

APPENDIX F

EDUCATIONAL OBJECTIVES

UNIVERSITY OF TORONTO

DEPARTMENT OF ANAESTHESIA

2011

This set of objectives is intended as a guide for residents in training in Anaesthesia at the University of Toronto. Residents will prepare for the Examination in Anaesthesia of the Royal College of Physicians and Surgeons of Canada and must therefore also satisfy the requirements of the College's "Objectives of Training and Specialty Training Requirements in Anaesthesia, 2006."

These objectives are in four parts.

Part One is a general description of the final characteristics of the specialist anaesthetist, related to the College's CanMEDS roles. It is not intended to be a checklist or curriculum. It is, therefore, descriptive rather than prescriptive.

Part Two gives specific objectives related to level of training. This includes objectives for residents on rotation in Internal Medicine and in Critical Care and in dedicated rotations such as pain management and obstetrical anaesthesia.

Part Three sets out objectives for the teaching programs in individual hospitals over and above the objectives of the first two parts.

PART ONE

GENERAL GOALS

THE SPECIALIST ANAESTHETIST

Anaesthesia includes clinical anaesthesia for surgery and obstetrics, with care for mother and newborn; techniques of resuscitation and critical care; and management of pain.

The specialist anaesthetist will have some knowledge in all of these areas although particular practice will determine the extent of that knowledge.

The objectives of Part One are organized according to physician roles as described in the CanMEDS 2000 project of the Royal College of Physicians and Surgeons of Canada and in the Objectives of Training in Anesthesiology published in 2000 and based on the aforementioned CanMEDS roles.

1. *Medical Expert/Clinical Decision-maker*

The National Curriculum for Canadian Anesthesia Residency was published in 2010. This document outlines the competencies expected for graduating anesthesiologists with respect to the Medical Expert Role in Anesthesia. Please see the accompanying document for further details with respect to these competencies.

2. *Communicator*

The anaesthetist will:

- 2.1. demonstrate effective communication skills with patients, families, colleagues, and hospital staff. Good communication will display sensitivity and will show consideration of ethical, gender, and cultural issues.
- 2.2. display skills as a consultant to concisely discuss patients with colleagues, organizing and expressing thoughts clearly.
- 2.3. demonstrate effective presentation skills in teaching colleagues, residents, students, and other health science professionals.
- 2.4. demonstrate appropriate oral and written communication skills.

3. *Collaborator*

The anaesthetist will:

- 3.1. consult effectively with other physicians and health care professionals to assure optimal medical management of patients
- 3.2. work effectively in multi-disciplinary teams for the optimal management of patients in the operating room, intensive care unit, obstetrical suite, consultation clinic, and wherever else anaesthetic expertise is required..
- 3.3. effectively communicate with the members of an interdisciplinary team in the resolution of conflicts, provision of feedback, and where appropriate, be able to assume a leadership role.

4. Manager

The anaesthetist will:

- 4.1. Demonstrate an understanding of the importance of Quality Assurance and Review in Anaesthesia and will be able to set out a program for assuring individual standards and demonstrate an ability to carry out morbidity and mortality reviews.
- 4.2. demonstrate an understanding of the administrative aspects of anaesthesia practice including:
 - 4.2.1. selection and acquisition of equipment and supplies
 - 4.2.2. capital and operational budgeting.
 - 4.2.3. operation of ambulatory services
 - 4.2.4. Quality Assurance programs
 - 4.2.5. practice guidelines concerning anaesthetic practice and equipment in Canada
 - 4.2.6. appropriate medical records of anaesthetic consultations and clinical care
 - 4.2.7. staff appointment processes
 - 4.2.8. hospital credentialling
 - 4.2.9. the role and function of specialty societies, the Royal College, and provincial licensing authorities.
 - 4.2.10. faculty and program accreditation
 - 4.2.11. practice management
- 4.3. Demonstrate an ability to manage time and resources effectively.
- 4.4. Demonstrate an ability to manage patient care, personal time and continuing education requirements and maintain an up to date resume.

5. Health Advocate

The anaesthetist will:

- 5.1. Demonstrate knowledge and understanding of national practice guidelines and equipment standards for anaesthesia.
- 5.2. Demonstrate an understanding of principles of patient safety as they pertain to anesthesia practice.
- 5.3. will advocate for resources for improved patient care
 - 5.3.1. through emerging medical technologies
 - 5.3.2. in acute and chronic pain management
 - 5.3.3. for improved anaesthesia patient safety

6. Scholar

The anaesthetist will:

- 6.1. develop and maintain a personal program for life-long continuing education
- 6.2. demonstrate skill in critical appraisal of the literature and evaluation of new information and evidence.
- 6.3. contribute whenever possible to the development, distribution and/or application of new knowledge.
- 6.4. contribute to the learning of patients, students, and other health professionals.

