



# **THE CCT IN ANAESTHETICS**

## **II: Competency Based**

### **Basic Level (Specialty Training (ST) Years 1 and 2)**

### **Training and Assessment**

**A manual for trainees and trainers**

**Edition 1: January 2007**

**Amendment 3: July 2010**

**1<sup>st</sup> Edition dated: 26 January 2007**

**Replacing The CCST in Anaesthesia II Edition 2 dated: April 2003**

This edition of *The CCT in Anaesthetics II: Basic Level Training and Assessment* revises the *CCST in Anaesthesia II: SHO Training and Assessment* 2<sup>nd</sup> Edition dated April 2003. The majority of the 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).

StR1 = CT1 = FTSTA1  
StR2 = CT2 = FTSTA 2

**Amendment 2 dated: 6 April 2009**

This amendment introduces an optional higher level syllabus for:

- Conscious sedation for dentistry

**Amendment 3 dated: July 2010**

This amendment includes:

- Intermediate vascular anaesthesia has been moved to additional units
- References to PMETB changed to GMC
- PMETB publications updated to GMC publications
- Addition of CESR[CP] as an alternative to the CCT
- Gold guide references updated
- Appendix K removed from Part I
- Addition of provisions for advanced ICM
- Revised rules for deferral of intermediate level units of training to ST5



## PREFACE

This is the second 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 II must be read in conjunction with Part I.**

The manuals were originally published as *The CCST in Anaesthetics* 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 Basic 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](mailto: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 Anaesthetics I: General Principles*.

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# 1: INTRODUCTION

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

This manual sets out the basic level knowledge skills and attitudes required of any trainee before he/she is eligible to start intermediate level training and it prescribes the competences which have to be 'signed up' allowing, however, considerable latitude as to how this can be done. The only exceptions to this are the very first assessment, the *Initial Assessment of Competency*, without which a trainee cannot progress beyond direct supervision<sup>1</sup> And the *Assessment of Basic Competency in Obstetric Anaesthesia* without which a trainee cannot work in an obstetric unit without direct supervision.

This manual also contains the Primary FRCA examination syllabus and 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 (e.g. capnography can be found in sections on induction, physiology, and clinical measurement). 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, 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.

## 1.1: Basic training in Anaesthesia and Intensive Care Medicine (ICM)

The minimum time spent in basic level training will normally comprise 21 months in anaesthesia and 3 months in ICM. Trainees who come to anaesthesia via the Acute Care Common Stem Programme (ACCS) will already have acquired various competences in anaesthesia and ICM that will be taken into account when assessing progress in basic level anaesthetic training and in the completion of the Basic Level Training Certificate.

### **ICM**

- The competences for intensive and high dependency care 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).
- The RCoA will recognise all ICM training received as part of an ACCS programme or 3 months basic level training in ICM obtained outside the GMC anaesthetics training programme provided it meets the requirements of the IBTICM.
- Satisfactory completion of the basic level competences however, does not imply simultaneous attainment of the Basic Training Programme in ICM set out by the IBTICM; for this to be achieved the basic level programme in ICM must comply with the IBTICM's requirements in *all* respects, including the minimum length of training blocks.<sup>2</sup>

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<sup>1</sup> Definitions of clinical supervision are contained in *The CCT in Anaesthetics, I: General Principles* Section 5.2

<sup>2</sup> A trainee intending to pursue a career in ICM should seek advice at an early stage from the IBTICM's Regional Adviser.

## 1.2: Mandatory assessments for trainees

### ***Initial Assessment of Competency***

Being allowed to practice without direct clinical supervision is one of the key points in the training of a novice trainee or in the assessment of a doctor arriving from outside the UK with some existing training in anaesthesia. Because of the importance of this step for patients, the doctor and the hospital, the *Initial Assessment of Competency* (Section 2 and Appendix A) is designed to be highly structured with tick boxes to confirm basic knowledge, ability in specific skills and the proper approach to patient care. Assessment forms must contain the prescribed information: for this particular initial assessment, ***no variation is permitted***. Unless this test has been completed satisfactorily, no trainee can progress to indirect (local or distant) clinical supervision. For a novice trainee it is anticipated that this early test would be taken at approximately 3 months: for those with previous training it could be completed after a short period of familiarisation within the hospital. Trainees coming to anaesthesia from an ACCS programme will already have passed the assessment but, if it was taken at an early stage of the ACCS programme they might need to be re-assessed before starting the anaesthetic programme.

If passed successfully, the assessment will allow the trainee to administer uncomplicated general anaesthesia and simple peripheral nerve blocks under the guidance of a consultant with indirect (local or distant) supervision. Failure of a novice trainee to achieve the prescribed standard after 6 months of full-time training will call into question their suitability for a career in anaesthesia.

### ***Assessment of basic competency in obstetric anaesthesia***

Before being allowed to work in an obstetric unit *without direct supervision* trainees must be formally assessed as competent in the basic obstetric anaesthetic skills. The initial training in obstetric anaesthesia for a novice trainee should consist of a minimum of 20 directly supervised obstetric anaesthesia sessions taken within a 4 month period, in a reasonably busy unit. At least 50% of these sessions should be supervised by a consultant specialist in obstetric anaesthesia. Trainees will normally undertake the basic assessment in their second year of training, and must have passed it by the end of their basic level training. More experienced trainees may be assessed after a relatively short period of supervision. The assessment document is at Appendix B. If the trainee fails the assessment then they may need targeted instruction before a re-test. Whether the whole assessment is to be repeated or targeted at deficient areas is a decision to be taken locally, with regard to local circumstances, and is left to the discretion of the trainee's supervisor. If a trainee repeatedly fails to pass the assessment of basic competency they may not be signed off for the basic level unit of obstetric training contained in Appendix C Section 10, and such a trainee must not work on an obstetric unit without direct supervision.

### ***Assessment of basic competency in regional anaesthesia***

- *Spinal blocks* Trainees must be formally assessed in performing spinal blocks before being allowed to use the technique in the absence of direct clinical supervision. This assessment is meant to assess competence in a general surgical/orthopaedic population and is separate to that required for obstetric anaesthesia. It will normally be passed during the first 12 months of basic level training.
- *Lumbar epidural blocks* Trainees must be formally assessed in performing lumbar epidural blocks before being allowed to use the technique in the absence of direct clinical supervision. This assessment will normally be passed during the first 18 months of basic level training.
- The assessment of both techniques should include the following aspects:
  - Pre-operative evaluation and explanation
  - Checking of appropriate equipment
  - Aseptic technique
  - Correct use of technique as appropriate
  - Block performance (which must be adequate for surgery)
  - Management during surgery
  - Postoperative instructions and care

### 1.3: Subsequent assessments

Assessment of basic training will be done in the workplace and by examination:

- Workplace assessments (carried out by the RCoA Tutor or other designated consultants who meet the criteria to be trainers<sup>3</sup>) will concentrate primarily on clinical skills, attitudes and behaviour together with a confirmation that the trainee has a practical understanding of the knowledge base.
- The assessment process subsequent to the *Initial Assessment of Competency* will not follow the same highly structured pattern and is described in Section 6 of *The CCT in Anaesthetics I: General Principles*.
- Whilst it would theoretically be possible to break down every sub-component of an anaesthetic procedure and provide a checklist assessment of each detail, it is neither practical nor profitable to do so. Furthermore, such an approach would remove the assessment of the total task which includes 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.<sup>4</sup>
- With the completion of each workplace assessment, a record will be kept both by the School of Anaesthesia and by the Trainee.
- Examination assessments will mainly test the knowledge base across basic science and clinical practice, together with the assessment of some skills and attitudes.<sup>5</sup>

### 1.4: Objectives and competences

The objectives of basic level training are found in Section 3 and the various components of the basic level training programme are listed in Appendix C. All the components are set out in the same order of knowledge, skills and attitudes. Some of the sections (e.g. basic science) have only knowledge listed for obvious reasons. To save repetition a list of commonly used abbreviations is given in *The CCT in Anaesthetics I: General Principles* Appendix A.

When assessing clinical competency the assessor is not intended to 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 basic science will continue to be assessed in the Primary Examination of the RCoA.

The RCoA relies on the good sense of its assessors in '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 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.<sup>6</sup>

Assessors must be aware of their overall responsibilities for patient safety when assessing trainees at the basic level because satisfactory assessments will allow the trainee to undertake more anaesthetic activity away from direct supervision.

As the trainee progresses, he/she will gradually be judged to have achieved competence in more aspects of practice.

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<sup>3</sup> A trainer is defined in *The CCT in Anaesthetics, I: General Principles*, Section 4

<sup>4</sup> This method of workplace assessment was initially developed and validated by the Northern Schools of anaesthesia, under the programme directorship of Dr J D Greaves [www.ncl.ac.uk/nsa](http://www.ncl.ac.uk/nsa)

<sup>5</sup> *Primary and Final Examinations for the FRCA: Regulations*. This is available on the RCoA website at <http://www.rcoa.ac.uk>

<sup>6</sup> The method of assessment whereby experienced practitioners are delegated the task of determining the line of acceptability is known as 'Limen Referencing'.

## 1.5: Progression to intermediate level training

The emphasis when confirming satisfactory completion of basic level training is on competence, not time. Signing the *Basic Level Training Certificate* means that the trainers are satisfied that the trainee has obtained the required basic level competences in anaesthesia and ICM, not just that they have completed 2 years of training. If the College Tutor feels unable to sign the *Basic Level Training Certificate* at the “normal time” then the trainee must be required to spend more time in training: two years is normally the minimum, not a maximum, duration for basic level training. This is particularly applicable to trainees from abroad entering CT/ST year 2 of the programme (see Section 4.6)

At the end of their basic level training, to be able to progress to intermediate level training the trainee must have:

- passed all the workplace assessments;
- demonstrated acceptable attitudes and behaviour;
- passed the RCoA Primary or an exempting examination of knowledge; and
- been issued with the *Basic Level Training Certificate*.

## 2: THE INITIAL ASSESSMENT OF COMPETENCY

### 2.1: Conducting the Initial Assessment of Competency

All trainees are required to have the Initial Assessment of Competency Certificate (IACC) before they can be permitted to practice anaesthesia without direct clinical supervision. The IACC 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 to support the trainee's formal record.

To obtain the IACC a trainee must achieve a satisfactory standard in an Initial Assessment of Competency involving at least two consultant anaesthetists who meet the criteria to be trainers<sup>7</sup>. This applies to both new trainees and to more experienced trainees working in the United Kingdom for the first time. Although the assessment process is the responsibility of the College Tutor, it can be delegated to other trainers, as appropriate. This initial assessment is designed to demonstrate the possession of basic key components of knowledge, skills and attitudes necessary to progress in the specialty.

**Until the Initial Assessment of Competency has been completed successfully, the trainee must not deliver anaesthesia *at any time* without Direct Supervision.**

It is intended that this assessment should be completed by a typical trainee after approximately 3 months of full-time training in anaesthesia, *but the exact timing will need to be determined on an individual basis*. More experienced trainees who are working in the United Kingdom for the first time, whatever their grade, could be assessed much earlier than 3 months, after a period of familiarisation and direct clinical supervision.

The initial assessment should comprise a recorded consensus view of the trainers who have supervised the trainee including a workplace assessment covering:

- preoperative assessment;
- general anaesthesia for ASA I or II patients (including equipment and anaesthetic machine check):
  - general anaesthesia with spontaneous respiration;
  - general anaesthesia with endotracheal intubation;
- rapid sequence induction and failed intubation routine;
- cardio pulmonary resuscitation (CPR) skills; and
- clinical judgement, attitudes and behaviour

The knowledge, skills and attitudes expected and the assessment details are given in Appendix 1. The patients seen by trainees will need to be selected so as to be appropriate to the trainees' limited exposure within the specialty and should always be of ASA I or II.

**These assessments will be formal. Both the assessment and its outcome must be recorded in departmental records and in the trainee's personal record. Should a trainee be assessed as unsatisfactory in any area, and thus be referred for further closely supervised training, the reasons for this referral must be recorded. The names of assessors must be legible, as must any additional comments.**

The IACC 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.

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<sup>7</sup> Levels of supervision and the criteria for trainers are defined in *The CCT in Anaesthetics, I: General Principles* Sections 4 and 5.

## 2.2: Following the Initial Assessment of Competency

**Satisfactory assessment** After a satisfactory assessment trainees may begin to undertake uncomplicated general anaesthesia cases and peripheral nerve blocks delegated to them, without direct supervision and may be given increased clinical responsibility (for example by working on the 'out of hours' rota with indirect {local or distant} supervision<sup>8</sup>.)

**Unsatisfactory assessment** After an unsatisfactory assessment trainees will need targeted instruction and a re-assessment. Whether the whole assessment is to be repeated or targeted at deficient areas is a decision to be taken locally, with regard to individual circumstances, and is left to the discretion of the assessors.

**Compulsory reassessment after repeated failure** Repeated failure by a novice trainee to achieve the prescribed standard after 6 months of full-time training will call into question the trainee's suitability for a career in anaesthesia and should lead to an immediate, compulsory reassessment. Failure at this assessment will normally result in the trainee being asked to leave the specialty.

### 3: OBJECTIVES OF BASIC LEVEL TRAINING

To complete basic level training successfully, the trainee must satisfactorily complete specified workplace assessments and pass an assessment of knowledge i.e. the FRCA Primary Examination or a prospectively approved equivalent qualification.

#### 3.1: Clinical workplace objectives

To complete basic level training satisfactorily, the trainee must first pass the Initial Assessment of Competency and then demonstrate to the satisfaction of the trainers the competences specified for all the units of training listed in Appendix C (the relevant sections in Appendix 3 are shown in brackets):

- the ability to undertake pre-operative assessment, obtain consent for anaesthetic procedures and prescribe premedication (Sections 1 & 2);
- the routine induction, maintenance and recovery from general anaesthesia of ASA grade I or II patients and their safe discharge (Sections 4, 5, 6 & 11);
- an understanding of and the safe use of anaesthesia equipment and the use, interpretation and limitations of monitoring equipment (Section 3);
- the ability to recognise ASA III, IV and V patients, the potential for difficult intubation and the timing and need to call for senior help (Section 1);
- the ability to assess, resuscitate and manage a trauma patient, and when necessary to stabilise the patient and prepare for transfer (Section 9);
- the ability to resuscitate a patient following a respiratory or cardiac arrest to the standards set by the Resuscitation Council (UK) and to describe the management of critical incidents (Sections 15 & 16):
- the ability to establish and manage sub-arachnoid and epidural blockade, IVRA and some simple peripheral nerve blocks (Section 8);
- an understanding of the implications of pregnancy, childhood (above age of 5), old age and infectious diseases in the pre, intra and post-operative periods (Sections 10, 11, 12 & 14);
- an understanding of the principles of intensive and high dependency care, and which groups of patients can benefit from them (Section 7); and
- attitudes, behaviour and judgement appropriate to the specialty (See *The CCT in Anaesthetics I: General Principles* Section 6.9).
- An understanding of the safe use of anaesthetic and other drugs with regard to possible drug errors. (See Appendix C)

#### 3.2: Clinical knowledge

The Primary FRCA Examination or a prospectively approved equivalent qualification assesses the knowledge and understanding (and some of the skills and attitudes) of the topics listed in Appendix C; and the knowledge and understanding of those aspects of basic science required to inform the clinical practice of a basic level training and to underpin subsequent intermediate level training.

**Basic science** Basic science will be assessed in the following areas (the relevant sections of Appendix C are given in brackets):

- human anatomy relevant to the practice of anaesthesia, intensive care medicine and pain management (Section 17);
- human physiology and biochemistry, and their application to the clinical practice of anaesthesia, intensive care medicine and pain relief (Section 18);
- general pharmacological principles, and a knowledge of drugs likely to be encountered in basic anaesthetic practice and the current treatment of patients presenting for anaesthesia, intensive care medicine and pain relief (Section 19);
- physics and clinical measurement, with an emphasis on monitoring equipment and safety (Section 20); and

- statistical methods, emphasising data summary and presentation, and the choice of statistical tests for different data types (Section 21).

