply in open competition to return to a training programme.
- If in addition to having failed the Final FRCA Examination there are outstanding concerns about the trainee’s performance in the other GMP domains, it is for the Dean to decide if the trainee should be allowed to continue training in anaesthesia.

⁹ “Where such additional training is required because of concerns over progress, the overall duration of the extension to training should normally be for a maximum of one year unless, exceptionally, this is extended at the discretion of the Postgraduate Dean, but with an absolute maximum of two years additional training *during the total duration of the training programme*. The extension does not have to be taken as a block of one year, but can be divided over the course of the training programme as appropriate.” *Gold Guide* page 79

APPENDIX C:**BLUEPRINT OF THE FINAL FRCA EXAMINATION
MAPPED AGAINST INTERMEDIATE LEVEL COMPETENCES**

Competences	MCQ	SAQ	SOE 1	SOE 2
Generic knowledge and skills		X	X	X
Academic / Research			X	
Cardiac / Thoracic anaesthesia		X	X	X
Intensive Care Medicine		X	X	X
Neuroanaesthesia		X	X	X
Obstetric anaesthesia		X	X	X
Paediatric anaesthesia		X	X	X
Pain management, acute & chronic		X	X	X
Vascular anaesthesia		X	X	X
Day surgery		X	X	X
Ear, Nose and Throat (Otorhinolaryngology)		X	X	X
General surgery / Gynaecology / Urology (± Transplantation)		X	X	X
Orthopaedic anaesthesia		X	X	X
Regional anaesthesia		X	X	X
Trauma and accidents		X	X	X
Diagnostic imaging, anaesthesia & sedation		X	X	X
Maxillo-facial / Dental anaesthesia		X	X	X
Ophthalmic anaesthesia		X	X	X
Plastics / Burns		X	X	X
Applied physiology	X		X	X
Applied clinical pharmacology	X		X	X
Statistical basis of clinical trial management	X		X	X
Clinical measurement	X		X	X
Health Care Management				X
Medical Ethics and Law	X			X

APPENDIX D:**BLUEPRINT OF WORKPLACE BASED ASSESSMENTS
MAPPED AGAINST INTERMEDIATE LEVEL COMPETENCES**

Updated guidance on the practical application of these assessments
can be found in the training pages of the RCoA website.

COMPETENCES	DOPS	Anaes- CEX	CbD	MSF
Generic knowledge and skills	X	X	X	
Academic / Research			X	
Cardiac / Thoracic anaesthesia	X	X	X	
Intensive Care Medicine	X	X	X	X
Neuroanaesthesia	X	X	X	X
Obstetric anaesthesia	X	X	X	X
Paediatric anaesthesia	X	X	X	X
Pain management, acute & chronic	X	X	X	X
Vascular anaesthesia	X	X	X	X
Day surgery	X	X	X	X
Ear, Nose and Throat (Otorhinolaryngology)	X	X	X	X
General surgery / Gynaecology / Urology (± Transplantation)		X	X	X
Orthopaedic anaesthesia	X	X	X	X
Regional anaesthesia	X	X	X	X
Trauma and accidents	X	X	X	X
Diagnostic imaging, anaesthesia & sedation	X	X	X	
Maxillo-facial / Dental anaesthesia	X	X	X	X
Ophthalmic anaesthesia	X	X	X	X
Plastics / Burns	X	X	X	
Communication Skills, Attitudes and Behaviour	X	X	X	X
The Responsibilities of Professional Life	X		X	X
Teaching and Medical Education	X			X
Health Care Management			X	

Medical Ethics and Law		X	X	
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