7. Professional

The anaesthetist will:

- 7.1. deliver the highest quality care with integrity, honesty and compassion.
 - 7.2. show recognition of personal limits by appropriate consultation with others when caring for the patient.
 - 7.3. exhibit appropriate professional interpersonal behaviours.
 - 7.4. show consideration of the ethical and legal aspects of patient care
 - 7.5. be able to deal effectively with conflicts in value systems.
 - 7.6. be aware of the problem of chemical dependence and ways to deal with it in self and in colleagues
 - 7.7. Demonstrate an understanding of the need for personal health and well being
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PART TWO

SPECIFIC EDUCATIONAL OBJECTIVES

PG1 YEAR

8.

The PG-1 year will allow the new anaesthesia resident to build upon knowledge and skills gained in medical school and the clinical clerkship. It is the overall goal of the program to allow the resident to gain as much possible experience over a broad range of medical practice before beginning specific training in Anaesthesia.

The following goals will be achieved through required rotations:

- Anesthesia – 4 months
- Internal Medicine, (general team medicine)
- Obstetrics and Gynecology (minimum 1 month in obstetrics)
- Paediatrics (at least 1 month in a paediatric emergency dept)and
- Surgery (1 month general surgery & 1 month of a sub-speciality rotation)
- Adult ER – 1 month
- Elective – 1 month

8.1. The goal of the PG-1 year is to provide the resident with extensive clinical experience in those areas of medical practice which directly interact with the practice of Anaesthesia, namely Internal Medicine, Obstetrics and Gynecology, Paediatrics, and Surgery.

8.1.1. The resident will further develop skills and knowledge in:

- 8.1.1.1. patient assessment, i.e. interview and history-taking, physical examination, and ordering and interpreting appropriate diagnostic tests;
- 8.1.1.2. independent clinical judgement and responsibility;
- 8.1.1.3. interpersonal relationships with patients, colleagues, and other members of the patient care team.

8.1.2. The resident will increase knowledge and understanding of the natural history of disease to manage the continuing care of patients.

8.2. Anaesthesia

The resident will:

- 8.2.1. become familiar with the basic concepts of anaesthesia with special emphasis on patient assessment, anaesthesia planning, perioperative patient management, the pharmacology of the commonest anaesthetic agents and principles of airway management and monitoring.
- 8.2.2. establish basic skills in endotracheal intubation and intravenous and arterial access.
- 8.2.3. begin developing skills of regional anaesthesia.

8.3. Medicine

The resident will:

- 8.3.1. improve skills and increase experience in the assessment, diagnosis, and management of patients with general medical disease.
- 8.3.2. be able to describe clinical pathophysiology that underlies prevalent cardiac, respiratory, renal, and haematological diseases.

8.4. Obstetrics & Gynecology

The resident will:

- 8.4.1. be able to describe the normal progression of labour
- 8.4.2. recognize abnormalities in labour, and
- 8.4.3. describe the management of complications of labour.
- 8.4.4. become familiar with the common operative aspects of gynecology.

8.5. Paediatrics

The resident will improve skills in the assessment, diagnosis and management of children.

8.5.1. Paediatric Emergency

On the rotation in Paediatric Emergency Medicine at the Hospital for Sick Children, the resident will:

- 8.5.1.1. develop proficiency in clinical skills in the paediatric emergency department: History, physical examination and use of appropriate laboratory and diagnostic investigations.
- 8.5.1.2. become proficient in the initial evaluation and management of the critically ill child.
- 8.5.1.3. be able to recognize , diagnose and manage common paediatric emergencies and demonstrate knowledge in:

- 8.5.1.3.1. Paediatric life support including: paediatric resuscitation, respiratory failure, shock and fluid management.
- 8.5.1.3.2. Principles of transportation of critically ill children.
- 8.5.1.3.3. Paediatric trauma including: child with multiple injuries and head, chest, abdominal and major orthopaedic injuries.

8.5.1.4. develop an approach to recognize and manage other medical or surgical emergencies including:

- 8.5.1.4.1. Anaphylaxis
- 8.5.1.4.2. Asthma/ bronchiolitis
- 8.5.1.4.3. Cardiac emergencies
- 8.5.1.4.4. Croup/ epiglottitis
- 8.5.1.4.5. Dehydration
- 8.5.1.4.6. Foreign body aspiration
- 8.5.1.4.7. Sickle cell crisis
- 8.5.1.4.8. Seizures
- 8.5.1.4.9. Toxin ingestion

8.6. Surgery

The resident will increase competency in the diagnosis and management of surgical diseases, especially in the operative aspects of surgical care and its goals.

8.7. Electives

The elective rotation should be chosen with the goal of maximizing the breadth of clinical experience during the PG1 year.

8.8 Adult ER

The resident will develop an approach to the evaluation and acute management of the emergency patient including medical and surgical emergencies and the management of the trauma patient.

PG2 YEAR – FIRST CLINICAL ANAESTHESIA YEAR

9. In the PG2 year, the resident will be expected to develop the basic knowledge, habits and attitudes which will be the basis not only for training but also for a lifetime in clinical practice.