### 3.3: 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 competences 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 competences described in each of the areas listed above. Guidance on the competences that might be achieved by trainees during their basic level training is given below:

**Communication skills, attitudes and behaviour** During basic level training trainees will be expected to build on the competences already acquired during the Foundation Years' training. Particular emphasis is to be placed on;

- establishing the confidence and trust of the patient (throughout this section the term "patient" is taken to include guardians and, where relevant, relatives);
- eliciting the necessary and relevant information from the patient, including areas of specific concern
- promoting meaningful dialogue with the patient
- discussing a management plan in terms appropriate to the patient's level of understanding and sensitive to the patient's concerns;
- communicating any risks in a way that the patient can understand; and
- in his/her relations with other health care staff to:
  - establish an effective working relationship;
  - gather relevant information about the patient; and
  - to share relevant information with staff concerning the management of the patient while respecting issues of confidentiality.

**The responsibilities of professional life** During basic level training emphasis should be placed on the acquisition of skills in communication and the assessment and treatment of patients described above.

**Teaching and medical education** By the end of basic level training trainees should be displaying a personal commitment to teaching and learning. This can be demonstrated by teaching under supervision undergraduates, Foundation Year trainees and other members of the medical team in areas within their professional competence. They should also be developing their understanding of the assessment and appraisal methods that they themselves will be undergoing.

#### **Health care management**

- During basic level training trainees should develop an understanding of:
  - the necessity to fulfil their responsibilities within the department including appropriate communication when they are unable to meet a commitment.
  - the structure and running of a department of anaesthesia and intensive care medicine, including the different roles of Departmental Chairman and Clinical Director;
  - efficient operating theatre and day surgery unit utilisation and critical care bed occupancy; and.

- the responsibility of all doctors as managers as outlined in GMC guidance, *Management for Doctors*.
- In addition they should:
  - show a recognition of a team approach, including clinicians, to the management of the service;
  - a commitment to good communication;
  - be able to report critical incidents; and
  - have attended equality and diversity training during the previous 3 years.

**Information technology** It is quite possible likely that trainees may have acquired many of the necessary IT skills before starting their specialist training. By the end of basic level training all trainees should have proved their computing ability at an equivalent level to the European Computer Driving Licence including:

- General concepts of information technology
- Managing files/folders, using the computer and storage media
- Word processing -preparing their curriculum vitae, case reports or scientific papers
- Spreadsheets –entering data and making simple analyses
- Presentations – using Powerpoint to deliver a presentation or lecture
- Databases-understanding how data is stored and retrieved
- Information and communication – accessing the Internet to search for and retrieve information. Basic communication skills using email

**Medical ethics and law** During basic level training trainees should show that they understand basic health care law, including:

- the *Bolam* principle.
- consent:
  - “Informed” consent.
  - Consent and mental competence, and how to proceed in their absence.
- legal requirements for record keeping.

## 4: METHODS OF IMPLEMENTING BASIC LEVEL ASSESSMENTS, APPRAISALS AND REVIEWS

### 4.1: Assessments of knowledge

The structure of the formal assessments of knowledge are described in the RCoA booklet *Primary and Final Examinations for the FRCA Regulations*<sup>8</sup>. This document also lists those qualifications which are equivalent to and allow exemption from the FRCA Primary Examination. A blueprint mapping the component parts of the Primary FRCA Examination against the CCT competences is at Appendix E.

### 4.2 Repeated failure to pass the FRCA Primary Examination

The policy on how to handle trainees who have failed to pass the FRCA Primary Examination or an equivalent, approved assessment of knowledge by the end of ST year 2 is described in Appendix D.

### 4.3: Workplace assessments

Workplace assessments will be undertaken by the RCoA tutor and other designated consultants who meet the criteria to be trainers. As described in Section 1.3, workplace assessments are intended to focus primarily 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.

#### **Assessment of clinical skills**

- The RCoA accepts that the timing of workplace assessments will vary from hospital to hospital. This is inevitable because of the different types of hospital and the selection of work they do. The format of assessments, however, must conform to the guidance contained in Sections 6.5 of *The CCT in Anaesthetics I: General Principles*.
- 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 and recorded, and constructive advice given to the trainee.
- 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.
- When assessing trainees four principles must be followed:
  - Both the trainee and the School of Anaesthesia and/or hospital must keep a copy of the outcome:
  - The trainee's logbook and portfolio are kept up to date and reviewed.
  - If the trainee does not meet the required standard the reasons must be given and recorded in writing.
  - The sum of the assessments must allow the *Basic Level Training Certificate* to be issued with confidence.
- 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 include the whole or just part of the assessment is left to the discretion of the assessor.

**Annual assessment of professionalism, attitudes and behaviour** Assessments of professionalism, attitudes and behaviour are integral parts of the workplace assessments and are an integral part of each unit described in Appendix 3. In addition an assessment dedicated to

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<sup>8</sup> This is available on the RCoA website at <http://www.rcoa.ac.uk>

professionalism, attitudes and behaviour should be carried out at least annually in the format described in *The CCT in Anaesthetics I: General Principles*, Section 6.7 and Appendix E, which also include examples of attitudes and behaviour that might cause concern. Any problems identified must be discussed with the trainee and documented.

#### **4.4: Annual appraisals**

Every trainee should receive an annual appraisal as described in Section 6.4 of *The CCT in Anaesthetics I: General Principles*.

#### **4.5: Annual Reviews of Competence Progression (ARCP)**

**ST Year 1 ARCP** After 9 to 12 months all trainees (except those who have required a *compulsory reassessment* - see Section 2.2), should have an ARCP which considers the suitability of the trainee to progress within the specialty. This ARCP should advise the trainee of their career options within anaesthesia or assist them in changing to a different specialty.

**ST Year 2 ARCP** After 21-24 months there should be an ARCP to determine whether the objectives of basic level training have been or are likely to be met. Until these objectives have been met the *Basic Level Training Certificate* cannot be issued and there can be no entry into ST year 3.

#### **4.6: Assessing the competences of trainees with previous training and/or experience**

Previous training and/or experience outside the UK and EEA, and experience and/or unapproved training within the UK and EEA, may be accepted by the Deanery when an applicant is appointed directly to a GMC approved ST year 2 post. The duration of previous training and experience that can be accepted will be defined by the national person specification relevant to the year of entry (details can be found on the MMC website [www.mmc.nhs.uk](http://www.mmc.nhs.uk)).

Such trainees must pass the *Initial Assessment of Competency* before being allowed to work without direct supervision and, if a CCT is to be awarded, must be assessed and pass all the basic level competences. If a trainee has received adequate training before starting the CCT programme. With careful planning it should be possible to assess all the basic level competences within twelve months. The *Initial Assessment of Competency* can be completed very early on. The remaining assessments should be scheduled for the balance of the 12 months UK ST year 2 training.

Trainees wishing to count up to 3 months overseas training in ICM must still be assessed in the RCoA competences detailed in Appendix C Section 7 before they can be awarded the *Basic Level Training Certificate*.

#### **4.7: The documentation of training by the trainee**

It is the trainee's personal responsibility to maintain a *Professional Portfolio* and logbook as described in *The CCT in Anaesthetics I: General Principles* Appendix P.

Trainees must also ensure that 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. It is expected that by the end of their basic level training, trainees will have undergone 'Workplace Assessments' in all units of training.

#### **4.8: Basic Level Training Certificate (BLTC)**

All trainees progressing to ST year 3, including ACCS and those moving from Fixed Term Specialty Training Appointments, are required to have the *BLTC* before they can *commence* their intermediate level training (See section 1.5).

The *BLTC* confirms completion of basic level 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.

The *BLTC* can be downloaded from the College Officials' Secure Area 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 basic level training.

**Trainees from the Republic of Ireland** Trainees entering ST year 3 who completed their basic level training in the Republic of Ireland should possess a *Certificate of Basic Training* issued by the College of Anaesthetists RCSI. They will be ineligible to commence intermediate level training without this certification.

**Others** Any other candidates e.g. SAS grades returning to training without a *BLTC* will be assessed individually by the local Regional Adviser prior to applying for intermediate level training. If appropriate the Regional Adviser will issue a letter in lieu of the *BLTC*.

## **APPENDIX A:**

### **THE INITIAL TEST OF COMPETENCY: SYLLABUS**

The principles of the Initial Test of Competency can be found in Section 2.1 of this manual.

This test is in 5 parts:

- a) Preoperative assessment.
- b) General anaesthesia for ASA I or II patients (including equipment and anaesthetic machine checks).
  - 1. General anaesthesia with spontaneous respiration
  - 2. General anaesthesia with endotracheal intubation
- c) Rapid sequence induction and failed intubation routine.
- d) Cardio pulmonary resuscitation (CPR) skills.
- e) Clinical judgement, attitudes and behaviour.

If a trainee has successfully completed an ALS course within the last 12 months (d) can be omitted.

Only after this test has been satisfactorily completed can a trainee progress beyond direct supervision.

Each of the 5 parts of the test (a – e, above) can be assessed by one (or more) trainers, but not all 5 parts can be “signed off” by the same single trainer. At least two trainers must be involved in the overall assessment.

What follows is the syllabus for each of the five parts together with the assessment sheets for each part.

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## **INITIAL ASSESSMENT OF COMPETENCY SYLLABUS:**

### **a) Pre-operative assessment of patients**

#### **Clinical skills**

1. Is able to demonstrate satisfactory communication with staff and patients
2. Is able, in a manner appropriate to the patient, to take a relevant history, explain the necessary aspects of anaesthesia, and answer their questions
3. Is able to assess the airway
4. Is able to recognise potential problems requiring senior help
5. Is able to explain the management of post-operative pain and symptom control in a manner appropriate to the patient
6. Is able to interpret basic investigations (FBC, U & Es, chest x ray, ECG)
7. Is able to choose and prescribe appropriate pre-medication

#### **Knowledge**

1. The ASA scale of fitness
2. The relevance of common inter-current diseases to anaesthesia and surgery
3. Consent for anaesthesia
4. Predictors of difficult intubation

#### **Setting**

**Patients:** All appropriate patients aged 16 and over.

#### **Assessments**

- |  |
|--|
| <ul style="list-style-type: none"><li>* A ward based demonstration of practical skills.</li><li>* Simultaneous oral confirmation of understanding.</li></ul> |
|--|

#### **Guidance**

This is a preliminary test to ensure that the trainee communicates adequately and understands the broad outline of anaesthetic assessment. After three months of training the trainee should be expected to identify patients who are low risk from the anaesthetist's point of view. There is no expectation of the trainee being able to determine the fitness for operation of patients who are severely ill or who have inter-current disease. The expectation is that they will know which cases to refer to or discuss with senior colleagues. The trainee should have an understanding of whatever premedication he or she intends to use.

**INITIAL ASSESSMENT OF COMPETENCY:**

**a) Pre-operative assessment of patients**

The trainee must be accompanied on a pre-operative round of patients.

**Name of trainee**.....

**The Trainee:**

	Yes	No
Communicates in a satisfactory manner with patients	<input type="checkbox"/>	<input type="checkbox"/>
Obtains relevant history	<input type="checkbox"/>	<input type="checkbox"/>
Undertakes any physical examination (if indicated)	<input type="checkbox"/>	<input type="checkbox"/>
Assesses the airway	<input type="checkbox"/>	<input type="checkbox"/>
Understands the pre-operative investigations	<input type="checkbox"/>	<input type="checkbox"/>
Explains anaesthesia clearly	<input type="checkbox"/>	<input type="checkbox"/>
Discusses pain and explains post operative analgesia clearly	<input type="checkbox"/>	<input type="checkbox"/>
Prescribes pre-operative medication as needed	<input type="checkbox"/>	<input type="checkbox"/>
Understands the ASA classification	<input type="checkbox"/>	<input type="checkbox"/>
Understands consent for anaesthesia and operation	<input type="checkbox"/>	<input type="checkbox"/>

**This assessment was completed satisfactorily**

IF NO, GIVE REASONS:

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Signed ..... Print name..... Date .....

Appointment .....

Signed: ..... Print name ..... Date.....

Appointment.....

## INITIAL ASSESSMENT OF COMPETENCY SYLLABUS:

### b) Administration of a safe general anaesthetic to an ASA I or II patient

#### Clinical skills

1. Explanation of the anaesthetic procedure(s) and surgery to the patient
2. Appropriate choice of anaesthetic technique
3. Pre-use equipment checks
4. Proper placement of I.V. cannula
5. Attachment of monitoring (including ECG) before induction of anaesthesia
6. Measures blood pressure non-invasively
7. Pre-oxygenation
8. Satisfactory induction technique
9. Appropriate management of the airway
10. Maintenance of anaesthesia, including analgesia
11. Appropriate perioperative monitoring and its interpretation
12. Recognition and immediate management of any adverse events which might occur
13. Proper measures during emergence from general anaesthesia, including extubation.
14. Satisfactory hand over to recovery staff
15. Accurate completion of anaesthetic and other records
16. Prescription of appropriate post-operative analgesia and anti-emetics
17. Choice of post operative oxygen therapy
18. Instructions for continued I.V. therapies (if relevant)
19. The ability to prepare all drugs using safe techniques with regard to checking, labelling diluting and asepsis.

#### Knowledge

1. The effects of anaesthetic induction on cardiac and respiratory function
2. The rationale for pre-oxygenation
3. Methods available for the detection of misplaced ET tubes, including capnography
4. Common causes of arterial desaturation (cyanosis) occurring during induction, maintenance and recovery
5. Common causes and management of intra-operative hypertension and hypotension
6. The immediate management only of cyanosis, apnoea, inability to ventilate, aspiration, bronchospasm, anaphylaxis and malignant hyperpyrexia
7. Trainees must demonstrate an adequate, basic, practical knowledge of anaesthetic pharmacology to support their practice, for example, know about: 2 induction agents, 2 volatile agents, 2 opioids, suxamethonium and 1 competitive relaxant

#### Setting

**Patients:** ASA I and II patients age 16 years and over requiring uncomplicated surgery in the supine position e.g. hernia, varicose veins, hysterectomy, arthroscopy.

**Location:** Operating theatre.

**Situations:** Supervised theatre practice.

#### Assessments:

- \* A theatre based demonstration of practical skills.
- \* Simultaneous oral case discussion of understanding.

**Guidance:**

The trainee should be observed undertaking a number of cases using facemask and airway, and/or laryngeal mask and/or endotracheal tube. Care should be taken to ensure that the trainee is skilled in use of bag and mask and does not always rely on the laryngeal mask. Whilst ensuring patient safety the assessor should let the trainee proceed largely without interference and note problems of technique. This should be combined with a question and answer session covering the underlying comprehension of the trainee. The level of knowledge expected is that of a trainee who has been working in anaesthesia for 3 months and should be sufficient to support the specified clinical skills. Exclusions are specialised surgery, rapid sequence induction (see Section c) and children under the age of 16 years.

