MODULE 8
Paediatric Anaesthesia

Duration Required: A minimum 50 sessions (½ days) of clinical experience is required — TE10 (2003) Recommendations for Vocational Training Programs

Trainee’s Aims

In Module 8 clinical experience is gained from participating in anaesthesia for paediatric patients.

The aim of Module 8 is for Trainees to acquire a series of clinical abilities and skills in the peri-operative and peri-anaesthetic care of paediatric patients. These include:

• Conducting or assisting in anaesthesia and peri-operative / peri-anaesthetic care for emergency and elective anaesthesia for patients in all paediatric age groups, including adolescents
• Recognising the skills and facilities required for various procedures in children of various ages and with various medical conditions
• Demonstrating paediatric and neonatal resuscitation skills

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.

Basic Science subjects relevant to neonates, infants and older children include the following.

- Anatomy relevant to airway management and breathing
- The physiology of respiration, circulation, fluid balance and thermoregulation
- The pharmacology of anaesthetic agents, analgesics and common paediatric medications, especially the relationship of dose to the size/maturity of child
- The relevance of surface area of children of various ages
Knowledge — Considerations of Paediatric Anaesthesia

- Stages of development of the normal child and their relevance to hospitalisation
- General principles of perioperative management relevant to children, emphasising:
  - common childhood illnesses and their influence on anaesthesia and surgery
  - fasting guidelines
  - fluid and electrolyte replacement
  - temperature control
  - specialised equipment for children of different sizes
  - perioperative monitoring
  - dosage and administration of emergency drugs
  - postoperative apnoea detection and management
  - acute and persistent pain management

- Relevant features of important childhood conditions, particularly:
  - respiratory infections
  - asthma
  - prematurity and its complications
  - facial anomalies affecting the airway
  - neonatal emergencies; especially respiratory distress, tracheo-oesophageal fistula, congenital diaphragmatic hernia, necrotising enterocolitis, abdominal wall defects
  - other childhood emergencies; especially inhaled/ingested foreign bodies, fractures, head injuries and burns
  - congenital cardiac disease; especially ASD, VSD, Tetralogy of Fallot
  - cerebral palsy
  - chronic diseases of childhood; especially cystic fibrosis, muscular dystrophy
  - congenital syndromes; especially Down’s, Pierre-Robin, mucopolysaccharidoses
  - the child at risk
  - malignancy and the treatment of malignancy
  - renal failure

Knowledge — Education and Self-Development

Trainees are required to understand the education and self-development principles learned during Modules 1, 2 and 3, especially those of adult learning, self-directed learning, and lifelong learning, and maintain their Learning Portfolio.
Clinical Management

Trainees are expected to understand relevant principles, apply knowledge in practice and to demonstrate abilities in paediatric anaesthesia care. These include the following.

- Applying principles of paediatric anaesthesia for the following surgical sub-specialties:
  - Neurosurgery
  - Ophthalmology
  - Dental surgery
  - Plastics and reconstructive surgery
  - Thoraco-abdominal surgery
  - Cardiac surgery and procedures
  - Urology surgery and procedures/investigations
  - Orthopaedic Surgery
  - Otolaryngology
  - General surgery
  - Trauma and Burns
- Applying principles of paediatric anaesthesia for diagnostic procedures
- Recognising and managing the sick child
- Recognising and managing reversal to transitional fetal circulation
- Managing fluid therapy in paediatric patients
- Managing specific childhood syndromes and disorders
- Applying principles of paediatric anaesthesia for procedures outside the operating theatre, including patient transport
- Caring for paediatric patients undergoing imaging investigations, which may require sedation or anaesthesia
- Recognising and managing paediatric emergencies including basic and advanced life support
- Understanding the organisation of a paediatric anaesthesia and analgesic service
- Recognising psychological issues relevant to hospitalised children

Skills — Clinical Skills

In this Module, Trainees will provide safe anaesthesia for paediatric patients and the support of the critically ill child.

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 will demonstrate decision-making and clinical skills, and perform drills such as paediatric advanced life support, to manage emergencies and conditions including the following.

- Hypoxia
- Bronchospasm
- Apnoea
- Upper airway obstruction including upper airway infection
- Bradycardia (and other arrhythmias)
- Cardiac arrest
- Hypovolaemia
- Neurological compromise
- Epiglottitis and croup
- Inhaled foreign body
- Infantile airway obstruction
- Laryngospasm
- Masseter spasm
- Postoperative stridor
- Aspiration of gastric contents

Skills learned in Modules 1 and 2 should be reviewed

Technical skills, such as airway management, vascular cannulation and regional anaesthesia should be demonstrated for paediatric patients

Interpersonal skills in dealing with paediatric patients and their carers should be demonstrated
Skills — Educational Skills

Trainees are expected to build on the educational skills in Modules 1 to 3 and develop the following:

- A review of their personal learning plan as specified in their Learning Portfolio
- Identification of the factors which 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

**During Advanced Training**

- 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
- Comprehending how decisions are made
- Determining what information should be accepted or rejected in decision-making
- Determining the value of information from various sources and the importance of cross-validation
- Assessing professional performance
- Managing time effectively for study, work and home/leisure
- Giving and receiving feedback
- Developing insight into personal limitations
- Using the Internet including E-mail
- 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
- Presenting quality assurance exercises or projects
- Developing facilitation skills, such as tutoring in small-group learning and conducting small-group meetings
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 medico-legal 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 practise 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
Curriculum Modules

Module 8 – Paediatric Anaesthesia

- 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

Paediatric Considerations
The following attitudinal considerations are important in caring for children:
- Varied individual needs of hospitalised children
- Communication with children and their carers
- Interaction with children that is appropriate to their developmental age
- Psychosocial aspects, especially the stress of separation experienced by children and their carers alike
- Strategies to provide informed consent and disclosure of risk when consulting with children and carers
- Planning of post-operative management, particularly of pain and stress
- Follow-up after anaesthesia complications

Assessment

The Module 8 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 and fulfilled the minimum clinical experience. The Module 8 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, and monitoring in Module 8 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 clinical experience (sessions), technical skills learned, topics reviewed and oral presentations delivered.