9.1. THEORY

The PG2 resident will develop and apply an approach to the important functions of the practice of anaesthesia:

- 9.1.1. assessment of the patient and identification of factors requiring special consideration including preparation of the patient for anaesthesia and surgery.
- 9.1.2. formation of a plan of anaesthesia
- 9.1.3. conduct of the "routine anaesthetic" including appropriate monitoring
- 9.1.4. a working understanding of the basic pharmacology, physiology, and physics of anaesthesia
- 9.1.5. a working understanding of the ethical basis of the practice of anaesthesia and the legal considerations of patient care.

9.2. PRACTICE

The PG2 resident will demonstrate the basic practical skills of anaesthesia including:

- 9.2.1. safe management of the airway in and out of the OR, in both intubated and nonintubated patients
- 9.2.2. safe use of anaesthetic equipment
- 9.2.3. cannulation of peripheral and central veins
- 9.2.4. arterial puncture and cannulation
- 9.2.5. catheterization of the pulmonary artery and use of the information derived from it
- 9.2.6. spinal and epidural anaesthesia and other regional blocks
- 9.2.7. the use of fibre-optic bronchoscopy in airway management
- 9.2.8. the safe management of IV sedation for surgery under regional anaesthesia
- 9.2.9. the basics of obstetrical anaesthesia and neonatal resuscitation
- 9.2.10. achievement of ACLS certification by the end of the PG2 year.
[ATLS certification is desirable but not mandatory.]

MEDICAL / CRITICAL CARE YEAR

Internal Medicine experience will include:

- 1 month Coronary Care
- 2 months Respiriology
- 1 month Nephrology
- 1 month Medical Consults
- 1 elective medical month

Experience on all of these services should include consultation.

10. INTERNAL MEDICINE

During the rotations in Internal Medicine, the Anaesthesia resident will:

- 10.1.1. improve skills in patient assessment through history, physical examination, and the use of laboratory tests and special investigations.
- 10.1.2. improve understanding of disease processes and their natural history and identify how they influence the management of the perioperative period.
- 10.1.3. improve knowledge of the treatment of common disorders and demonstrate application of this knowledge to assess when patients are optimally prepared for anaesthesia.
- 10.1.4. Participate in the team management of patients and when appropriate supervise more junior members of the team.

10.2. Cardiology

10.2.1. Medical Expert - Must demonstrate the ability to

- 10.2.1.1. Be able to take a focused cardiac history
- 10.2.1.2. Complete a focused physical examination of the cardiovascular system
- 10.2.1.3. Be able to interpret relevant laboratory data
- 10.2.1.4. Interpret the summary reports of advanced cardiac investigations such as:
 - 10.2.1.4.1. Vascular studies such as the ankle-brachial index and carotid Doppler studies
 - 10.2.1.4.2. Holter monitors
 - 10.2.1.4.3. Myocardial stress tests
 - 10.2.1.4.4. Myocardial perfusion studies
 - 10.2.1.4.5. Left – and – right-sided cardiac catheterization studies
 - 10.2.1.4.6. Static echocardiography reports
- 10.2.1.5. As they relate to relevant perioperative assessment
- 10.2.1.6. Evaluate and manage the medically optimized pre-existing cardiac disease
 - 10.2.1.6.1. Anti-anginals
 - 10.2.1.6.2. Anti-hypertensives
 - 10.2.1.6.3. Anti-dysrhythmics
 - 10.2.1.6.4. Diuretics
- 10.2.1.7. Evaluate and manage the patient with Coronary Artery disease
 - 10.2.1.7.1. Acute myocardial ischemia
 - 10.2.1.7.2. Myocardial infarction
 - 10.2.1.7.3. Complications of myocardial infarction e.g. dysrhythmia, VSD, CHF, MR, LV, aneurysm, pseudoaneurysm
 - 10.2.1.7.4. Management in the face of recent thrombolytic and anti-platelet therapy
 - 10.2.1.7.5. The implications of recent PCI and coronary stent placement
- 10.2.1.8. Evaluate and manage patients with other Cardiac diseases:
- 10.2.1.9. Valvular heart disease
 - 10.2.1.9.1. AS
 - 10.2.1.9.2. AR
 - 10.2.1.9.3. MS
 - 10.2.1.9.4. MR
 - 10.2.1.9.5. PS
 - 10.2.1.9.6. TR
- 10.2.1.10. Cardiac tamponade
- 10.2.1.11. Constructive pericarditis
- 10.2.1.12. Cardiomyopathies
 - 10.2.1.12.1. Dilated
 - 10.2.1.12.2. Restrictive
 - 10.2.1.12.3. Obstructive (HOCM with or without SAM, Dynamic left ventricular obstruction in the elderly)
- 10.2.1.13. Cardiogenic shock
- 10.2.1.14. Right sided CHF, pulmonary hypertension

- 10.2.1.15. Left sided CHF from diastolic and/or systolic dysfunction
- 10.2.1.16. Rhythm Disturbances including an approach to pacemakers and AICDs
- 10.2.1.17. Demonstrate an approach to Cardiac risk assessment and reduction.
- 10.2.1.18. Demonstrate an understanding of the safe and effective use of invasive monitoring in the Cardiac care unit

10.2.2. Communicator:

- 10.2.2.1. To effectively communicate with patients and families with respect to assessment and management options
- 10.2.2.2. To complete and write up concise and complete consultations
- 10.2.2.3. To be able to consent and review risks of common procedures in the Cardiac care unit e.g. arterial line, central line, pulmonary artery catheter insertion.