**INITIAL ASSESSMENT OF COMPETENCY :**

b) Ability to administer a general anaesthetic competently to an elective ASA I or II patient

**Part 1 General anaesthesia with spontaneous respiration**

**Name of trainee** .....

**The Trainee:**

	Yes	No
Properly prepares the anaesthetic room and operating theatre	<input type="checkbox"/>	<input type="checkbox"/>
Satisfactorily conducts a pre-operative equipment check (including the anaesthetic machine and breathing system)	<input type="checkbox"/>	<input type="checkbox"/>
Has properly prepared and assessed the patient for surgery	<input type="checkbox"/>	<input type="checkbox"/>
Chooses an appropriate anaesthetic technique	<input type="checkbox"/>	<input type="checkbox"/>
Establishes IV access	<input type="checkbox"/>	<input type="checkbox"/>
Establishes ECG and pulse oximetry in the anaesthetic room	<input type="checkbox"/>	<input type="checkbox"/>
Measures the patients blood pressure prior to induction	<input type="checkbox"/>	<input type="checkbox"/>
Pre-oxygenates as necessary	<input type="checkbox"/>	<input type="checkbox"/>
Induces anaesthesia satisfactorily	<input type="checkbox"/>	<input type="checkbox"/>
Manages airway competently	<input type="checkbox"/>	<input type="checkbox"/>
I) Face mask (+/-) airway	<input type="checkbox"/>	<input type="checkbox"/>
II) LMA	<input type="checkbox"/>	<input type="checkbox"/>
Makes satisfactory transfer to operating theatre	<input type="checkbox"/>	<input type="checkbox"/>
Positions patient safely	<input type="checkbox"/>	<input type="checkbox"/>
Maintains and monitors anaesthesia satisfactorily	<input type="checkbox"/>	<input type="checkbox"/>
Conducts emergence and recovery safely	<input type="checkbox"/>	<input type="checkbox"/>
Keeps an appropriate and legible anaesthetic record	<input type="checkbox"/>	<input type="checkbox"/>
Prescribes analgesia appropriately	<input type="checkbox"/>	<input type="checkbox"/>
Properly supervises discharge of patient from recovery	<input type="checkbox"/>	<input type="checkbox"/>
Understands the need for oxygen therapy	<input type="checkbox"/>	<input type="checkbox"/>
Prepares, labels and uses all drugs with appropriate safe technique	<input type="checkbox"/>	<input type="checkbox"/>
	<b>YES</b>	<b>NO</b>
<b>This assessment was completed satisfactorily</b>	<input type="checkbox"/>	<input type="checkbox"/>

IF NO, GIVE REASONS:

Signed .....Print name..... Date..... Appt.....

Signed .....Print name..... Date..... Appt.....

**INITIAL ASSESSMENT OF COMPETENCY :**

b) Ability to administer a general anaesthetic competently to an elective ASA I or II patient

**Part 2 General anaesthesia with endotracheal intubation**

**Name of trainee** .....

**In addition to the assessment in Part 1, the trainee must demonstrate the following:**

	Yes	No
Assesses the airway properly	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of factors which may make intubation difficult	<input type="checkbox"/>	<input type="checkbox"/>
Satisfactory use of laryngoscope	<input type="checkbox"/>	<input type="checkbox"/>
Correct placement of endotracheal tube*	<input type="checkbox"/>	<input type="checkbox"/>
Confirming the position of endotracheal tube by	<input type="checkbox"/>	<input type="checkbox"/>
(i) observation	<input type="checkbox"/>	<input type="checkbox"/>
(ii) auscultation	<input type="checkbox"/>	<input type="checkbox"/>
(iii) capnography	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of how to recognise incorrect placement of endotracheal tube	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of how to maintain oxygenation in the event of failed intubation	<input type="checkbox"/>	<input type="checkbox"/>
Manages extubation competently	<input type="checkbox"/>	<input type="checkbox"/>
<b>This assessment was completed satisfactorily</b>	<b>YES</b>	<b>NO</b>
<b>IF NO, GIVE REASONS:</b>	<input type="checkbox"/>	<input type="checkbox"/>

Signed.....Print name.....Date.....

Appointment .....

Signed .....Print name.....Date .....

Appointment .....

\*If intubation is not possible, the trainee should maintain the airway and allow the assessor to intubate the patient.

## INITIAL ASSESSMENT OF COMPETENCY SYLLABUS:

### c) Rapid Sequence Induction for an ASA I or II patient and failed intubation routine

#### Clinical skills

1. Detection of risk factors relating to slow gastric emptying, regurgitation and aspiration
2. Use of drugs (antacids, H<sub>2</sub> receptor antagonists etc) in the management of the patient at risk of aspiration
3. Explanation of pre-oxygenation to the patient
4. Proper explanation of rapid sequence induction (RSI) to patient.
5. Proper demonstration of cricoid pressure to the patient and assistant.
6. Demonstration of the use of:
  - a) tipping trolley
  - b) suction
  - c) oxygen flush
7. Appropriate choice of induction and relaxant drugs.
8. Attachment of ECG, pulse oximeter and measurement of BP before induction.
9. Pre-oxygenation.
10. Satisfactory rapid sequence induction technique.
11. Demonstration of proper measures to minimise aspiration risk during emergence from anaesthesia.
12. Failed intubation drill, emergency airway management (this may be manikin based).

#### Knowledge

1. Risk factors causing regurgitation and aspiration.
2. Factors influencing gastric emptying, especially trauma and opioids.
3. Fasting periods in relation to urgency of surgery
4. Reduction of the risks of regurgitation.
5. Failed intubation drill, emergency airway management
6. The emergency treatment of aspiration of gastric contents
7. Basic pharmacology of suxamethonium and repeated doses.

#### Setting

**Patients:** Starved ASA I and II patients aged 16 and over having uncomplicated elective or urgent surgery with normal upper airway anatomy.

**Location:** Operating theatre.

**Situations:** Supervised theatre practice.

#### Assessments

- |   |
|---|
| <ul style="list-style-type: none"><li>* A test of failed intubation drill (this may be manikin based)</li><li>* A theatre based demonstration of practical skills.</li><li>* Simultaneous oral test of understanding.</li></ul> |
|---|

#### Guidance

This test should ensure competent management of the airway during straightforward urgent surgery. The test must be done on a patient who is adequately starved prior to induction of anaesthesia. The patient may, or may not be, an urgent case. The trainee should be able to discuss methods of prediction of the difficult airway and of difficult intubation. They should be able to explain and if possible demonstrate on a manikin the failed intubation drill, and the immediate management of the patient who aspirates gastric contents.

**INITIAL ASSESSMENT OF COMPETENCY:**

**c) Rapid Sequence Induction (RSI) and failed intubation routine**

**Name of trainee**.....

**The Trainee has satisfactorily demonstrated:**

	Yes	No
Preparation of the anaesthetic room and operating theatre	<input type="checkbox"/>	<input type="checkbox"/>
Satisfactorily checking of the anaesthetic machine, sucker etc.	<input type="checkbox"/>	<input type="checkbox"/>
Preparation of the patient (information and positioning)	<input type="checkbox"/>	<input type="checkbox"/>
An understanding of the mandatory periods for pre-operative fasting	<input type="checkbox"/>	<input type="checkbox"/>
An understanding of the indications for RSI	<input type="checkbox"/>	<input type="checkbox"/>
An adequate explanation of RSI to the patient, including cricoid pressure	<input type="checkbox"/>	<input type="checkbox"/>
To the assistant how to apply cricoid pressure	<input type="checkbox"/>	<input type="checkbox"/>
Proper pre-oxygenation of the patient	<input type="checkbox"/>	<input type="checkbox"/>
The undertaking of a RSI	<input type="checkbox"/>	<input type="checkbox"/>
Recognition of correct placement of tracheal tube	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of failed intubation drill	<input type="checkbox"/>	<input type="checkbox"/>
Practical application of failed intubation drill (this may be manikin based)	<input type="checkbox"/>	<input type="checkbox"/>
Proper extubation when the stomach may not be empty	<input type="checkbox"/>	<input type="checkbox"/>

**This assessment was completed satisfactorily** Yes      No  
        
 IF NO, GIVE REASONS:

Signed..... Print name ..... Date .....

Appointment.....

Signed ..... Print name ..... Date .....

Appointment.....

## INITIAL ASSESSMENT OF COMPETENCY SYLLABUS:

### d) Cardio-pulmonary resuscitation (CPR)

#### Clinical skills

1. Able to recognise cardiac and respiratory arrest
2. Able to perform cardiac compression
3. Able to manage the airway during cardiopulmonary resuscitation (CPR): using expired air breathing, bag and mask, laryngeal mask and endotracheal intubation
4. Able to perform CPR either single-handed or as a member of a team
5. Able to use the defibrillator
6. Able to interpret arrhythmias causing and associated with cardiac arrest
7. To perform resuscitation sequences for ventricular tachycardia, VF, asystole, EMD
8. Able to move a patient into the recovery position

#### Knowledge

1. Resuscitation guidelines of Resuscitation Council (UK)
2. The factors relating to brain injury at cardiac arrest
3. Factors influencing the effectiveness of cardiac compression
4. Drugs used during CPR (adrenaline (epinephrine), atropine, lignocaine, calcium, magnesium, sodium bicarbonate)
5. The ethics of CPR: who might benefit
6. Record keeping at CPR

#### Setting

Simulated scenario of collapse requiring cardio-pulmonary resuscitation during a practical teaching session

**Role:** Initiate and maintain CPR when necessary. Undertake the role of team leader if no more senior doctor is present, continuing CPR as appropriate, administering necessary drugs and defibrillating if needed. If a more experienced resuscitator is available will adopt an appropriate role in the resuscitation team.

**Locations:** Wherever necessary.

#### Assessments

- \* Manikin based practical assessment of CPR skills
- \* Arrhythmia recognition session using monitor
- \* Oral assessment of knowledge of resuscitation

If a trainee has completed an ALS course within the last 12 months, the assessment of CPR competency can be assumed and signed off with a comment made to that effect under the signature(s).

**INITIAL ASSESSMENT OF COMPETENCY:**

**d) Cardiopulmonary Resuscitation**

This assessment may be undertaken at any time and may be combined with a practical teaching session.<sup>9</sup>

**Name of trainee**.....

**The Trainee:**

	Yes	No
Ensures personal safety and that of the staff	<input type="checkbox"/>	<input type="checkbox"/>
Calls for help	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrates the diagnostic method	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrates mask to mouth rescue breathing.	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrates ventilation with mask and bag	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrates satisfactory insertion of and ventilation with ET tube	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrates satisfactory cardiac compression.	<input type="checkbox"/>	<input type="checkbox"/>
Satisfactorily interprets common arrhythmias on ECG monitor.	<input type="checkbox"/>	<input type="checkbox"/>
Understands the indications for defibrillation.	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrates correct use of defibrillator	<input type="checkbox"/>	<input type="checkbox"/>
Understands the use of appropriate drugs during resuscitation	<input type="checkbox"/>	<input type="checkbox"/>
Can undertake the lead role in directing CPR.	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrates moving a patient into the recovery position	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No
<b>This assessment was completed satisfactorily</b>	<input type="checkbox"/>	<input type="checkbox"/>
IF NO, GIVE REASONS		

Signed..... Print name..... Date .....

Appointment .....

Signed ..... Print name ..... Date.....

Appointment .....

<sup>9</sup> If a trainee has completed an ALS course within the last 12 months, the assessment of CPR competency can be assumed and signed with a comment made to that effect under the signature(s).

## **INITIAL ASSESSMENT OF COMPETENCY SYLLABUS:**

### **e) Clinical judgement, attitudes and behaviour**

A guide to assessing satisfactory attitudes and behaviour is given in *The CCT in Anaesthetics I: General Principles* Appendix 4. At this early stage in a trainee's career all that is required is confirmation of the statement on the assessment sheet overleaf.

**INITIAL ASSESSMENT OF COMPETENCY:**

**e) Clinical judgement, attitudes and behaviour**

**Name of trainee** .....

To the best of my knowledge and belief this trainee has:

1. Shown care and respect for patients.
2. Demonstrated a willingness to learn.
3. Asked for help appropriately.
4. Appeared reliable and trustworthy.

Signed.....Print name.....Date.....

Appointment .....

Signed.....Print name.....Date.....

Appointment .....

## **APPENDIX B:**

### **WORKPLACE ASSESSMENT OF THE BASIC COMPETENCES FOR OBSTETRIC ANAESTHESIA**

**This assessment applies to trainees new to obstetric anaesthesia and to more experienced trainees who are working in the United Kingdom for the first time to enable them to work with distant supervision**

Each part of each of the following assessments can be assessed by one (or more) trainers, but not all parts can be “signed off” by the same single trainer. At least two consultants with fixed sessions in obstetric anaesthesia must be involved in the overall assessment. One of these should be the supervising consultant.

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## WORKPLACE ASSESSMENT OF THE BASIC COMPETENCES FOR OBSTETRIC ANAESTHESIA

### a) Knowledge

The following broad topics are the minimum knowledge base required before a trainee can be expected to work with distant supervision. The form of this knowledge assessment is left to the discretion of local trainers it could, for example, be by case based discussion.

	Yes	No
1. Labour analgesia (including options other than regional anaesthesia)	<input type="checkbox"/>	<input type="checkbox"/>
2. Anatomy – spine, airway, obstetric	<input type="checkbox"/>	<input type="checkbox"/>
3. Labour physiology	<input type="checkbox"/>	<input type="checkbox"/>
4. Basic obstetrics, including basic foetal assessment	<input type="checkbox"/>	<input type="checkbox"/>
5. Relevant pharmacology, including oxytocics, vasopressors, magnesium sulphate etc	<input type="checkbox"/>	<input type="checkbox"/>
6. Obstetric general anaesthesia; including revision of failed intubation protocols	<input type="checkbox"/>	<input type="checkbox"/>
7. Epidural or CSE analgesia in labour	<input type="checkbox"/>	<input type="checkbox"/>
8. Regional anaesthesia for operative delivery – including management of hypotension, total spinal anaesthesia and accidental intravenous injection of local anaesthesia	<input type="checkbox"/>	<input type="checkbox"/>
9. Management of major haemorrhage	<input type="checkbox"/>	<input type="checkbox"/>
10. Management of pre-eclampsia and eclampsia	<input type="checkbox"/>	<input type="checkbox"/>

**WORKPLACE ASSESSMENT OF THE BASIC COMPETENCES FOR OBSTETRIC ANAESTHESIA**

**b) Preconditions prior to workplace assessments**

Name of trainee.....

- |  | Yes                      | No                       |
|--|--------------------------|--------------------------|
| 1. The trainee has progressed to working with distant supervision in adult non-obstetric practice. He/She is appropriately confident and has undergone satisfactory workplace assessments in this role.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. The trainee has had satisfactory workplace assessments in the following topics: Pre-operative assessment, premedication, anaesthesia equipment: monitoring and safety, induction of general anaesthesia, intraoperative care, ( <i>The CCT in Anaesthetics II Appendix 3 Sections 1,2,3,4,5 and 6</i> ) | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The trainee has an adequate knowledge base (see above for details)  | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. The trainee has received an appropriate induction to the obstetric unit, including familiarisation with all relevant equipment, protocols and guidelines.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. The trainee knows when and how to request more experienced assistance   |                          |                          |

**This assessment was completed satisfactorily** YES  NO   
 If not, you must give details overleaf

Signed ..... Name..... (Lead trainer) Date.....

Signed ..... Name..... (Trainee) Date.....

**WORKPLACE ASSESSMENT OF THE BASIC COMPETENCES FOR OBSTETRIC ANAESTHESIA**

**c) Assessment of competence to administer an epidural / CSE for pain relief in labour**

Name of trainee.....

Date of assessment..... Place of assessment.....

**Direct observation of procedural skills**

**The checklist below may be used, and may be particularly helpful if the overall assessment is not satisfactory.**

*A tick indicates satisfactory performance in the stated competence*

	✓	Date
1. Chooses the anaesthetic technique appropriately	<input type="checkbox"/>	_____
2. Assesses the patient	<input type="checkbox"/>	_____
3. Obtains informed consent	<input type="checkbox"/>	_____
4. Establishes IV access / gives a preload according to local protocol.	<input type="checkbox"/>	_____
5. Demonstrates satisfactory aseptic technique	<input type="checkbox"/>	_____
6. Positions patient correctly for the block	<input type="checkbox"/>	_____
7. Inserts epidural catheter satisfactorily using appropriate technique	<input type="checkbox"/>	_____
8. Performs aspiration test and responds appropriately to the result	<input type="checkbox"/>	_____
9. Administers test dose according to local protocol.	<input type="checkbox"/>	_____
10. Ensures further care of patient as appropriate	<input type="checkbox"/>	_____
11. Demonstrates good record keeping as required by GMC	<input type="checkbox"/>	_____
12. Demonstrates good behaviour, communication skills and attitudes as required by GMC	<input type="checkbox"/>	_____

**This assessment was completed satisfactorily** YES NO  
 If not, you must give details overleaf

Signed ..... Name..... (Lead trainer) Date.....

Signed ..... Name..... (Trainee) Date.....

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## WORKPLACE ASSESSMENT OF THE BASIC COMPETENCES FOR OBSTETRIC ANAESTHESIA

### d) Assessment of competence to administer an epidural top-up for an emergency Caesarean section

Name of trainee.....

