MODULE 3
Anaesthesia for Major and Trauma Surgery

This is a mandatory Module in Basic Training.

Trainee’s Aims

This is the next Module that new Trainees must complete after Module 1. This Module relates to clinical experience in anaesthesia for major elective surgery, emergency surgery and trauma surgery, including gastrointestinal and hepatobiliary surgery, laparoscopic surgery and the perioperative care of trauma patients.

The aim of Module 3 is for Trainees to acquire clinical abilities and skills in managing complex, high-risk, and injured patients, and those with co-existing medical conditions that are relevant to anaesthesia, and to build on what they learned in Module 1. This includes learning to integrate and apply knowledge and skills in clinical management.

Learning Objectives

These are what the Trainee needs to learn. They are presented as:

- Knowledge
- Clinical management (“knows how”) that applies knowledge and clinical skills to manage the patient
- Skills (clinical and technical)
- Attitudes and behaviours

Knowledge — Basic Sciences

Trainees are required to revise the relevant subjects in the Basic Sciences as set out in the ANZCA document Syllabus for the Basic Sciences in Anaesthesia and Intensive Care (1st edition 1995) and as updated on the ANZCA website. Trainees are expected to apply Basic Science principles in clinical practice.

Knowledge — Education and Self-development

Trainees are expected to build on their self-development knowledge from Module 1. In this Module they need to understand the principles of small group learning.

Clinical Management

Trainees are expected to understand relevant principles, to apply knowledge in practice, and to demonstrate abilities in the anaesthesia management of patients for major and trauma surgery (eg, ASA 3 and 4 and E). These include the following.

Professional Practice

- Compliance with the relevant policies, recommendations and guidelines in professional practice as contained in ANZCA Professional Documents (see Appendix)
Anaesthesia for High-risk Elective and Emergency Surgery

- Preoperative evaluation and resuscitation
- Postoperative care
- Thromboembolism prophylaxis
- Perioperative and prophylactic antibiotics
- Management of coagulopathies
- Regional anaesthesia for abdominal, vascular, and imaging procedures including anatomy, and physiological and pharmacological aspects
- Informed consent and consent for incompetent patients
- Management of postoperative pain, phantom-limb pain and pain from injury

Anaesthesia for Trauma Surgery

- Assessment and immediate care; primary and secondary survey
- Trauma severity scores
- Emergency airway management
- Establishing intravenous access
- Priorities of resuscitation, investigations, and surgical procedures
- Physio-biochemical effects of trauma
- Managing facial, head and cervical spine injuries
- Glasgow Coma Scale and other scores of consciousness
- Pathophysiology of head injury including changes in cerebral blood flow, cerebral metabolism and intracranial pressure
- Pathophysiology and management of shock
- Pathophysiology of blood loss and massive blood transfusion
- Volume replacement
- Managing abdominal and chest injuries
- Management of burns procedures, including:
  - Understanding the pathophysiology of burns
  - Anaesthesia for debridement and skin grafting
  - Drills in burns resuscitation
- Managing coagulopathies
- Organisation of trauma and retrieval services
- Transport of ventilated or injured patients including portable ventilators and monitoring systems

Co-existing Medical Conditions Relevant to Anaesthesia

- Endocrine disorders including phaeochromocytoma, hyperthyroidism, hypothyroidism, and diabetes mellitus
- Disorders of the cardiovascular system (see Module 5)
- Disorders of the respiratory system (see Module 5)
- Disorders of the nervous system
- Disorders of the liver, biliary tract and gastrointestinal system
- Renal disorders
- Water, electrolyte and acid-base disturbances
- Haematological disorders, including coagulopathies
- Skin and musculoskeletal disorders, including rheumatoid arthritis and ankylosing spondylitis
- Psychiatric disorders and substance abuse
- Disorders associated with ageing
- Obesity
Skills — Clinical Skills

In this Module, Trainees will provide safe anaesthesia for:

- Major abdominal surgery
- Laparoscopic surgery
- Trauma surgery

Trainees will revise pre-assessment skills, including taking an appropriate history and performing an appropriate physical examination (including airway assessment, cardiovascular, respiratory and neurological examinations) to assess the patient’s status.

Trainees are required to be competent in the following technical skills.

- Skills learned in Module 1, especially securing an airway, arterial and central venous cannulation, and rapid sequence induction
- Cricothyroidotomy and percutaneous tracheostomy
- Cannulation of major vessels for volume resuscitation
- Awake fibreoptic intubation
- Thoracic and lumbar epidural and spinal anaesthesia
- Blood salvage and conservation
- Regional nerve blocks for abdominal and lower limb surgery
- Chest drain insertion
- Peritoneal lavage and interpretation
- Immobilisation and care of cervical spine injuries
- Awake fibreoptic intubation
- Thoracic and lumbar epidural and spinal anaesthesia
- Blood salvage and conservation
- Regional nerve blocks for abdominal and lower limb surgery
- Chest drain insertion
- Peritoneal lavage and interpretation
- Immobilisation and care of cervical spine injuries

Trainees should be familiar with clinical drills for crises management. These include:

- Drills in Module 1, especially for airway emergencies eg, “cannot intubate, cannot ventilate”, difficult airway, hypoxia and abnormal end-tidal CO₂ levels
- Managing major intraoperative events in aneurysm and abdominal surgery
- Drill for the primary and secondary survey
- Drill for raised intracranial pressure
- Drill for tension pneumothorax
- Drill for managing severe haemorrhage
- Drill for managing cardiac arrest (ACLS Algorithm)
- Drill for managing malignant hyperthermia
- Drill for raised intracranial pressure

Skills — Educational Skills

Trainees are expected to learn educational skills in Modules 1 to 3 that will enable them to develop the following:

- A review of their personal learning plan as specified in their Learning Portfolio
- Identification of the factors that lead to deviation from the original learning plan
- A learning plan in the Learning Portfolio in which basic science teaching is linked to clinical practice
The Trainee should acquire the following core skills.

### During Basic Training
- Maintaining a Learning Portfolio
- Developing a study plan for the rest of the training period
- Reviewing study plans and correcting for deviations (e.g., catching up on deficient knowledge or experience)
- Reflecting on previous learning experiences with the aid of the Learning Portfolio
- Linking basic science teaching with clinical practice
- Studying effectively
- Participating in small-group learning and educational activities
- Being aware of decision-making processes
- Managing time effectively for study, work and home/leisure
- Giving and receiving feedback
- Developing insight into personal limitations
- Using the Internet including email
- Conducting and appraising literature searches
- Appraising journal articles including the application of statistics
- Carrying out oral presentations and professional communication. Specific skills in communication are outlined in Modules 2, 11 and 12

### Attitudes and Behaviours
Trainees are expected to develop the attitudes and behaviours that are obligatory in specialist medical practice.

Core attitudes and behaviours that Trainees must cultivate during the whole period of FANZCA training include the following.

### Specialist Practice
- To attain the attributes of a specialist as a:
  - Medical expert
  - Communicator
  - Collaborator
  - Manager
  - Health advocate
  - Scholar and teacher
  - Professional
- To practise good communication with colleagues, patients and others
- To work as a member of a team, but to assume responsibilities and/or delegate duties as a team leader when necessary
- To commit to, and believe in, a culture of safety and ethical, high quality care
- To accept that medical knowledge and skills are not the only requirements of specialist practice
- To be aware of medicolegal obligations relating to medical practice
- To have insight into one’s own limitations, abilities and areas of expertise
- To commit to lifelong continuing professional development

### Professionalism and Ethics
To commit to, and believe in the ethical and professional principles of:
- Altruism: the best care for the patient must be the principal driving force of practice
- Patient autonomy: patients’ ability to determine their treatment
- Beneficence: the principle of “doing good” to patients
• Non-maleficence: the principle of not doing harm to patients
• Fidelity: faithfulness to one’s duties and obligations. This principle underlies excellence in patient care, confidentiality, telling the truth, a commitment to continuing professional development and lifelong learning, and not neglecting patient care
• Social justice: the right of all patients to be fairly treated
• Utility: the principle of doing the most good for the greatest number of people
• Duty to oneself in terms of personal health care, and maintenance of competence to practise
• Accountability: the anaesthetist is responsible for his/her actions
• Honour and integrity in all conduct, including the generation and use of resources
• Respect for others, including a responsibility to work as a team and to practice conflict resolution
• Appropriate response to clinical error

Patient Considerations
To commit to, and believe in, the rights of patients with respect to:
• Autonomy
• Confidentiality of the doctor-patient relationship
• Appropriate, excellent clinical care, including pre-operative assessment
• Informed consent
• Comprehension of the risks of anaesthesia techniques
• Appropriate care irrespective of race, culture, gender, and socio-economic status

Research Considerations
• To value rigorous educational and scientific processes
• To distinguish between practice with a sound scientific basis and that which requires further objective assessment
• To commit to the ethical principles of research

Assessment
The Module 3 Supervisor will validate the Trainee’s completion of the module in accordance with the process outlined in College Professional Document TE2. This will involve the Trainee assessing whether she/he has achieved the core aims (Trainee’s aims) of the module. The Module 3 Supervisor will review the Trainee’s Learning Portfolio as part of this assessment.

The Supervisor of Training and other Consultants will evaluate the Trainee’s overall performance in the In-Training Assessment (ITA) process. Aspects of clinical performance, education skills, and attitudes will be reviewed. The ITA will remain a formative assessment conducted every six months, independent of Module assessment.

The Primary and Final Examinations will be summative assessments of the Trainee. Knowledge of basic sciences, clinical measurement, monitoring, and statistics in Module 3 will be assessed in the Primary Examination. Clinical management and clinical skills in this Module will be assessed in the Final Examination.

The Learning Portfolio is an integral tool for self-assessment (as well as for recording clinical experience and developing study plans). The Trainee is expected to self-evaluate his/her education skills and learning experience from the Learning Portfolio. For example, the Learning Portfolio should show the Trainee’s progress through the Module, as records of technical skills learned, topics reviewed and oral presentations delivered.