10.2.3. Collaborator:

- 10.2.3.1. To collaborate effectively with referring colleagues with respect to diagnostic and management options.
- 10.2.3.2. To work closely with allied health staff in management of patients with cardiac disease

10.2.4. Manager:

- 10.2.4.1. To be able to manage time effectively and provide services as a consultant.

10.2.5. Scholar:

- 10.2.5.1. To be aware of current Cardiac risk assessment guidelines.
- 10.2.5.2. To be able to conduct an in depth literature review of a case of interest during the rotation and present this to a group of colleagues.

10.2.6. Health Advocate:

- 10.2.6.1. To have knowledge of methods to reduce cardiac risk in the perioperative period.
- 10.2.6.2. To advocate for access to appropriate care for all patients.

10.2.7. Professional:

- 10.2.7.1. To demonstrate good attendance and punctuality to scheduled teaching sessions and clinics.
- 10.2.7.2. To demonstrate professional attitudes in interactions with patients and other healthcare professionals.

10.3. Nephrology

10.3.1. Medical Expert:

- 10.3.1.1. Chronic Renal Failure
 - 10.3.1.1.1. Clinical characteristics / the uremic syndrome
 - 10.3.1.1.2. Dialysis treatment: indications, types, physiologic effects and complications
 - 10.3.1.1.3. Anesthetic management of the patient with chronic renal failure:
 - 10.3.1.1.3.1. Preoperative evaluation / optimization

- 10.3.1.1.3.2. Monitoring
- 10.3.1.1.3.3. Selection of anesthetic agents
- 10.3.1.2. Acute Renal Failure
- 10.3.1.3. Pathophysiology of oliguria
 - 10.3.1.3.1. Types
 - 10.3.1.3.1.1. Prevention
 - 10.3.1.3.1.2. Diagnostic tests
 - 10.3.1.3.1.3. Management
- 10.3.1.4. Hepatorenal Syndrome
 - 10.3.1.4.1. Pathophysiology
 - 10.3.1.4.2. Treatment
 - 10.3.1.4.3. Response to liver transplant
- 10.3.1.5. Interpretation and management of common electrolyte disturbances:
 - 10.3.1.5.1. Hyperkalemia
 - 10.3.1.5.2. Hypokalemia
 - 10.3.1.5.3. Hyponatremia
 - 10.3.1.5.4. Hyponatremia

10.3.2. Communicator:

- 10.3.2.1. To effectively communicate with patients and families with respect to assessment and management options
- 10.3.2.2. To complete and write up concise and complete consultations
- 10.3.2.3. To be able to consent and review risks of procedures in the renal patient – peritoneal catheter and/or hemodialysis line insertion.

10.3.3. Collaborator:

- 10.3.3.1. To collaborate effectively with referring colleagues with respect to diagnostic and management options.
- 10.3.3.2. To work closely with allied health staff in management of patients with renal disease

10.3.4. Manager:

- 10.3.4.1. To be able to manage time effectively and provide services as a consultant

10.3.5. Scholar:

- 10.3.5.1. To be aware of current strategies for management of patients in renal failure or with electrolyte abnormalities.
- 10.3.5.2. To be able to conduct an in depth literature review of a case of interest during the rotation and present this to a group of colleagues.

10.3.6. Health Advocate:

- 10.3.6.1. To advocate for access to appropriate care for all patients.

10.3.7. Professional:

- 10.3.7.1. To demonstrate good attendance and punctuality to scheduled teaching sessions and clinics.