Date of assessment..... Place of assessment.....

#### **Direct observation of procedural skills**

The checklist below may be used, and may be particularly helpful if the overall assessment is not satisfactory.

*A tick indicates satisfactory performance in the stated competence*

	✓	Date
1. Chooses the anaesthetic technique appropriately	<input type="checkbox"/>	_____
2. Assesses the patient, obtains informed consent and ensures an appropriate pre-medication is given	<input type="checkbox"/>	_____
3. Checks equipment, prepares required drugs	<input type="checkbox"/>	_____
4. Establishes appropriate IV access	<input type="checkbox"/>	_____
5. Establishes monitoring according to local protocols	<input type="checkbox"/>	_____
6. Prepares and administers epidural drug(s) according to local protocol.	<input type="checkbox"/>	_____
7. Positions patient appropriately for the top up and development of the block	<input type="checkbox"/>	_____
8. Demonstrates adequate vigilance	<input type="checkbox"/>	_____
9. Treats complications and manages difficulties appropriately	<input type="checkbox"/>	_____
10. Checks adequacy of anaesthesia prior to surgery	<input type="checkbox"/>	_____
11. Gives other intra-operative therapy as required and/or per protocols	<input type="checkbox"/>	_____
12. Maintains a good anaesthetic record	<input type="checkbox"/>	_____
13. Prescribes post-operative analgesia and other therapy as per unit protocols	<input type="checkbox"/>	_____
14. Demonstrates good behaviour, communication skills and attitudes	<input type="checkbox"/>	_____

**This assessment was completed satisfactorily**  
If not, you must give details below

YES	NO
<input type="checkbox"/>	<input type="checkbox"/>

Signed ..... Name..... (Lead trainer) Date.....

Signed ..... Name..... (Trainee) Date.....

## WORKPLACE ASSESSMENT OF THE BASIC COMPETENCES FOR OBSTETRIC ANAESTHESIA

### e) Assessment of competence to administer a spinal / CSE for elective or emergency Caesarean section

Name of trainee.....

Date of assessment..... Place of assessment.....

#### Direct observation of procedural skills

The checklist below may be used, and may be particularly helpful if the overall assessment is not satisfactory.

*A tick indicates satisfactory performance in the stated competence*

	✓	Date
1. Chooses the anaesthetic technique appropriately	<input type="checkbox"/>	_____
2. Assesses the patient, obtains informed consent, ensures appropriate pre-medication is given and explains attendant risks	<input type="checkbox"/>	_____
3. Checks equipment, prepares required drugs	<input type="checkbox"/>	_____
4. Establishes IV access and commences pre-load as per unit standards	<input type="checkbox"/>	_____
5. Establishes monitoring	<input type="checkbox"/>	_____
6. Positions patient	<input type="checkbox"/>	_____
7. Performs spinal or CSE anaesthesia	<input type="checkbox"/>	_____
8. Manages the patient appropriately during onset of anaesthesia	<input type="checkbox"/>	_____
9. Manages the patient appropriately during surgery	<input type="checkbox"/>	_____
10. Gives other intraoperative therapy as required and/or per protocols	<input type="checkbox"/>	_____
11. Maintains an good anaesthetic record	<input type="checkbox"/>	_____
12. Prescribes post-operative analgesia and other therapy as per unit Protocols	<input type="checkbox"/>	_____
13. Demonstrates good behaviour, communication skills and attitudes	<input type="checkbox"/>	_____

**This assessment was completed satisfactorily**  
If not, you must give details below

YES <input type="checkbox"/>	NO <input type="checkbox"/>
---------------------------------	--------------------------------

Signed ..... Name..... (Lead trainer) Date.....

Signed ..... Name..... (Trainee) Date.....

**WORKPLACE ASSESSMENT OF THE BASIC COMPETENCES FOR OBSTETRIC ANAESTHESIA**

**f) Assessment of competence to administer general anaesthesia for elective or emergency Caesarean section**

Name of trainee.....

Date of assessment..... Place of assessment.....

**Direct observation of procedural skills**

**The checklist below may be used, and may be particularly helpful if the overall assessment is not satisfactory.**

*A tick indicates satisfactory performance in the stated competence*

	✓	Date
1. Chooses the anaesthetic technique appropriately	<input type="checkbox"/>	_____
2. Assesses the patient and assesses the airway	<input type="checkbox"/>	_____
3. Obtains informed consent and gives pre-induction drugs	<input type="checkbox"/>	_____
4. Checks and prepares equipment and drugs	<input type="checkbox"/>	_____
5. Establishes iv access and monitoring	<input type="checkbox"/>	_____
6. Positions patient	<input type="checkbox"/>	_____
7. Preoxygenates the patient	<input type="checkbox"/>	_____
8. Performs rapid sequence induction of anaesthesia	<input type="checkbox"/>	_____
9. Manages the airway satisfactorily	<input type="checkbox"/>	_____
10. Demonstrates vigilance and maintains anaesthesia appropriately	<input type="checkbox"/>	_____
11. Gives other therapy as required and/or per protocol	<input type="checkbox"/>	_____
12. Manages emergence from anaesthesia adequately	<input type="checkbox"/>	_____
13. Ensures safe transfer from operating table to bed / trolley and to recovery	<input type="checkbox"/>	_____
14. Maintains an good anaesthetic record	<input type="checkbox"/>	_____
15. Prescribes post-operative analgesia and other therapy	<input type="checkbox"/>	_____
16. Demonstrates good behaviour, communication skills and attitudes	<input type="checkbox"/>	_____

**This assessment was completed satisfactorily**  
If not, you must give details below

YES <input type="checkbox"/>	NO <input type="checkbox"/>
---------------------------------	--------------------------------

Signed ..... Name..... (Lead trainer) Date.....

Signed ..... Name..... (Trainee) Date.....

## **APPENDIX C:**

### **THE CCT IN ANAESTHETICS BASIC LEVEL SYLLABUS (ST years 1 and 2)**

	<b>UNIT</b>	<b>PAGE</b>
1.	Preoperative assessment	II – C - 2
2.	Premedication	II – C - 5
3.	Anaesthesia and HDU and ICU equipment: monitoring and safety	II – C - 6
4.	Induction of general anaesthesia	II – C - 8
5.	Intraoperative care (including sedation)	II – C - 10
6.	Postoperative and recovery care	II – C - 12
7.	Intensive and high dependency care	II – C - 14
8.	Regional anaesthesia	II – C - 16
9.	Management of trauma, stabilisation and transfer of patients	II – C - 18
10.	Obstetric anaesthesia and analgesia	II – C - 20
11.	Paediatric anaesthesia	II – C - 21
12.	Anaesthesia and the elderly	II – C - 24
13.	Pain medicine	II – C - 25
14.	Infection control	II – C - 26
15.	Critical incidents	II – C - 27
16.	Management of respiratory and cardiac arrest	II – C - 29
17.	Anatomy	II – C - 30
18.	Physiology and biochemistry	II – C - 32
19.	Pharmacology	II – C - 35
20.	Physics and clinical measurement	II – C - 37
21.	Statistical methods	II – C - 39

# 1: PREOPERATIVE ASSESSMENT

## 1.1: Knowledge

B:1.1.1	Implications for anaesthesia of commoner elective conditions requiring gynaecological, abdominal, orthopaedic, ENT, dental, urological and body surface surgery. Knowledge of special interest practice and specialised techniques is not required unless specified elsewhere.
B:1.1.2	The relevance of trauma, intestinal obstruction and acute abdominal emergencies
B:1.1.3	The ASA classification and other scoring systems such as Glasgow coma scale (GCS)
B:1.1.4	The interpretation of relevant preoperative investigations
B:1.1.5	Restriction of food and fluid by mouth, cessation of smoking, correction of dehydration
B:1.1.6	Assessment of difficulties in airway management and the importance of the 'shared airway'
B:1.1.7	Implications for anaesthesia of common medical conditions (ischaemic heart disease, hypertension, diabetes, asthma, rheumatoid arthritis etc)
B:1.1.8	Anaesthetic implications of current drug therapy and whether it should be continued, modified stopped or changed peri-operatively
B:1.1.9	Need for and methods of perioperative antithrombotic treatment
B:1.1.10	The importance of an anaesthetic history and genetic diseases in anaesthesia with respect to suxamethonium apnoea, anaphylaxis and malignant hyperpyrexia
B:1.1.11	Assessment of post-operative analgesic needs
B:1.1.12	Assessment of whether ICU or HDU care will be required post-operatively
B:1.1.13	The importance of consent and the issues surrounding it
B:1.1.14	Dangers of repeat anaesthesia
B:1.1.15	Assessment of cardio-pulmonary exercise tests for the prediction of post-operative outcomes

## 1.2: Skills

<i>History taking</i>	
B:1.2.1	Anaesthetic history: personal and familial
B:1.2.2	Previous airway/ intubation difficulties
B:1.2.3	Medication: current and past
B:1.2.4	Allergies and previous drug reactions
B:1.2.5	Previous anaesthetic exposure and surgery
B:1.2.6	Respiratory status and symptoms (especially asthma and COPD)
B:1.2.7	Cardiovascular status and symptoms (especially IHD and hypertension)
B:1.2.8	Neurological status and symptoms (especially epilepsy, CVAs, conscious level and including mental state)
B:1.2.9	Gastro-intestinal problems (especially reflux, obstruction, potentially delayed gastric emptying)
B:1.2.10	Arthropathies and other musculo-skeletal problems (especially rheumatoid arthritis)
B:1.2.11	Renal conditions
B:1.2.12	Hepatic conditions (especially jaundice, cirrhosis)
B:1.2.13	Endocrine conditions (especially diabetes, steroid therapy)
B:1.2.14	Skin conditions
B:1.2.15	Obstetric conditions
B:1.2.16	Congenital disorders affecting anaesthesia
B:1.2.17	Hereditary disorders affecting anaesthesia
B:1.2.18	Haemoglobinopathies
B:1.2.19	Coagulopathies
B:1.2.20	Nutritional abnormalities (especially obesity)
B:1.2.21	Social problems and identification of high risk groups for infection

<i>Physical Examination</i>	
B:1.2.22	Teeth/ airway/ cervical spine/ intubation assessment
B:1.2.23	Cardiovascular system (IHD, hypertension, LVF)
B:1.2.24	Respiratory system (asthma, COPD)
B:1.2.25	Nutritional state (obesity)
B:1.2.26	Neurological system (GCS: any acute or residual effects of CVA)
B:1.2.27	Abdomen and GI tract
B:1.2.28	Anaemia
B:1.2.29	Jaundice
B:1.2.30	Sequelae of diabetes and steroids
B:1.2.31	Musculo-skeletal problems (including relevance to positioning, neck stability, regional blockade)
<i>Data Interpretation</i>	
B:1.2.32	Clinical:
B:1.2.33	Respiratory function tests
B:1.2.34	Electrocardiographs
B:1.2.35	Central venous pressure measurement
B:1.2.36	Systolic, diastolic and mean arterial pressure
B:1.2.37	Exercise tests of the cardiac and respiratory function
B:1.2.38	Interpreting fluid balance and other charts
B:1.2.39	Radiological (showing clear abnormalities):
B:1.2.40	Chest radiographs
B:1.2.41	Films showing long bone, skull, vertebral and rib fractures
B:1.2.42	Simple CAT and MRI scans of head demonstrating fractures/ haemorrhage
B:1.2.43	Neck and thoracic inlet films
B:1.2.44	Films showing abdominal fluid levels/air
B:1.2.45	Laboratory:
B:1.2.46	Haematology (including coagulation and sickle tests)
B:1.2.47	Urea and electrolytes
B:1.2.48	pH and blood gases
B:1.2.49	Liver function tests
B:1.2.50	Thyroid function
<i>Factors in special groups</i>	
B:1.2.51	Children (aged 5 years and over)
B:1.2.52	The elderly
B:1.2.53	Day case patients
<i>Planning</i>	
B:1.2.54	Deciding on the appropriate pre-operative assessment
B:1.2.55	Deciding on an anaesthetic technique appropriate to the patient
B:1.2.56	Ensuring the necessary resources are available for safe patient care

### 1.3: Attitudes and behaviour

<i>Communication</i>	
B:1.3.1	Consent for:
B:1.3.2	general anaesthesia (including a discussion of the risks)
B:1.3.3	epidural/caudal/spinal/regional/local blocks ((including a discussion of the risks)
B:1.3.4	Explanation of need for preoperative routine and specialised tests (including hepatitis screening, HIV testing and sickle cell status)
B:1.3.5	Explanation of pain management, side effects and complications of:
B:1.3.6	oral/sublingual/rectal/subcutaneous/IM/IV/nasal/transdermal drugs
B:1.3.7	epidural/regional techniques/local blocks
B:1.3.8	inhalational analgesia
B:1.3.9	patient controlled analgesia
B:1.3.10	Discussion of preoperative medication choices
B:1.3.11	Explanation of postoperative expectations and care
B:1.3.12	Communication with other professionals
<i>Other Attitudes</i>	
B:1.3.13	Care and compassion for patients
B:1.3.14	Ability to achieve appropriate information transfer
B:1.3.15	Ethical behaviour
B:1.3.16	Professional, unemotional approach
B:1.3.17	Reassurance
B:1.3.18	Attention to detail
B:1.3.19	Punctuality
B:1.3.20	Clean neat appearance and politeness
B:1.3.21	Proper interaction with other professions and professionals
B:1.3.22	Helpfulness

### 1.4 Workplace training objectives

B:1.4.1	Able to assess the airway for potential difficulties with airway management
B:1.4.2	Able to take a relevant history
B:1.4.3	Able to interpret pre-operative investigations and respond to them
B:1.4.4	Able to recognise when senior advice or assistance is required
B:1.4.5	Able to assess and plan the anaesthetic management of ASA I & II patients
B:1.4.6	Able to recognise ASA III, IV & V patients, and have a knowledge of the implications of this for anaesthesia
B:1.4.7	Able to assess the impact of the presenting surgical condition on the patient's physiological status
B:1.4.8	Able to assess suitability of patients for day case surgery
B:1.4.9	Able to identify patients at a high risk of nausea and vomiting
B:1.4.10	Able to explain risks and options of routine anaesthesia to patients and to obtain their consent.
B:1.4.11	Have a knowledge of how to deal with emergencies arising before anaesthesia and how to stabilise a patient's condition until senior assistance can arrive (see also section 13).