10.3.7.2. To demonstrate professional attitudes in interactions with patients and other healthcare professionals.

10.4. Respirology

10.4.1. Medical Expert

- 10.4.1.1. To be able to conduct a focused respiratory history and physical.
- 10.4.1.2. To be able to generate a differential diagnosis for respiratory symptoms, including cough, hemoptysis, chest pain, chronic sputum production, and wheezing
- 10.4.1.3. To have a knowledge of the pathophysiology, diagnosis, and management of COPD and asthma
- 10.4.1.4. To be familiar with the presentation, etiological microbiology, treatments and complications of pneumonia
- 10.4.1.5. To have an approach to the investigation and management of a patient with bronchiectasis
- 10.4.1.6. To understand the etiology, predisposing factors, and presentation of thromboembolic disease as well as a diagnostic and management approach for the patient with suspected pulmonary embolism.
- 10.4.1.7. To be aware of the causes, signs and symptoms and basic treatment principles of pulmonary hypertension.
- 10.4.1.8. To have an approach to pulmonary fibrosis including common causes and presentation and possible treatments available.
- 10.4.1.9. To have knowledge of the pathophysiology, symptoms, diagnosis and treatment of common sleep disorders including obstructive sleep apnea.
- 10.4.1.10. To have an approach to a patient with suspected pulmonary malignancy and be aware of the staging and types of bronchogenic carcinoma.
- 10.4.1.11. To be aware of the role and physiology of noninvasive ventilation in the setting of both chronic and acute respiratory failure.
- 10.4.1.12. Radiographically, the following should be achieved on this rotation
 - 10.4.1.12.1. To have an approach to Chest Xrays and CT chests
 - 10.4.1.12.2. Be aware of the diagnostic value of V/Q scans, CT angiograms and PETscans in the diagnosis of thromboembolism and metastatic cancer, respectively.
 - 10.4.1.12.3. To be able to describe and provide a differential diagnosis of common presentations of consolidation, interstitial patterns and pleural disease.
- 10.4.1.13. Technically, the following should be achieved on this rotation
 - 10.4.1.13.1. To have an approach to interpretation of pulmonary function tests and be able to provide a differential diagnosis based on these results.
 - 10.4.1.13.2. To be able to consent a patient of the risks and perform a thoracentesis independently.
 - 10.4.1.13.3. To be aware of the role and risks of bronchoscopy and basic techniques and be able to perform bronchoscopy with supervision.
 - 10.4.1.13.4. To be aware of basic parameters of an overnight polysomnogram, and diagnostic alternatives, and how they relate clinically particularly with respect to the perioperative period.

10.4.2. Communicator:

- 10.4.2.1. To complete and write up concise and complete consultations.
- 10.4.2.2. To be able to confidently review side-effects and modality of use of common pulmonary treatments including bronchodilators, prednisone and CPAP.
- 10.4.2.3. To be able to consent and review risks of common procedures in respirology including thoracentesis and bronchoscopy.

10.4.3. Collaborator:

- 10.4.3.1. To work closely with allied health staff in multidisciplinary clinics such as the TRAPP and ALS clinic.
- 10.4.3.2. To collaborate effectively with the pulmonary function technicians and radiology group when consulting on patients.
- 10.4.3.3. To collaborate effectively with referring colleagues with respect to diagnostic and management options.

10.4.4. Manager:

- 10.4.4.1. To be able to manage time effectively and provide services as a consultant

10.4.5. Scholar:

- 10.4.5.1. To be aware of current Canadian guidelines of common respiratory diseases including COPD, asthma and TB.
- 10.4.5.2. To be able to conduct an in depth literature review of a case of interest during the rotation and present this to a group of colleagues.

10.4.6. Health Advocate:

- 10.4.6.1. To have knowledge of tools available for smoking cessation and be able to educate patients on this topic.
- 10.4.6.2. To have the knowledge of occupational exposures that cause lung diseases and the resources available to patients.
- 10.4.6.3. To have knowledge of infectious risk of pulmonary infections and implications for perioperative management of these patients

10.4.7. Professional:

- 10.4.7.1. To demonstrate good attendance and punctuality to scheduled teaching sessions and clinics.
- 10.4.7.2. To demonstrate professional attitudes in interactions with patients and other healthcare professionals.

10.5. Medical Consults

10.5.1. Medical Expert:

- 10.5.1.1. Demonstrate the ability to evaluate complex medical patients with respect to effective history taking and physical examination and selection of appropriate investigations
- 10.5.1.2. Demonstrate good clinical reasoning skills based on the evaluation of patients described above.
- 10.5.1.3. Demonstrate the ability to manage patients with multiple medical issues in the pre-, intra- and postoperative period.

10.5.2. Communicator:

- 10.5.2.1. Demonstrate the ability to effectively communicate with patients and families with respect to assessment and management options
- 10.5.2.2. Demonstrate the ability to complete and write up concise and complete consultations.

10.5.2.3. Demonstrate the ability to effectively verbally communicate with members of consulting services and other members of the health care team.

10.5.3. Collaborator:

10.5.3.1. Demonstrate and ability to collaborate effectively with referring colleagues with respect to diagnostic and management options.

10.5.3.2. Demonstrate and ability to work closely with allied health staff in management of patients with complex medical problems.

10.5.4. Manager

10.5.4.1. Demonstrate an ability to be able to manage time effectively and provide services as a consultant.

10.5.4.2. Demonstrate an understanding of appropriate use of resources.

10.5.5. Scholar:

10.5.5.1. Demonstrate the effective use of current literature as applied to patient management.

10.5.5.2. Demonstrate the ability to utilize patient encounters to drive further learning.

10.5.5.3. To be able to conduct an in depth literature review of a case of interest during the rotation and present this to a group of colleagues.

10.5.5.4. Demonstrate effective teaching skills

10.5.6. Health Advocate:

10.5.6.1. To advocate for access to appropriate care for all patients.

10.5.6.2. To advocate for lifestyle changes which may affect outcomes in medical patients.

10.5.7. Professional:

10.5.7.1. To demonstrate good attendance and punctuality to scheduled teaching sessions and clinics.

10.5.7.2. To demonstrate professional attitudes in interactions with patients and other healthcare professionals.

11. CRITICAL CARE

During the rotation in Critical Care the resident will improve technical skills and knowledge in the management of the critically ill patient.

This will also be an opportunity for the anaesthesia resident, accustomed to individual practice, to participate in team care of patients with both physicians and non-physicians and to improve skills in communication with patients, staff and families.

11.1. Medical Expert:

11.1.1. Technical Skills

Adding to those skills learned in the practice of clinical anaesthesia, the resident will demonstrate basic competency in:

11.1.1.1. Thoracentesis

- 11.1.1.2. Tube thoracostomy
- 11.1.1.3. Peritoneal tap
- 11.1.1.4. Invasive and noninvasive physiological monitoring in the critical care setting

11.1.2. Knowledge Base

The resident will use the critical care experience to demonstrate increased understanding of the etiology, pathophysiology, diagnosis, treatment and complications of:

- 11.1.2.1. Respiratory failure, mechanical ventilation and weaning.
- 11.1.2.2. Cardiac emergencies including arrest, arrhythmias, ischaemia, failure, tamponade and severe hypertension.
- 11.1.2.3. Shock
- 11.1.2.4. Neurological disorders including coma, status epilepticus and neuromuscular diseases
- 11.1.2.5. The diagnosis of brain death and the management of organ donors
- 11.1.2.6. Sepsis
- 11.1.2.7. Acid-base, fluid and electrolyte disorders
- 11.1.2.8. Renal preservation and support
- 11.1.2.9. The acute abdomen, GI haemorrhage, hollow viscus dysfunction, and hepatobiliary disease.
- 11.1.2.10. Endocrine disturbances in the critically ill.
- 11.1.2.11. Coagulation disorders and blood replacement therapy.
- 11.1.2.12. Nutrition of the critically ill: enteral and parenteral
- 11.1.2.13. Hypothermia
- 11.1.2.14. Trauma and burns
- 11.1.2.15. Intoxications
- 11.1.2.16. Transportation of the critically ill.
- 11.1.2.17. Ethical and legal aspects of critical care

11.2. Communicator:

- 11.2.1. establish relationships with patients/families;
- 11.2.2. listen effectively;
- 11.2.3. obtain and synthesize relevant history from patients/families/communities; and
- 11.2.4. discuss appropriate information with patients/families and the health care team

11.3. Collaborator:

- 11.3.1. consult effectively with other physicians and health care professionals; and
- 11.3.2. contribute effectively to interdisciplinary team activities.

11.4. Manager:

- 11.4.1. allocate finite health care resources wisely;
- 11.4.2. work effectively and efficiently in a health care organization;
- 11.4.3. utilize information technology to optimize patient care, life-long learning, and other activities; and
- 11.4.4. utilize personal resources effectively to balance patient care, learning needs, and outside activities.

11.5. Scholar:

- 11.5.1. facilitate the learning of patients/families, house staff/students and other health professionals;
- 11.5.2. contribute to the development of new knowledge; and
- 11.5.3. develop, implement, and monitor a personal continuing education strategy.

11.6. Health Advocate:

- 11.6.1. Understand, in general, the diverse determinants of health, disease, and illness, and relate occupational and environmental exposures, socio-economic factors, and life style

factors to critical illness.

- 11.6.2. Understand, in general, the health care system and more specifically the structure, function, and financing of critical care units.
- 11.6.3. Understand the importance of medico-legal considerations for the critically ill.
- 11.6.4. Be able to communicate to the general population critical care issues and their impact on the maintenance and improvement of health care.

11.7. Professional:

- 11.7.1. Be aware of, and understand, moral and ethical issues as they impact on patients, their families, and critical care providers.
- 11.7.2. Understand the role and responsibilities of the critical care physician at the local, regional, and national levels.
- 11.7.3. Develop and demonstrate use of a framework for recognizing and dealing with ethical issues in clinical and/or research practice including truth-telling, consent, conflict of interest, resource allocation, and end-of-life care.

12. SECOND AND THIRD YEARS OF CLINICAL ANAESTHESIA

In the second clinical year the resident will continue to develop the knowledge, skills and attitudes relevant to the practice of anaesthesia. Following the concept of graded responsibility, the resident will assume more responsibility for the plan of anaesthesia and assume more independence in the management of routine cases.

12.1. THEORY

The resident will:

- 12.1.1. gain a more complete knowledge of basic and clinical science and be able to describe the principles of physiology and pharmacology as directly applied to clinical practice. The "why" will be added to the "how".
- 12.1.2. demonstrate increasing knowledge and skill in planning the management of the patient with a compromised preop status.