## 2: PREMEDICATION

### 2.1 Knowledge

B:2.1.1	Rationale for use of premedicant drugs
B:2.1.2	Choice of drugs, advantages and disadvantages
B:2.1.3	Rationale for antacid, and prokinetic premedication
B:2.1.4	Rationale for antithrombotic therapy
B:2.1.5	Understanding of causes of delayed gastric emptying

### 2.2 Skills

B:2.2.1	Assessment of level of anxiety and address patient's concerns
B:2.2.2	Recognition of situations leading to delayed gastric emptying
B:2.2.3	Checking a patient prior to premedication and on arrival in the anaesthetic room/theatre

### 2.3 Attitudes and behaviour

B:2.3.1	Able to reassure patient and allay anxiety
B:2.3.2	Explain (as appropriate) problems/complications to patients/ relatives concerning:
B:2.3.3	<ul style="list-style-type: none"><li>• difficult intubation &amp; dentition</li></ul>
B:2.3.4	<ul style="list-style-type: none"><li>• sore throat, nausea and vomiting</li></ul>
B:2.3.5	<ul style="list-style-type: none"><li>• thrombophlebitis</li></ul>
B:2.3.6	<ul style="list-style-type: none"><li>• post-spinal headache</li></ul>
B:2.3.7	<ul style="list-style-type: none"><li>• suxamethonium apnoea and pains</li></ul>
B:2.3.8	<ul style="list-style-type: none"><li>• anaphylaxis</li></ul>
B:2.3.9	<ul style="list-style-type: none"><li>• malignant hyperpyrexia</li></ul>

### 2.4 Workplace training objectives

B:2.4.1	To become practised at answering patients questions in the most appropriate way
B:2.4.2	To always try to alleviate anxiety
B:2.4.3	To ensure thromboprophylaxis is considered
B:2.4.4	To gain a knowledge of the properties and effects of premedicant drugs

### 3: ANAESTHESIA, HDU AND ICU EQUIPMENT: MONITORING AND SAFETY

#### 3.1 Knowledge

B:3.1.1	Physical principles underlying the function of the anaesthetic machine, pressure regulators, flowmeters, vaporizers, breathing systems
B:3.1.2	Chemistry of absorption of carbon dioxide
B:3.1.3	Principles of lung ventilators, disconnection monitors
B:3.1.4	Manufacture and storage of oxygen, nitrous oxide, carbon dioxide, compressed air
B:3.1.5	Pipeline and suction systems, gas cylinders
B:3.1.6	Minimum monitoring requirements
B:3.1.7	Basis for pre-use checks of anaesthetic machine, breathing systems and monitoring apparatus
B:3.1.8	Airways, tracheal tubes, tracheostomy tubes, emergency airways, laryngeal masks, fixed and variable performance oxygen therapy equipment, self-inflating bags
B:3.1.9	The content of an anaesthetic record
B:3.1.10	<b>Function and use of resuscitation equipment, transfusion devices</b>
B:3.1.11	Humidification devices
B:3.1.12	Environmental control of the operating theatre including temperature, humidity, air changes and scavenging systems for waste anaesthetic gases and vapours
B:3.1.13	Sterilisation and cleaning of equipment
B:3.1.14	Electrical safety
B:3.1.15	Characteristics of intravenous cannulae, spinal and epidural needles

#### 3.2 Skills

B:3.2.1	Checking the anaesthetic machine
B:3.2.2	Checking pipelines
B:3.2.3	Changing and checking cylinders
B:3.2.4	Connecting up breathing systems
B:3.2.5	Checking breathing systems
B:3.2.6	Setting up/checking/monitoring lung ventilators
B:3.2.7	Setting up/checking alarm limits for monitoring equipment
B:3.2.8	Collecting data from monitors
B:3.2.9	Record keeping
B:3.2.10	Checking resuscitation equipment
B:3.2.11	Assembling resuscitation equipment
B:3.2.12	Selecting defibrillator settings
B:3.2.13	Recognising machine, breathing system and equipment errors: miss-assembly and disconnections
B:3.2.14	Composing equipment checklists for:
B:3.2.15	• resuscitation equipment
B:3.2.16	• difficult and failed intubation
B:3.2.17	• CVP monitoring
B:3.2.18	• arterial pressure monitoring
B:3.2.19	• epidural/spinal packs
B:3.2.20	• paediatric intubation set

### 3.3 Attitudes and behaviour

B:3.3.1	Recognition that anaesthetic equipment comprises anaesthesia tool kit
B:3.3.2	Shared responsibility for equipment with theatre staff
B:3.3.3	Commitment to understand as fully as possible the working principles of all anaesthetic equipment
B:3.3.4	Determination to maximise safety, and not to compromise it by accepting substandard equipment both as to range and quality

### 3.4 Workplace training objectives

B:3.4.1	To check anaesthesia machine
B:3.4.2	To assemble and check breathing systems
B:3.4.3	To set up and check ventilator
B:3.4.4	To describe the requirements for minimal monitoring
B:3.4.5	To decide when additional monitoring (e.g. CVP, arterial line) is needed
B:3.4.6	To set up and check monitoring equipment and alarm limits
B:3.4.7	To check resuscitation equipment
B:3.4.8	To keep a good anaesthetic record

## 4: INDUCTION OF GENERAL ANAESTHESIA

### 4.1: Knowledge

B:4.1.1	Intravenous and inhalational induction of anaesthesia; advantages and disadvantages of each technique
B:4.1.2	Indications for tracheal intubation
B:4.1.3	Selection of tube type (oral, nasal, armoured etc), diameter and length
B:4.1.4	Management of difficult intubation and failed intubation
B:4.1.5	Methods of confirming placement of the endotracheal tube; oesophageal and endobronchial intubation, complications
B:4.1.6	Insertion and use of oral airways, face masks and laryngeal mask airway
B:4.1.7	Causes of regurgitation and vomiting during induction, prevention and management of pulmonary aspiration
B:4.1.8	Cricoid pressure
B:4.1.9	Induction of anaesthesia in special circumstances, (head injury, full stomach, upper airway obstruction, shock)
B:4.1.10	Drugs: pharmacology and dosages of induction agents, relaxants, analgesics, and inhalational agents and types of drug error: wrong drug, dose, route; use of safe practice to minimise risks.
B:4.1.11	Side effects of drugs used and their interactions
B:4.1.12	Monitoring during induction
B:4.1.13	Recognition and management of anaphylactic and anaphylactoid reactions including follow up and patient information
B:4.1.14	Management of intra-arterial injection of harmful substances (e.g. antibiotics, thiopentone)
B:4.1.15	Management of asthma, COPD, hypertension, IHD, rheumatoid arthritis
B:4.1.16	Problems of the obese patient

### 4.2: Skills

B:4.2.1	IV and inhalational Induction of anaesthesia in patients with elective and urgent conditions requiring gynaecological, abdominal, orthopaedic, ENT, dental, urological and body surface surgery (Knowledge of special interest practice and specialised techniques is not required unless specified elsewhere)
B:4.2.2	Checking patient in the anaesthetic room
B:4.2.3	Safety checking of equipment (see section 7)
B:4.2.4	Obtaining vascular access - suitability of sites and technique of intravenous injection
B:4.2.5	Airway assessment and optimising the patient's position for airway management
B:4.2.6	Airway management with mask and oral/nasal airways
B:4.2.7	Introduction and checking correct placement of laryngeal mask airway
B:4.2.8	Appropriate choice and passage of oral and nasal endotracheal tubes
B:4.2.9	Intubation up to grade II Cormack-Lehane
B:4.2.10	Use of gum elastic bougie and stilette
B:4.2.11	Identifying correct/incorrect placement of tube (oesophagus/main bronchus)
B:4.2.12	Interpretation of capnograph trace
B:4.2.13	Failed intubation drill
B:4.2.14	Rapid sequence induction/cricoid pressure
B:4.2.15	Checking difficult intubation kit and paediatric intubation set
B:4.2.16	Using of monitoring equipment, including application of ECG electrodes
B:4.2.17	Managing of cardiovascular and respiratory changes during and after induction of general anaesthesia
B:4.2.18	Appropriate safe practice in selecting, checking, drawing up, diluting, labelling and

	administration of drugs.
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#### 4.3: Attitudes and behaviour

B:4.3.1	Safety first
B:4.3.2	Always knowing the whereabouts of senior assistance
B:4.3.3	Being clear in explanations to patient and staff
B:4.3.4	Being reassuring to patients during induction of anaesthesia
B:4.3.5	Being polite, calm and having a professional approach

#### 4.4: Workplace training objectives

B:4.4.1	To perform routine intravenous induction of anaesthesia
B:4.4.2	To perform routine gaseous induction of anaesthesia
B:4.4.3	To identify the correct placement of the endotracheal tube after intubation
B:4.4.4	To rehearse failed intubation drill
B:4.4.5	To discuss induction of general anaesthesia in difficult airways, shocked patients and others of ASA>II
B:4.4.6	To manage the cardiovascular and respiratory complications of induction of general anaesthesia
B:4.4.7	To describe the management of aspiration, anaphylaxis, failed intubation and malignant hyperpyrexia

## 5: INTRAOPERATIVE CARE (INCLUDING SEDATION)

### 5.1: Knowledge

B:5.1.1	Techniques of maintenance of general anaesthesia involving both spontaneous and controlled ventilation (except special interest and highly specialised practice)
B:5.1.2	Definition of and methods of sedation
B:5.1.3	Management of the shared airway
B:5.1.4	Effects and hazards of the pneumoperitoneum induced for laparoscopic surgery
B:5.1.5	Drugs: Pharmacology, uses and dosages of induction agents used for IV maintenance, relaxants, analgesics, inhalational agents
B:5.1.6	Methods of producing muscle relaxation
B:5.1.7	Choice of spontaneous and controlled ventilation and methods of monitoring them
B:5.1.8	Minimum monitoring standards
B:5.1.9	Additional monitoring for sick patients (e.g. CVP, urine flow)
B:5.1.10	Detection and prevention of awareness
B:5.1.11	Management of important critical incidents occurring during anaesthesia (see section 19)
B:5.1.12	Diagnosis and treatment of pneumothorax
B:5.1.13	Principles of fluid balance
B:5.1.14	Blood & blood products; synthetic colloids; crystalloids
B:5.1.15	Management of massive haemorrhage, volume expansion, blood transfusion (hazards including incompatibility reaction)
B:5.1.16	Correct intraoperative positioning on theatre table, care of pressure points, avoidance nerve injury: complications of supine and prone positions
B:5.1.17	Management of asthma, COPD, hypertension, IHD, rheumatoid arthritis, jaundice, steroid therapy, diabetes
B:5.1.18	Content of the anaesthetic record
B:5.1.19	Modification of technique in repeat anaesthesia
B:5.1.20	Understanding basic surgical operations

### 5.2: Skills

B:5.2.1	Maintenance of appropriate levels of anaesthesia with inhalational and intravenous agents in patients with elective and urgent conditions requiring gynaecological, abdominal, orthopaedic, ENT, dental, urological and body surface surgery (Knowledge of special interest practice and specialised techniques is not required unless specified elsewhere.)
B:5.2.2	Transferring the patient from trolley to operating table
B:5.2.3	Positioning the patient
B:5.2.4	Airway control: recognition and correction of problems
B:5.2.5	Laryngoscopy and intubation and its problems
B:5.2.6	Detection and correction of airway obstruction
B:5.2.7	Use of oral airways, facemasks and laryngeal mask airway
B:5.2.8	Sharing the airway
B:5.2.9	Management of appropriate intermittent positive pressure ventilation
B:5.2.10	Methods of pain relief during maintenance
B:5.2.11	Management of effects of drugs used during anaesthesia
B:5.2.12	Management of hypo and hypertension
B:5.2.13	Provision of intra-operative fluids; transfusion of blood and blood products
B:5.2.14	Management of diabetes
B:5.2.15	Methods of detection of awareness
B:5.2.16	Management of appropriate muscle relaxation
B:5.2.17	Management of any critical incidents which occur during anaesthesia
B:5.2.18	Interpretation and limitations of monitoring equipment

### 5.3: Attitudes and behaviour

B:5.3.1	Vigilance
B:5.3.2	Attention to detail
B:5.3.3	Attention to multiple sources of data continuously
B:5.3.4	Recognition of need to communicate with colleagues

### 5.4: Workplace training objectives

B:5.4.1	To manage anaesthetised spontaneously breathing patients
B:5.4.2	To manage anaesthetised ventilated patients
B:5.4.3	To manage sedated patients
B:5.4.4	To manage diabetes perioperatively
B:5.4.5	To manage steroid cover
B:5.4.6	To checking blood and blood products
B:5.4.7	To apply and interpret of appropriate monitoring
B:5.4.8	To know how to deal with emergencies as they occur in anaesthesia and how to stabilise a patient's condition until senior assistance arrives
B:5.4.9	To plan ahead with the surgeon any unusual requirements of anaesthesia

## 6: POSTOPERATIVE AND RECOVERY CARE

### 6.1: Knowledge

B:6.1.1	Causes and treatment of failure to breathe at end of operation
B:6.1.2	Distinguishing between opiate excess, continued anaesthetic effect and/or residual paralysis
B:6.1.3	Care of the unconscious patient
B:6.1.4	Monitoring the patient in recovery
B:6.1.5	Interpretation of nerve stimulator patterns
B:6.1.6	Oxygen therapy, indications and techniques
B:6.1.7	Management of cyanosis, hypo- and hypertension, shivering and stridor
B:6.1.8	Postoperative fluid balance and prescribing
B:6.1.9	Assessment of pain and methods of pain management
B:6.1.10	Methods of treating of postoperative nausea and vomiting
B:6.1.11	Causes and management of post-operative confusion
B:6.1.12	Management of asthma, COPD, hypertension, IHD, rheumatoid arthritis, jaundice, steroid therapy, diabetes
B:6.1.13	Management of the obese patient
B:6.1.14	Recovery room equipment
B:6.1.15	Prevention, diagnosis and management of postoperative pulmonary atelectasis, deep vein thrombosis and pulmonary embolus
B:6.1.16	Criteria for discharge of day-stay patients

### 6.2: Skills

B:6.2.1	Recovery from anaesthesia in patients with elective and urgent conditions requiring gynaecological, abdominal, orthopaedic, ENT, dental, urological and body surface surgery ( Knowledge of special interest practice and specialised techniques is not required unless specified elsewhere.)
B:6.2.2	Clear instructions during handover of patient to recovery staff
B:6.2.3	Assessment of full return of protective reflexes
B:6.2.4	Assessment of adequacy of ventilation/reversal
B:6.2.5	Recognition of residual relaxant action
B:6.2.6	Use of nerve stimulator
B:6.2.7	Extubation and airway protection in presence of potentially full stomach
B:6.2.8	Prescription of postoperative fluids
B:6.2.9	Assessment of fluid balance and need for urethral catheterisation
B:6.2.10	Evaluation and management of post-operative confusion
B:6.2.11	Assessment of postoperative pain
B:6.2.12	Prescription of postoperative pain regimen
B:6.2.13	Treatment of nausea and vomiting
B:6.2.14	Stabilisation before discharge from Recovery
B:6.2.15	Continuation of care until discharge from Recovery, and beyond as appropriate
B:6.2.16	Criteria for discharge of patients to ward
B:6.2.17	Criteria for discharge of day-stay patients

### 6.3: Attitudes and behaviour

B:6.3.1	Clear communication
B:6.3.2	Responding rapidly to calls for help
B:6.3.3	Follow up of sick patients on the ward before going home

### 6.4: Workplace training objectives

B:6.4.1	To achieve a smooth, controlled return of vital functions and reflexes
B:6.4.2	To practice giving clear instructions to recovery staff
B:6.4.3	To be able to discharge patients safely back to the ward
B:6.4.4	To know the criteria for discharge of day-stay patients
B:6.4.5	To recognise and treat of common recovery room complications
B:6.4.6	To recognise and treat conditions and circumstances requiring HDU or ICU care
B:6.4.7	To know the equipment requirements of a recovery room

## 7: INTENSIVE AND HIGH DEPENDENCY CARE

During ST Years 1 and 2 trainees in anaesthesia are required to spend a total of 3 months in intensive care training. The basic level knowledge, skills and attitudes lists below are compatible with the recommendations of the Intercollegiate Board for Training in Intensive Care Medicine (IBTICM)<sup>10</sup> for this level of training in intensive care medicine. Because these are reproduced in full, there is obviously repetition of material that appears in other sections of this document. There is, in addition, guidance on assessment for ICM.

### 7.1: Knowledge

B:7.1.1	An understanding of the potential benefits of high dependency and intensive care
B:7.1.2	Common causes of admission to high dependency and intensive care
B:7.1.3	Method of examination of the unconscious patient
B:7.1.4	The principles of brain stem death diagnosis
B:7.1.5	An understanding of sepsis and the basic patterns of failure of the major organs
B:7.1.6	The common causes of cardiac and respiratory arrest
B:7.1.7	The anatomy of the oropharynx, larynx, trachea & bronchial tree
B:7.1.8	Basic anatomy of neck, upper thorax, arms, wrists, inguinal region and foot relevant to insertion of venous and arterial access
B:7.1.9	Method of inserting a chest drain and relief of tension pneumothorax
B:7.1.10	Understanding of the choice of intravenous fluids appropriate for use in major fluid loss, and their pharmacology
B:7.1.11	The recognition of basic cardiac dysrhythmias and the current therapies (physical (carotid sinus massage), electrical (defibrillation & countershock), electrolytic (Mg <sup>++</sup> , Ca <sup>++</sup> ), and pharmacological (adrenaline (epinephrine), atropine, lignocaine and 2 <sup>nd</sup> line drugs)
B:7.1.12	Pharmacology of the common inotropic agents used in the critically ill (adrenaline (epinephrine), nor-adrenaline (nor-epinephrine))
B:7.1.13	Pharmacology of major analgesics used as respiratory depressants (morphine, fentanyl series), and common side effects and contra-indications
B:7.1.14	Pharmacology of common muscle relaxants (depolarising and non-depolarising) and common side effects and contra-indications
B:7.1.15	Pharmacology of intravenous sedative and anaesthetic induction agents used in the critical care unit
B:7.1.16	Thromboprophylaxis in intensive and high dependency patients
B:7.1.17	Choice of antibiotics
B:7.1.18	Use of diuretics for cardiac and respiratory failure and to maintain urine output
B:7.1.19	The basic cardiac and respiratory physiology
B:7.1.20	The basic physiology of respiration and the consequences of positive pressure ventilation
B:7.1.21	An understanding of common blood gas abnormalities
B:7.1.22	An understanding of the use of ventilation in use on critically ill patients, with a knowledge of the vocabulary
B:7.1.23	An understanding of the uses and limitations of monitoring equipment
B:7.1.24	The content of an ICU record
B:7.1.25	An insight into likely outcome based upon severity scoring
B:7.1.26	The grief response

<sup>10</sup> Available from the IBTICM Secretariat at the RCA

## 7.2: Skills

B:7.2.1	Cardiopulmonary resuscitation (as defined in Section 2.1 and Appendix 1.d.)
B:7.2.2	Maintenance of a clear airway using bag and mask
B:7.2.3	Insertion of an endotracheal tube, via the oral route
B:7.2.4	Change of tracheostomy tube
B:7.2.5	Examination and care of the unconscious patient
B:7.2.6	Insertion of adequate peripheral venous access sufficient to manage major haemorrhage
B:7.2.7	Insertion of central venous and arterial cannulae
B:7.2.8	Institution and maintenance of controlled mechanical ventilation in a critically ill patient
B:7.2.9	Ability to summarise and provide a succinct analysis of the patient's medical history, ongoing therapies and expected problems to medical and nursing colleagues
B:7.2.10	Good communication with patients, relatives and staff
B:7.2.11	Ability to explain and discuss the nature of the patient's illness with relatives

## 7.3: Attitudes and behaviour

B:7.3.1	Understanding of the needs and behaviour of worried and grieving relatives
B:7.3.2	Commitment to good communication
B:7.3.3	Willingness to accept failures of therapy
B:7.3.4	Involving others with specialist skills
B:7.3.5	Recognition of team approach

## 7.4: Workplace training objectives

B:7.4.1	To gaining the skills and confidence to resuscitate adult patients following cardio-pulmonary arrest
B:7.4.2	To caring for the unconscious patient
B:7.4.3	To recognition of an adult critically ill patient and begin resuscitation with appropriate urgency
B:7.4.4	To communicate well with the nursing staff in the ICU, patients, relatives and other hospital staff
B:7.4.5	To recognise one's own limitations and the nature and importance of team working
B:7.4.6	To make clear presentations of patients to other medical and nursing staff
B:7.4.7	To offer comfort to patient and relatives when there is no prospect of survival

### **Assessment guidelines**

- Ward based assessment of interaction with relatives by feedback from senior nursing staff
- Ward based assessment of interaction with nursing staff
- Ward based observation of skills in airway control and vascular access
- Training room based assessment of resuscitation skills (unless having completed ALS course within the last 12 months). This could be undertaken by a Resuscitation training Officer.
- Oral assessment of pharmacology and physiology in ICU setting
- Observation during presentation of assignment during weekly seminar/teaching session

## 8: Regional anaesthesia

Regional techniques are integral components of anaesthesia in the UK, 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. All trainee anaesthetists are expected to be able to perform both spinal and lumbar epidural block, but Schools of Anaesthesia will vary in the range of other blocks to which trainees can be exposed. The basic level curriculum thus indicates which other blocks might be learned at this stage, but only if appropriate opportunities are available. 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.

### 8.1: Knowledge

B:8.1.1	Pharmacology of local anaesthetics & spinal opioids
B:8.1.2	Anatomy of spine, nerve roots, cauda equina, intercostal nerves, brachial plexus, femoral nerve, inguinal canal, nerves at wrist and ankle, nerve supply of larynx
B:8.1.3	Dermatomes and levels for common operations (e.g. inguinal hernia, haemorrhoids)
B:8.1.4	Technique of spinal and epidural (including caudal) anaesthesia: single shot and catheter techniques
B:8.1.5	Management of the complications of spinal and epidural (including caudal) analgesia (associated hypotension, shivering, nausea & anxiety)
B:8.1.6	Management of accidental total spinal blockade
B:8.1.7	Management of dural tap
B:8.1.8	Techniques and complications of intravenous regional anaesthesia (IVRA),
B:8.1.9	Toxicity of local anaesthetic agents and its management
B:8.1.10	Management of failed/ deteriorating regional block
B:8.1.11	Methods of sedation
B:8.1.12	Absolute and relative contraindications to regional blockade
B:8.1.13	Dangers of accidental intravenous administration of local anaesthetic drugs.

### 8.2 Skills

B:8.2.1	Technique of spinal and epidural (including caudal) analgesia in any suitable patients
B:8.2.2	Recognition of contraindicated or unsuitable patients or those in whom a block would be difficult to perform
B:8.2.3	Management of hypotension, nausea, anxiety and shivering induced by spinal or epidural blockade
B:8.2.4	Post-operative care following spinal or epidural block (including urinary retention)
B:8.2.5	Prescription of continuous epidural infusions
B:8.2.6	Use of epidural techniques for post-operative pain management
B:8.2.7	Checking epidural/spinal packs
B:8.2.8	Technique of intravenous regional anaesthesia (IVRA)
B:8.2.9	Performance of some simple peripheral nerve blocks
B:8.2.10	Use of drugs to provide sedation
B:8.2.11	Combined general and regional anaesthesia
B:8.2.12	Appropriate safe practice in selecting, checking, drawing up, diluting, labelling and administration of local anaesthetic agents.

### **8.3: Attitudes and behaviour**

B:8.3.1	Safety first
B:8.3.2	Considering views of patient and surgeon
B:8.3.3	Management of theatre environment with awake patient
B:8.3.4	Planning list to allow block to take effect
B:8.3.5	Communication and reassurance
B:8.3.6	Consent for regional blockade

### **8.4: Workplace training objectives**

B:8.4.1	To obtain consent from patients
B:8.4.2	To create a safe and supportive environment in theatre
B:8.4.3	To position patients and to instruct and use assistants properly
B:8.4.4	To establish spinal and epidural blockade
B:8.4.5	To maintain epidural blockade using top up and continuous techniques with local anaesthetics and opioids
B:8.4.6	To perform IVRA
B:8.4.7	To perform some simple peripheral nerve blocks
B:8.4.8	To know the criteria for the safe discharge of patients from recovery

## 9: MANAGEMENT OF TRAUMA, STABILISATION AND TRANSFER OF PATIENTS

### 9.1: Knowledge

B:9.1.1	Performance and interpretation of the primary and secondary survey
B:9.1.2	Emergency airway management
B:9.1.3	Anatomy and technique of cricothyrotomy/tracheostomy/mini-tracheotomy
B:9.1.4	Establishing IV access: interosseous cannulation
B:9.1.5	Immediate specific treatment of life-threatening illness or injury, with special reference to thoracic and abdominal trauma
B:9.1.6	Recognition and management of hypovolaemic shock
B:9.1.7	Effects of trauma on gastric emptying
B:9.1.8	Central venous access: anatomy and techniques
B:9.1.9	Central venous pressure monitoring
B:9.1.10	Arterial pressure monitoring
B:9.1.11	Pleural drain insertion
B:9.1.12	Peritoneal lavage
B:9.1.13	Principles of the management of head injury
B:9.1.14	Mechanisms and effects of raised intra-cranial pressure: coup and contra-coup injuries
B:9.1.15	Methods of preventing the 'second insult' to the brain
B:9.1.16	Principles of anaesthesia in the presence of a recent head injury
B:9.1.17	Management of cervical spine injuries
B:9.1.18	Principles of the safe transfer of patients
B:9.1.19	Understanding portable monitoring systems
B:9.1.20	Recognition and management of dilutional coagulopathy
B:9.1.21	Factors affecting intraocular pressure

### 9.2: Skills

B:9.2.1	Assessment and immediate management of trauma patient: primary and secondary survey
B:9.2.2	Glasgow coma scale
B:9.2.3	Recognition of need for appropriate investigations (Hb, cross-match, chest X-ray etc)
B:9.2.4	Assessment and management of circulatory shock
B:9.2.5	Emergency airway management, oxygen therapy and ventilation
B:9.2.6	Chest drain insertion and management: emergency relief of tension pneumothorax
B:9.2.7	Cannulation of major vessels for resuscitation and monitoring
B:9.2.8	Care and immobilisation of cervical spine
B:9.2.9	Transfers within and between hospitals of adults who do <u>not</u> have life threatening conditions or a severe head injury
B:9.2.10	Analgesia for trauma victim
B:9.2.11	Urinary catheterisation in traumatised patient
B:9.2.12	Establishing central venous pressure monitoring: interpretation of readings
B:9.2.13	Establishing arterial pressure monitoring: interpretation of readings
B:9.2.14	Anaesthesia in the presence of a recent head injury (which itself does not require surgery)
B:9.2.15	Anaesthesia for a penetrating eye injury
B:9.2.16	Ability to deal with emergencies before, during and after anaesthesia and the ability to stabilise a patient's condition until senior assistance arrives

### 9.3: Attitudes and behaviour

B:9.3.1	Trauma matters: importance of speed of response and proper resuscitation
B:9.3.2	Try to offer the best chance of survival
B:9.3.3	Focus on the golden hour
B:9.3.4	Communication with appropriate specialists
B:9.3.5	Ability to take control when either appropriate or necessary
B:9.3.6	Insist on stabilisation before transfer
B:9.3.7	Pretransfer checking of kit and personnel
B:9.3.8	Communication with relatives

### 9.4: Workplace training objectives

B:9.4.1	To perform assessment, immediate care and management of the traumatised patient, (including the principles of managing a head injury)
B:9.4.2	To stabilise a patient's condition until senior assistance arrives
B:9.4.3	To know when to get senior or other specialist help
B:9.4.4	To know of how to deal with emergencies related to trauma before, during and after anaesthesia
B:9.4.5	To transfer a <i>stable</i> ventilated patient safely to another site, either in the same or in a different hospital

## 10: OBSTETRIC ANAESTHESIA AND ANALGESIA

### 10.1: Knowledge

B:10.1.1	Physiological changes associated with a normal pregnancy
B:10.1.2	Functions of the placenta: placental transfer: feto-maternal circulation
B:10.1.3	The fetus: fetal circulation: changes at birth
B:10.1.4	Pain pathways relevant to labour
B:10.1.5	Methods of analgesia during labour: indications and contraindications
B:10.1.6	Effect of pregnancy on the technique of general and regional anaesthesia
B:10.1.7	Principles of anaesthesia for incidental surgery during pregnancy

### 10.2: Skills (to observe or perform)

B:10.2.1	Preoperative assessment of pregnant patient
B:10.2.2	Anaesthesia for retained products of conception
B:10.2.3	Analgesia for labour
B:10.2.4	Management of APH and PPH
B:10.2.5	Management of dilutional coagulopathy
B:10.2.6	Intubation problems in the full-term mother
B:10.2.7	Anaesthesia/analgesia for instrumental delivery
B:10.2.8	Anaesthesia for retained placenta
B:10.2.9	Anaesthesia for caesarean section

### 10.3: Attitudes and behaviour

B:10.3.1	Attempt by conscientious care to recognise problems early
B:10.3.2	Seek senior help early
B:10.3.3	Good communication with mother, partner and other family members
B:10.3.4	Calmness under pressure
B:10.3.5	Timely assistance and prompt response to requests for analgesia and help
B:10.3.6	Reassurance to the mother
B:10.3.7	Compassion and kindness when the outcome of labour has been poor

### 10.4: Workplace training objectives

B:10.4.1	All trainees should have an attachment to an obstetric service to observe and preferably perform the listed skills. Before progressing to indirect supervision trainees must successfully complete the workplace assessment of the basic competences for obstetric anaesthesia described in Section 1.2 of <i>The CCT in Anaesthetics II</i> . If a trainee repeatedly fails to pass the assessment of basic competency they may not be signed off for the competences listed in Sections 10.1 to 10.3 above, and such a trainee must not work on an obstetric unit without direct supervision.
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# 11: PAEDIATRIC ANAESTHESIA

## 11.1: Knowledge (infants and children)

B:11.1.1	Anatomical differences in the airway, head, and spinal cord from the adult
B:11.1.2	Deciduous and permanent dentition
B:11.1.3	Physiological differences from the adult
B:11.1.4	Haematological and biochemical changes with age
B:11.1.5	Estimation of blood volume, replacement of fluid loss
B:11.1.6	Modification of drug dosages
B:11.1.7	Analgesia for children
B:11.1.8	Premedication, including local anaesthesia for venepuncture
B:11.1.9	Calculation of tube sizes, selection of masks and airways
B:11.1.10	Choice of breathing system
B:11.1.11	Upper respiratory tract infections and when to cancel operations
B:11.1.12	Psychological aspects of sick children

## 11.2: Skills (aged 5 and above, unless otherwise stated)

B:11.2.1	Preoperative assessment of the previously fit child
B:11.2.2	Anaesthesia in fit children for elective and urgent general, ENT, and ophthalmic surgery, minor trauma and other non-specialist procedures
B:11.2.3	Venous access (including local anaesthesia premedication)
B:11.2.4	Airway management, selection of correct sized tubes and masks etc
B:11.2.5	IV and gaseous induction of general anaesthesia
B:11.2.6	Spontaneous and ventilated maintenance of anaesthesia
B:11.2.7	Caudal and other simple blocks
B:11.2.8	Management and stabilisation of the injured child (excluding neonates and infants) until senior help arrives
B:11.2.9	Paediatric resuscitation (practised in a resuscitation teaching session) as described by the Resuscitation Council (UK)

## 11.3: Attitudes and behaviour

B:11.3.1	Communication with the child and parents
B:11.3.2	Reassurance for the child and parents
B:11.3.3	Issues of consent
B:11.3.4	Management of the environment during induction of anaesthesia

## 11.4: Workplace training objectives

B:11.4.1	The variation in paediatric exposure will vary greatly amongst trainees during ST Years 1 and 2. Trainees should take whatever opportunities they can to obtain the skills in the list above. It is accepted that not all trainees will have sufficient clinical opportunity to progress beyond direct supervision.
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## 11.5: 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.