12.2. PRACTICE

The resident will:

- 12.2.1. demonstrate further skill in invasive monitoring.
- 12.2.2. exhibit confidence in conducting anaesthetics with more remote supervision.
- 12.2.3. by the end of the second clinical year, master the basics of obstetrical anaesthesia and the management of non-obstetrical surgery in the pregnant patient.

13. FINAL YEAR

The final year resident will complete the acquisition of all skills, attitudes, knowledge and judgement needed to be a consultant in Anaesthesia as described in the General Objectives of Training.

- 13.1. assess the patient, plan and carry out a technique for anaesthesia, and manage the post-operative care for patients having all types of procedures.
- 13.2. develop skill, confidence and sound judgement in selecting a good plan of anaesthesia when the choices are not clear-cut and there is no "perfect" technique.

- 13.3. be able to assume complete responsibility for the entire conduct of all types of anaesthesia.
- 13.4. develop and refine the skills of preoperative consultation including careful complete assessment, thoughtful analysis, and clear, helpful, practical advice.
- 13.5. gain an understanding of the practical organization of a Department of Anaesthesia and an Operating Room Suite. This will include familiarity with Quality Assurance in Anaesthesia and some insight into the problems of equipment selection and acquisition.

14. **OBSTETRICAL ANAESTHESIA**

14.1. **Medical Expert:**

During the dedicated rotation in Obstetrical Anaesthesia and also during obstetrical anaesthesia assignments in base hospitals, the resident should gain and demonstrate a thorough knowledge of:

14.1.1. Physiology

- 14.1.1.1. Physiologic changes of normal pregnancy. The anaesthetic implications of each will be emphasized.
- 14.1.1.2. The relative importance of each change throughout gestation.
- 14.1.1.3. Physiologic changes that accompany the onset of labour.

14.1.2. Pharmacology

- 14.1.2.1. Pharmacokinetic and pharmacodynamic changes in normal pregnancy and the anaesthetic implications of each.
- 14.1.2.2. Commonly used drugs in labour and delivery
- 14.1.2.3. Potential drug interactions between obstetrical and anaesthetic drugs
- 14.1.2.4. The effects of pharmacologic agents and anaesthetic techniques on uterine blood flow and fetal development.

14.1.3. Labour analgesia

- 14.1.3.1. Physiology and anatomy of labour pain
- 14.1.3.2. Non-pharmacologic analgesia
- 14.1.3.3. Pharmacologic analgesia
 - 14.1.3.3.1. Opioid analgesia (routes of administration, patient control)
- 14.1.3.4. Regional analgesia: epidural, spinal, combined
 - 14.1.3.4.1. Goals of analgesia
 - 14.1.3.4.2. Strategies for maintenance (intermittent top-up vs continuous infusion vs patient control)
 - 14.1.3.4.3. Family involvement and patient satisfaction
- 14.1.3.5. Contraindications and complications of obstetrical analgesia
- 14.1.3.6. Consent issues concerning labour analgesia

14.1.4. Operative Delivery — options, contraindications and complications

- 14.1.4.1. Anaesthesia for operative vaginal delivery
- 14.1.4.2. Analgesia for elective, urgent and emergency caesarean section
- 14.1.4.3. Airway management in the parturient
- 14.1.4.4. Anaesthetic implications of multiple gestation and malpresentations (e.g.: breech, transverse)

14.1.5. Obstetric haemorrhage

- 14.1.5.1. Classification and differential diagnosis
 - 14.1.5.1.1. Maternal vs fetal haemorrhage
- 14.1.5.2. Effect of haemorrhage on maternal haemodynamics

- 14.1.5.3. Effect of haemorrhage on the fetus
- 14.1.5.4. Anaesthetic considerations
- 14.1.5.5. Commonly used obstetrical drugs
- 14.1.6. Obstetrical complications including pathophysiology, pharmacological management, expected obstetric management and anaesthetic implications, including
 - 14.1.6.1. Pre-eclampsia/eclampsia
 - 14.1.6.2. Preterm labour
 - 14.1.6.3. Shoulder dystocia
 - 14.1.6.4. Amniotic fluid embolism
 - 14.1.6.5. Fatty liver of pregnancy
 - 14.1.6.6. Chorioamnionitis
 - 14.1.6.7. Fetal death
 - 14.1.6.8. Prolapsed umbilical cord.
 - 14.1.6.9. Tetanic contractions
- 14.1.7. Medical/Surgical diseases in pregnancy, including
 - 14.1.7.1. Diabetes
 - 14.1.7.2. Hypertension
 - 14.1.7.3. Heart disease (shunts, valvular heart disease, coronary artery disease)
 - 14.1.7.4. Neurological diseases (raised intracranial pressure, CNS diseases, peripheral nervous system diseases, muscular dystrophies, MH)
 - 14.1.7.5. Trauma
- 14.1.8. Fetal surveillance — anaesthetic implications
 - 14.1.8.1. Biophysical profile
 - 14.1.8.2. Fetal heart rate monitoring
 - 14.1.8.3. Scalp sampling
 - 14.1.8.4. Doppler umbilical blood flow
- 14.1.9. Anaesthesia for non-obstetrical surgery in the pregnant patient
 - 14.1.9.1. Choice of anaesthetic (including teratogenicity)
 - 14.1.9.2. Premedication
 - 14.1.9.3. Intraoperative considerations including positioning and monitoring
 - 14.1.9.4. Postoperative considerations including monitoring and analgesia