### 11.5.1: Knowledge

B:11.5.1.1	Situations in which abuse of children may present
B:11.5.1.2	Signs indicative of a possible need to safeguard the infant or child
B:11.5.1.3	Awareness of local CP procedures

### 11.5.2: Skills

B:11.5.2.1	Clearly communicates concerns (includes documentation)
B:11.5.2.2	Ability to manage the child and their parents in a sensitive, appropriate manner

### 11.5.3 Attitudes and behaviour

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

### 11.5.4 Workplace and training objectives

B:11.5.4.1	Demonstrates knowledge of local safeguarding children procedures
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### 11.5.5 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

## 12: ANAESTHESIA AND THE ELDERLY

### 12.1: Knowledge

B:12.1.1	Physiological changes with age
B:12.1.2	Altered pharmacological response
B:12.1.3	Erosion of physiological reserve
B:12.1.4	Frequent co-morbidities
B:12.1.5	Positioning difficulties
B:12.1.6	Communication difficulties (eyesight, hearing, CVAs)
B:12.1.7	Mental clarity, memory loss
B:12.1.8	Causes of post-operative confusion
B:12.1.9	Importance of social circumstances

### 12.2: Skills

B:12.2.1	Modifications necessary when anaesthetising the elderly
B:12.2.2	Management of post-operative confusion

### 12.3: Attitudes and behaviour

B:12.3.1	Special efforts to communicate clearly (N.B. deafness and blindness)
B:12.3.2	Old people have feelings too
B:12.3.3	Respect for the social norms of older people
B:12.3.4	Problems of consent in mental infirmity
B:12.3.5	Recognising the limitations of therapy
B:12.3.6	Ethics of 'do not resuscitate' orders

### 12.4: Workplace training objectives

B:12.4.1	When anaesthetising elderly patients to be aware of the special problems they pose.
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## 13: Pain medicine

### 13.1: Knowledge

B:13.1.1	Afferent nociceptive pathways, dorsal horn, peripheral and central mechanisms, neuromodulatory systems, supraspinal mechanisms
B:13.1.2	Nociceptive pain, visceral pain, neuropathic pain
B:13.1.3	Influence of therapy on nociceptive mechanisms
B:13.1.4	The analgesic ladder
B:13.1.5	Simple analgesics: drugs and mechanisms
B:13.1.6	Opioids: drugs and mechanisms
B:13.1.7	Non-steroidal anti-inflammatory agents: drugs and mechanisms
B:13.1.8	Local anaesthetic agents: drugs and mechanisms
B:13.1.9	Measurement of pain
B:13.1.10	Organisation and objectives of an acute pain service

### 13.2: Skills

B:13.2.1	Assessment and management of postoperative pain and nausea
B:13.2.2	Monitoring acute pain and pain relieving methods
B:13.2.3	Use of simple analgesics: paracetamol: NSAIDs
B:13.2.4	Opioids: intramuscular, intravenous infusion, intravenous PCA, subcutaneous PCA, epidural, intrathecal
B:13.2.5	Regional local anaesthetic techniques: lumbar epidural, caudal epidural, simple peripheral nerve blocks
B:13.2.6	Inhalational analgesia
B:13.2.7	Specific clinical groups: children, elderly, impaired consciousness, intensive care
B:13.2.8	Contributing to an acute pain service

### 13.3: Attitudes and behaviour

B:13.3.1	Communication with patients, relatives, staff
B:13.3.2	Rapid response to unrelieved pain
B:13.3.3	Management tempered by awareness of potential complications and side effects
B:13.3.4	Awareness of limitations in pain management
B:13.3.5	Making efforts to follow patients up on the wards
B:13.3.6	Recognition of need for team approach and partnerships in a pain team

### 13.4: Workplace training objectives

B:13.4.1	To prescribe appropriately for patients in pain awaiting surgery
B:13.4.2	To prescribe pain management for patients after common surgical procedures
B:13.4.3	To institute appropriate action to relieve pain quickly in recovery
B:13.4.4	To become familiar and technically proficient with a variety of therapeutic methods listed above in the skills list

## 14: INFECTION CONTROL

### 14.1: Knowledge

B:14.1.1	Universal precautions and good working practices (hand washing, gloves etc)
B:14.1.2	Cross infection: modes and common agents
B:14.1.3	Emergence of resistant strains: antibiotic policies in a hospital
B:14.1.4	Common surgical infections: antibiotic choice and prophylaxis
B:14.1.5	Infections from contaminated blood
B:14.1.6	Hepatitis and HIV infections: modes of infection: natural history: at risk groups
B:14.1.7	Immunisation policy
B:14.1.8	Sterilisation of equipment
B:14.1.9	Strategy if contaminated

### 14.2: Skills

B:14.2.1	Preoperative assessment: awareness of at risk groups
B:14.2.2	Recognition of the immunocompromised patient
B:14.2.3	Administration of IV antibiotics: risk of allergy and anaphylaxis
B:14.2.4	Aseptic techniques
B:14.2.5	Use of disposable filters and breathing systems
B:14.2.6	Use of protective clothing/gloves/masks etc

### 14.3: Attitudes and behaviour

B:14.3.1	Every patient entitled to the best care available
B:14.3.2	Prevention of self-infection
B:14.3.3	Prevention of cross infection

### 15.4: Workplace training objectives

B:14.4.1	To think about and apply the skills and attitudes listed above to all patients
B:14.4.2	To wash hands between patients

## 15: CRITICAL INCIDENTS

### 15.1: Knowledge

Common causes of critical incidents

<i>Principles of the causes, detection and management of:</i>	
B:15.1.1	Cardiac and / or respiratory arrest
B:15.1.2	Unexpected Hypoxia with or without cyanosis
B:15.1.3	Unexpected increase in peak airway pressure
B:15.1.4	Progressive fall in minute volume during spontaneous respiration or IPPV
B:15.1.5	Fall in end tidal CO <sub>2</sub>
B:15.1.6	Rise in end tidal CO <sub>2</sub>
B:15.1.7	Rise in inspired CO <sub>2</sub>
B:15.1.8	Unexpected hypotension
B:15.1.9	Unexpected hypertension
B:15.1.10	Sinus Tachycardia
B:15.1.11	Arrhythmias (ST segment changes; sudden tachydysrhythmia; sudden bradycardia; Ventricular Ectopics – Ventricular tachycardia – Ventricular Fibrillation)
B:15.1.12	Convulsions
<i>Management of the following specific conditions:</i>	
B:15.1.13	Aspiration of vomit
B:15.1.14	Laryngospasm
B:15.1.15	Bronchospasm
B:15.1.16	Tension Pneumothorax
B:15.1.17	Gas / Fat / Pulmonary embolus
B:15.1.18	Adverse drug reactions
B:15.1.19	Anaphylaxis
B:15.1.20	Transfusion of miss-matched blood or blood products
B:15.1.21	Malignant hyperpyrexia
B:15.1.22	Inadvertent intra-arterial injection of irritant fluids
B:15.1.23	High spinal block
B:15.1.24	Local Anaesthetic toxicity
B:15.1.25	Failed intubation
B:15.1.26	Difficulty with IPPV and sudden or progressive loss of minute volume

### 15.2: Skills

B:15.2.1	Early recognition of deteriorating situation by careful monitoring
B:15.2.2	Practice response protocols in resuscitation room or in simulation with other relevant health care professionals when appropriate
B:15.2.3	Respond appropriately if any of them happen
B:15.2.4	Ability to obtain the attention of others when a crisis is occurring

### 15.3: Attitudes and behaviour

B:15.3.1	Vigilance
B:15.3.2	Awareness of the importance and process of critical incident reporting
B:15.3.3	Acceptance that it can happen to you: the unexpected happens to everybody
B:15.3.4	Following through a critical incident with warning flags, presentation at morbidity meetings, proper reporting etc
B:15.3.5	Information to patient and where necessary, counselling and advice

#### 15.4: Workplace training objectives

B:15.4.1	To have management plans for the listed critical incidents
B:15.4.2	To practice whenever possible in mock-up situations or simulation with other relevant health care professionals when appropriate
B:15.4.3	To respond appropriately if a critical incident occurs

## 16: MANAGEMENT OF RESPIRATORY AND CARDIAC ARREST

This section should be read in conjunction with Section 2.1 and Appendix 1. Trainees can be regarded as achieving the necessary competences if they have successfully completed an ALS course in the last 12 months.

### 16.1: Knowledge

B:16.1.1	Patient assessment: diagnosis of causes of cardio-respiratory arrest
B:16.1.2	Causes of cardio-respiratory arrest during induction, maintenance and recovery from anaesthesia
B:16.1.3	Importance of considering non-cardiac causes of cardio-respiratory arrest
B:16.1.4	Methods of airway management (mouth-mouth/nose, bag-mask, LMA, intubation)
B:16.1.5	Recognition and management of life-threatening arrhythmias including defibrillation and drug therapy
B:16.1.6	Recognition and management of non-cardiac causes of cardio-respiratory arrest
B:16.1.7	Knowledge of specific problems of paediatric resuscitation
B:16.1.8	Ethical aspects of resuscitation

### 16.2: Skills

B:16.2.1	Recognition of cardiac and respiratory arrest
B:16.2.2	Resuscitation equipment checklist
B:16.2.3	ABC
B:16.2.4	Practical life support – following current algorithm
B:16.2.5	Managing the airway
B:16.2.6	External chest compression
B:16.2.7	Vascular access, suitability of sites
B:16.2.8	Arrhythmia recognition and management (drugs/ defibrillators/ pacemakers)
B:16.2.9	Defibrillation and defibrillator settings
B:16.2.10	Deciding when further resuscitation is futile
B:16.2.11	Diagnosis of death
B:16.2.12	Fluid balance assessment/management

### 16.3: Attitudes and behaviour

B:16.3.1	Always resuscitate unless certain it is inappropriate
B:16.3.2	Not to resuscitate orders
B:16.3.3	Recognise need for team leader
B:16.3.4	Desire to offer the best possible chance of survival
B:16.3.5	Recognition of futility
B:16.3.6	Dealing sensitively and honestly with relatives
B:16.3.7	Medico-legal aspects of resuscitation (police reports etc)

### 16.4: Workplace training objectives

B:16.4.1	To resuscitate adults (and know the principles of resuscitating children) from cardio-respiratory arrest to the standards set by the Resuscitation Council [UK]
B:16.4.2	To discuss ethical aspects of resuscitation

## 17: ANATOMY

Trainees should be able to demonstrate a good understanding of human anatomy relevant to the practice of anaesthesia at basic level and to support progress to intermediate level training.

### 17.1: Knowledge

<b>Respiratory System</b>	
B:17.1.1	Mouth, nose, pharynx, larynx, trachea, main bronchi, segmental bronchi, structure of bronchial tree: differences in the child
B:17.1.2	Airway and respiratory tract, blood supply, innervation and lymphatic drainage
B:17.1.3	Pleura, mediastinum and its contents
B:17.1.4	Lungs, lobes, microstructure of lungs
B:17.1.5	Diaphragm, other muscles of respiration, innervation
B:17.1.6	The thoracic inlet and 1st rib
B:17.1.7	Interpretation of a normal chest x-ray
<b>Cardiovascular system</b>	
B:17.1.8	Heart, chambers, conducting system, blood and nerve supply.
B:17.1.9	Pericardium
B:17.1.10	Great vessels, main peripheral arteries and veins
B:17.1.11	Fetal and materno - fetal circulation
<b>Nervous system</b>	
B:17.1.12	Brain and its subdivisions
B:17.1.13	Spinal cord, structure of spinal cord, major ascending and descending pathways
B:17.1.14	Spinal meninges, subarachnoid and extradural space, contents of extradural space
B:17.1.15	CSF and its circulation
B:17.1.16	Spinal nerves, dermatomes
B:17.1.17	Brachial plexus, nerves of arm
B:17.1.18	Intercostal nerves
B:17.1.19	Nerves of abdominal wall
B:17.1.20	Nerves of leg and foot
B:17.1.21	Autonomic nervous system
B:17.1.22	Sympathetic innervation, sympathetic chain, ganglia and plexuses
B:17.1.23	Parasympathetic innervation
B:17.1.24	Stellate ganglion
B:17.1.25	Cranial nerves: base of skull: trigeminal ganglion
B:17.1.26	Innervation of the larynx
B:17.1.27	Eye and orbit
<b>Vertebral column</b>	
B:17.1.28	Cervical, thoracic, and lumbar vertebrae
B:17.1.29	Sacrum, sacral hiatus
B:17.1.30	Ligaments of vertebral column
B:17.1.31	Surface anatomy of vertebral spaces, length of cord in child and adult

<i>Surface anatomy</i>	
B:17.1.32	Structures in antecubital fossa
B:17.1.33	Structures in axilla: identifying the brachial plexus
B:17.1.34	Large veins and anterior triangle of neck
B:17.1.35	Large veins of leg and femoral triangle
B:17.1.36	Arteries of arm and leg
B:17.1.37	Landmarks for tracheostomy, cricothyrotomy
B:17.1.38	Abdominal wall (including the inguinal region): landmarks for suprapubic urinary and peritoneal lavage catheters

## **17: Objectives for trainees**

This knowledge base will be tested in the Primary Examination. Some clinical aspects may be asked in the workplace assessments.

## 18: PHYSIOLOGY AND BIOCHEMISTRY

Trainees should have a good general understanding of human physiology, be able to apply physiological principles and knowledge to clinical practice at basic level and to support progress to intermediate level training.

### 18.1: Knowledge

<i>General</i>	
B:18.1.1	Organisation of the human body and control of internal environment
B:18.1.2	Variations with age
B:18.1.3	Function of cells; genes and their expression
B:18.1.4	Cell membrane characteristics; receptors
B:18.1.5	Protective mechanisms of the body
<i>Biochemistry</i>	
B:18.1.6	Acid base balance and buffers
B:18.1.7	Ions e.g. Na <sup>+</sup> , K <sup>+</sup> , Ca <sup>++</sup> , Cl <sup>-</sup> , HCO <sub>3</sub> <sup>-</sup>
B:18.1.8	Cellular metabolism
B:18.1.9	Enzymes
<i>Body fluids and their functions and constituents</i>	
B:18.1.10	Capillary dynamics and interstitial fluid
B:18.1.11	Osmolarity: osmolality, partition of fluids across membranes
B:18.1.12	Lymphatic system
B:18.1.13	Special fluids especially cerebrospinal fluid: also pleural, pericardial
B:18.1.14	and peritoneal fluids
<i>Haematology and Immunology</i>	
B:18.1.15	Red blood cells: haemoglobin and its variants
B:18.1.16	Blood groups
B:18.1.17	Haemostasis and coagulation
B:18.1.18	White blood cells
B:18.1.19	The inflammatory response
B:18.1.20	Immunity and allergy
<i>Muscle</i>	
B:18.1.21	Action potential generation and its transmission
B:18.1.22	Neuromuscular junction and transmission
B:18.1.23	Muscle types
B:18.1.24	Skeletal muscle contraction
B:18.1.25	Smooth muscle contraction: sphincters
B:18.1.26	Motor unit
<i>Heart/Circulation</i>	
B:18.1.27	Cardiac muscle contraction
B:18.1.28	The cardiac cycle: pressure and volume relationships
B:18.1.29	Rhythmicity of the heart
B:18.1.30	Regulation of cardiac function; general and cellular
B:18.1.31	Control of cardiac output (including the Starling relationship)
B:18.1.32	Fluid challenge and heart failure
B:18.1.33	Electrocardiogram and arrhythmias

<i>Heart/Circulation (continued)</i>	
B:18.1.34	Neurological and humoral control of systemic blood pressures, blood volume and blood flow (at rest and during physiological disturbances e.g. exercise, haemorrhage and Valsalva manoeuvre)
B:18.1.35	Peripheral circulation: capillaries, vascular endothelium and arteriolar smooth muscle
B:18.1.36	Characteristics of special circulations including: pulmonary, coronary, cerebral, renal, portal and foetal
<i>Renal tract</i>	
B:18.1.37	Blood flow and glomerular filtration and plasma clearance
B:18.1.38	Tubular function and urine formation
B:18.1.39	Assessment of renal function
B:18.1.40	Regulation of fluid and electrolyte balance
B:18.1.41	Regulation of acid-base balance
B:18.1.42	Micturition
B:18.1.43	Pathophysiology of acute renal failure
<i>Respiration</i>	
B:18.1.44	Gaseous exchange: O <sub>2</sub> and CO <sub>2</sub> transport, hypoxia and hyper- and hypocapnia, hyper- and hypobaric pressures
B:18.1.45	Functions of haemoglobin in oxygen carriage and acid-base equilibrium
B:18.1.46	Pulmonary ventilation: volumes, flows, dead space
B:18.1.47	Effect of IPPV on lungs
B:18.1.48	Mechanics of ventilation: ventilation/perfusion abnormalities
B:18.1.49	Control of breathing, acute and chronic ventilatory failure, effect of oxygen therapy
B:18.1.50	Non-respiratory functions of the lungs
<i>Nervous System</i>	
B:18.1.51	Functions of nerve cells: action potentials, conduction and synaptic mechanisms
B:18.1.52	The brain: functional divisions
B:18.1.53	Intracranial pressure: cerebrospinal fluid, blood flow
B:18.1.54	Maintenance of posture
B:18.1.55	Autonomic nervous system: functions
B:18.1.56	Neurological reflexes
B:18.1.57	Motor function: spinal and peripheral
B:18.1.58	Senses: receptors, nociception, special senses
B:18.1.59	Pain: afferent nociceptive pathways, dorsal horn, peripheral and central mechanisms, neuromodulatory systems, supraspinal mechanisms, visceral pain, neuropathic pain, influence of therapy on nociceptive mechanisms
B:18.1.60	Spinal cord: anatomy and blood supply, effects of spinal cord section
<i>Liver</i>	
B:18.1.61	Functional anatomy and blood supply
B:18.1.62	Metabolic functions
<i>Gastrointestinal</i>	
B:18.1.63	Gastric function; secretions, nausea and vomiting
B:18.1.64	Gut motility, sphincters and reflex control
B:18.1.65	Digestive functions
<i>Metabolism</i>	
B:18.1.66	Nutrients: carbohydrates, fats, proteins, vitamins and minerals
B:18.1.67	Metabolic pathways, energy production and enzymes; metabolic rate
B:18.1.68	Hormonal control of metabolism: regulation of plasma glucose, response to trauma
B:18.1.69	Physiological alterations in starvation, obesity, exercise and the stress response
B:18.1.70	Body temperature and its regulation

<i>Endocrinology</i>	
B:18.1.71	Mechanisms of hormonal control: feedback mechanisms, effect on membrane and intracellular receptors
B:18.1.72	Hypothalamic and pituitary function
B:18.1.73	Adrenocortical hormones
B:18.1.74	Adrenal medulla: adrenaline (epinephrine) and noradrenaline (norepinephrine)
B:18.1.75	Pancreas: insulin, glucagon and exocrine function
B:18.1.76	Thyroid and parathyroid hormones and calcium homeostasis
<i>Pregnancy</i>	
B:18.1.77	Physiological changes associated with normal pregnancy
B:18.1.78	Materno-fetal, fetal and neonatal circulation
B:18.1.79	Functions of the placenta: placental transfer
B:18.1.80	Fetus: changes at birth

## **18.2: Objectives for trainees**

This knowledge base will be tested in the Primary Examination. Some clinical aspects may be asked in the workplace assessments.

## 19: PHARMACOLOGY

Trainees should have a good understanding of general pharmacological principles, together with knowledge of drugs likely to be encountered in (a) anaesthetic practice and (b) current treatment of patients presenting for anaesthesia. The level of knowledge should be sufficient to enable clinical practice at basic level and to support progress to intermediate level training.

### 19.1: Knowledge

<i>Applied chemistry</i>	
B:19.1.1	Types of intermolecular bonds
B:19.1.2	Laws of diffusion. Diffusion of molecules through membranes
B:19.1.3	Solubility and partition coefficients
B:19.1.4	Ionization of drugs
B:19.1.5	Drug isomerism
B:19.1.6	Protein binding
B:19.1.7	Oxidation and reduction
<i>Mode of action of drugs</i>	
B:19.1.8	Dynamics of drug-receptor interaction
B:19.1.9	Agonists, antagonists, partial agonists, inverse agonists
B:19.1.10	Efficacy and potency. Tolerance
B:19.1.11	Receptor function and regulation
B:19.1.12	Metabolic pathways; enzymes; drug: enzyme interactions; Michaelis-Menten equation
B:19.1.13	Enzyme inducers and inhibitors
B:19.1.14	Mechanisms of drug action
B:19.1.15	Ion channels: types: relation to receptors. Gating mechanisms
B:19.1.16	Signal transduction: cell membrane/receptors/ion channels to intracellular molecular targets, second messengers
B:19.1.17	Action of gases and vapours
B:19.1.18	Osmotic effects. pH effects. Adsorption and chelation
B:19.1.19	Mechanisms of drug interactions:
B:19.1.20	Inhibition and promotion of drug uptake. Competitive protein binding. Receptor interactions
B:19.1.21	Effects of metabolites and other degradation products.
<i>Pharmacokinetics and pharmacodynamics</i>	
B:19.1.22	Drug uptake from: gastrointestinal tract, lungs, transdermal, subcutaneous, IM, IV, epidural, intrathecal routes
B:19.1.23	Bioavailability
B:19.1.24	Factors determining the distribution of drugs: perfusion, molecular size, solubility, protein binding
B:19.1.25	The influence of drug formulation on disposition
B:19.1.26	Distribution of drugs to organs and tissues: Body compartments
B:19.1.27	Influence of specialised membranes: tissue binding and solubility
B:19.1.28	Materno-fetal distribution
B:19.1.29	Distribution in CSF and extradural space
B:19.1.30	Modes of drug elimination:
B:19.1.31	Direct excretion
B:19.1.32	Metabolism in organs of excretion: phase I & II mechanisms
B:19.1.33	Renal excretion and urinary pH
B:19.1.34	Non-organ breakdown of drugs
B:19.1.35	Pharmacokinetic analysis:
B:19.1.36	Concept of a pharmacokinetic compartment
B:19.1.37	Apparent volume of distribution
B:19.1.38	Clearance

<i>Pharmacokinetics and pharmacodynamics (continued)</i>	
B:19.1.39	Clearance concepts applied to whole body and individual organs
B:19.1.40	Simple 1 and 2 compartmental models: concepts of wash-in and wash-out curves
B:19.1.41	Physiological models based on perfusion and partition coefficients
B:19.1.42	Effect of organ blood flow: Fick principle
B:19.1.43	Pharmacokinetic variation: influence of body size, sex, age, disease, pregnancy, anaesthesia, trauma, surgery, smoking, alcohol and other drugs
B:19.1.44	Effects of acute organ failure (liver, kidney) on drug elimination
B:19.1.45	Pharmacodynamics: concentration-effect relationships: hysteresis
B:19.1.46	Pharmacogenetics: familial variation in drug response
B:19.1.47	Adverse reactions to drugs: hypersensitivity, allergy, anaphylaxis, anaphylactoid reactions
Systematic Pharmacology	
B:19.1.48	Anaesthetic gases and vapours
B:19.1.49	Hypnotics, sedatives and intravenous anaesthetic agents
B:19.1.50	Simple analgesics
B:19.1.51	Opioids and other analgesics; and opioid antagonists
B:19.1.52	Non-steroidal anti-inflammatory drugs
B:19.1.53	Neuromuscular blocking agents (depolarising & non-depolarising), and anticholinesterases
B:19.1.54	Drugs acting on the autonomic nervous system: cholinergic and adrenergic agonists and antagonists
B:19.1.55	Drugs acting on the heart & cardiovascular system (including inotropes, vasodilators, vasoconstrictors, antiarrhythmics, diuretics)
B:19.1.56	Drugs acting on the respiratory system (including respiratory stimulants & bronchodilators)
B:19.1.57	Antihypertensives
B:19.1.58	Anticonvulsants
B:19.1.59	Anti-diabetic agents
B:19.1.60	Diuretics
B:19.1.61	Antibiotics
B:19.1.62	Corticosteroids and other hormone preparations
B:19.1.63	Antacids. Drugs influencing gastric secretion and motility
B:19.1.64	Antiemetic agents
B:19.1.65	Local anaesthetic agents
B:19.1.66	Plasma volume expanders
B:19.1.67	Antihistamines
B:19.1.68	Antidepressants
B:19.1.69	Anticoagulants
B:19.1.70	Vitamin K, B <sub>12</sub> and thiamine

## 19.2: Objectives for trainees

This knowledge base will be tested in the Primary Examination. Some clinical aspects may be asked in the workplace assessments.

## 20: PHYSICS AND CLINICAL MEASUREMENT

Candidates should have a good understanding of the principles of physics and clinical measurement with an emphasis on the function of monitoring equipment safety and measurement techniques.

### 20.1: Knowledge

B:20.1.1	Mathematical concepts: relationships and graphs
B:20.1.2	Concepts only of exponential functions and logarithms: wash-in, wash-out and tear away
B:20.1.3	Basic measurement concepts: linearity, drift, hysteresis, signal: noise ratio, static and dynamic response
B:20.1.4	SI units: fundamental and derived units
B:20.1.5	Other systems of units where relevant to anaesthesia (e.g. mmHg, bar, atmospheres)
B:20.1.6	Simple mechanics: mass, force, work and power
B:20.1.7	Heat: freezing point, melting point, latent heat
B:20.1.8	Conduction, convection, radiation
B:20.1.9	Mechanical equivalent of heat: laws of thermodynamics
B:20.1.10	Measurement of temperature and humidity
B:20.1.11	Colligative properties: osmometry
B:20.1.12	Physics of gases and vapours
B:20.1.13	Absolute and relative pressure
B:20.1.14	The gas laws; triple point; critical temperature and pressure
B:20.1.15	Density and viscosity of gases
B:20.1.16	Laminar and turbulent flow; Poiseuille's equation, the Bernoulli principle
B:20.1.17	Vapour pressure: saturated vapour pressure
B:20.1.18	Measurement of volume and flow in gases and liquids
B:20.1.19	The pneumotachograph and other respirometers
B:20.1.20	Principles of surface tension
B:20.1.21	Basic concepts of electricity and magnetism
B:20.1.22	Capacitance, inductance and impedance
B:20.1.23	Amplifiers: band width, filters
B:20.1.24	Amplification of biological potentials: ECG, EMG, EEG
B:20.1.25	Sources of electrical interference
B:20.1.26	Processing, storage and display of physiological measurements
B:20.1.27	Bridge circuits
B:20.1.28	Basic principles and safety of lasers
B:20.1.29	Basic principles of ultrasound and the Doppler effect
B:20.1.30	Principles of cardiac pacemakers and defibrillators
B:20.1.31	Electrical hazards: causes and prevention
B:20.1.32	Electrocution, fires and explosions
B:20.1.33	Diathermy and its safe use
B:20.1.34	Principles of pressure transducers
B:20.1.35	Resonance and damping, frequency response
B:20.1.36	Measurement and units of pressure
B:20.1.37	Direct and indirect methods of blood pressure measurement
B:20.1.38	Principles of pulmonary artery and wedge pressure measurement
B:20.1.39	Cardiac output: Fick principle, thermodilution
B:20.1.40	Measurement of gas and vapour concentrations, (oxygen, carbon dioxide, nitrous oxide, and volatile anaesthetic agents) using infra-red, paramagnetic, fuel cell, oxygen electrode and mass spectrometry methods
B:20.1.41	Measurement of pH, pCO <sub>2</sub> , pO <sub>2</sub>
B:20.1.42	Measurement CO <sub>2</sub> production/ oxygen consumption/ respiratory quotient
B:20.1.43	Simple tests of pulmonary function e.g. peak flow measurement, spirometry
B:20.1.44	Capnography

B:20.1.45	Pulse oximetry
B:20.1.46	Measurement of neuromuscular blockade
B:20.1.47	Measurement of pain

## **20.2: Objectives for trainees**

This knowledge base will be tested in the Primary Examination. Some clinical aspects of safety and measurement will probably be asked in the workplace assessments.

## 21: STATISTICAL METHODS

Trainees will be required to demonstrate understanding of basic statistical concepts, but will not be expected to have practical experience of statistical methods. Emphasis will be placed on methods by which data may be summarised and presented, and on the selection of statistical measures for different data types. Candidates will be expected to understand the statistical background to measurement error and statistical uncertainty.

### 21.1: Knowledge

<i>Data Collection.</i>	
B:21.1.1	Simple aspects of study design
B:21.1.2	Defining the outcome measures and the uncertainty of measuring them
B:21.1.3	The basic concept of meta-analysis and evidence based medicine
<i>Descriptive statistics</i>	
B:21.1.4	Types of data and their representation
B:21.1.5	The normal distribution as an example of parametric distribution
B:21.1.6	Indices of central tendency and variability
<i>Deductive and inferential statistics</i>	
B:21.1.7	Simple probability theory and the relation to confidence intervals
B:21.1.8	The null hypothesis
B:21.1.9	Choice of simple statistical tests for different data types
B:21.1.10	Type I and type II errors

### 21.2: Objectives for trainees

This knowledge base will be tested in the Primary Examination. Some clinical aspects may be asked in the workplace assessments.

## **APPENDIX D:**

### **GUIDELINES FOR MANAGING TRAINEES WHO HAVE NOT PASSED THE BASIC LEVEL ASSESSMENT OF KNOWLEDGE (THE PRIMARY FRCA or equivalent) BY THE END OF ST YEAR 2**

The Primary FRCA Examination (or a prospectively approved equivalent qualification) assesses the knowledge and understanding (and some of the skills and attitudes) required to inform and underpin the clinical practice of basic level training. Trainees who have not been able to pass the Primary FRCA Examination (or a prospectively approved equivalent) will not be able to progress from basic to intermediate level training. Trainees are limited in the number of attempts they can have at the Primary FRCA Examination (or a prospectively approved equivalent). The following action is advised when managing trainees who have not passed the Primary FRCA Examination (or a prospectively approved equivalent) by the end of ST year 2:

- Providing that 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 knowledge<sup>11</sup>. 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 examination (or an approved equivalent), this will normally result in withdrawal from the run-through training programme and loss of the training number;
- If the trainee subsequently passes the Primary FRCA Examination (or an approved equivalent) after having lost their NTN, the trainee will have to apply in open competition to return to a training programme.
- If in addition to having failed the assessment of knowledge 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.

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<sup>11</sup> “Gold Guide Appendix 1 paragraph 30 page 93

## APPENDIX E:

### BLUEPRINT OF THE PRIMARY FRCA EXAMINATION MAPPED AGAINST THE CCT COMPETENCES

Competences	MCQ	OSCE	SOE 1	SOE 2
Anaesthesia, HDU and ICU equipment: monitoring and safety		X		X
Anaesthesia and the elderly		X		X
Anatomy		X		X
Critical incidents		X		X
Day surgery		X		X
ENT		X		X
General surgery / Gynaecology / Urology (± Transplantation)		X		X
Induction of general anaesthesia		X	X	X
Infection control			X	X
Intensive and high dependency care		X		X
Intraoperative care (including sedation)		X	X	X
Management of respiratory and cardiac arrest		X		X
Management of trauma, stabilisation and transfer of patients				X
Obstetric anaesthesia and analgesia		X		X
Orthopaedic anaesthesia		X		X
Paediatric anaesthesia		X		X
Pain medicine	X	X	X	X
Pharmacology	X		X	
Physics and clinical measurement	X	X		X
Physiology and biochemistry	X		X	
Postoperative and recovery care				X
Premedication	X		X	X
Preoperative assessment		X		X
Regional anaesthesia		X	X	X

Statistical basis of clinical trial management	X		X	
Statistical methods	X	X	X	
Trauma and accidents		X		X
Vascular anaesthesia		X		X

## APPENDIX F:

### BLUEPRINT OF WORKPLACE BASED ASSESSMENTS MAPPED AGAINST BASIC LEVEL COMPETENCES

COMPETENCES	WORK PLACE BASED ASSESSMENTS			
	DOPS	Anaes- CEX	CBD	MSF
Anaesthesia, HDU and ICU equipment: monitoring and safety	X	X		
Anaesthesia and the elderly	X	X	X	X
Anatomy			X	
Critical incidents	X	X	X	X
Day surgery	X	X	X	X
ENT	X	X	X	X
General surgery / Gynaecology / Urology (± Transplantation)	X	X	X	X
Induction of general anaesthesia	X	X	X	
Initial Assessment of Competency	X			
Infection control	X	X	X	
Intensive and high dependency care	X	X	X	X
Intraoperative care (including sedation)	X	X	X	
Management of respiratory and cardiac arrest	X	X	X	X
Management of trauma, stabilisation and transfer of patients	X	X	X	
Obstetric anaesthesia and analgesia	X	X	X	X
Orthopaedic anaesthesia	X	X	X	X
Paediatric anaesthesia	X	X	X	X
Pain medicine		X	X	X
Pharmacology			X	
Physics and clinical measurement			X	
Physiology and biochemistry			X	
Postoperative and recovery care	X	X	X	

Preoperative assessment	X	X	X	X
Pre-medication	X	X	X	X
Regional anaesthesia	X	X	X	X
Statistical methods			X	
Trauma and accidents	X	X	X	X
Vascular anaesthesia	X	X	X	X