14.2. Communicator:

- 14.2.1. Communication with the parturient and her family.
- 14.2.2. Involving the patient in anesthetic care decisions.

14.3. Collaborator

- 14.3.1. Consultation liaison with obstetricians, family physicians and midwives.
- 14.3.2. Communication with the health care team.
- 14.3.3. Crisis and risk management
- 14.3.4. Participation in preoperative case conferences for complex patients.

14.4. Manager:

- 14.4.1. Prioritization and triage of multiple patients.
- 14.4.2. Maintain log book of procedures performed during their rotation.
- 14.4.3. Get feedback about their management

14.5. Scholar:

- 14.5.1. Attend all department rounds.
- 14.5.2. Prepare at least one department round.
- 14.5.3. Be prepared to make health care choices based on best evidence
- 14.5.4. Understand the normal physiologic changes of pregnancy and their impact on anesthetic / analgesic choices.

- 14.5.5. Be introduced to electronic health care resources.
- 14.5.6. Be able to critically evaluate health care choices in anesthesia applied to the obstetrical patient.

14.6. Health Advocate:

- 14.6.1. The resident will learn to be advocate for the patient concerning pain management both peripartum and postoperatively.

14.7. Professional:

- 14.7.1. Appropriate Interaction with staff, other physicians and other health care providers.
- 14.7.2. Punctuality
- 14.7.3. Preparation for daily cases.
- 14.7.4. Ethical Issues
 - 14.7.4.1. Consent
 - 14.7.4.2. Fetal vs maternal rights
 - 14.7.4.3. Maternal/paternal conflicts

15. **CHRONIC PAIN MANAGEMENT**

15.1. Medical Expert

- 15.1.1. Basic Principles
 - 15.1.1.1. Know the principles of multidisciplinary pain management
 - 15.1.1.2. Discuss the pharmacology of opiates, nonnarcotic analgesics, nonsteroidal anti-inflammatory agents, and centrally acting drugs.
 - 15.1.1.3. Understand measurement and assessment of pain and function.
 - 15.1.1.4. Understand the principles and indications of diagnostic testing.
 - 15.1.1.5. Understand the role of nerve blocks in pain management.
 - 15.1.1.6. Describe psychotherapeutic treatment principles, rehabilitation, and team management.
 - 15.1.1.7. Know the basic principles of cancer pain management.
 - 15.1.1.8. Discuss the principles of other chronic pain syndromes, including:
 - 15.1.1.9. Spine related pain conditions
 - 15.1.1.10. Myofascial pain
 - 15.1.1.11. Complex regional pain syndromes
 - 15.1.1.12. Neuralgias
 - 15.1.1.13. Chronic post-operative pain conditions
 - 15.1.1.14. Understand the principles of physical treatment modalities acupuncture/TENS
 - 15.1.1.15. Understands the key elements of diagnostic, prognostic and therapeutic blocks including radiofrequency ablation and neurolysis.
 - 15.1.1.16. Keep log of all patients and procedures performed and assisted in
- 15.1.2. Chronic Pain Management
 - 15.1.2.1. Take complete (pain oriented) history and targeted physical examination
 - 15.1.2.2. Assess qualitative and quantitative pain measurements
 - 15.1.2.3. Plan and order appropriate diagnostic investigations
 - 15.1.2.4. Invoke proper consultative referrals
 - 15.1.2.5. Organize a list of differential diagnosis
 - 15.1.2.6. Propose a treatment plan
 - 15.1.2.7. Manage chronic opioid and non-opioid pharmacologic regimens
 - 15.1.2.8. Organize booking for procedures
 - 15.1.2.9. Awareness of the basic principles of palliative care, rehabilitation techniques, socio-economic and cultural issues in pain, ethical issues in pain management.
 - 15.1.2.10. Plan follow up re-assessments
- 15.1.3. Procedures related to chronic pain managements

- 15.1.3.1. The trainee will demonstrate and understanding of (but not an ability to perform)
- 15.1.3.2. Epidural and subarachnoid injections
- 15.1.3.3. Peripheral nerve and spinal nerve block procedure
- 15.1.3.4. Sympathetic blocks
- 15.1.3.5. Joint and myofascial injections
- 15.1.3.6. Differential blocks and infusions
- 15.1.3.7. He/she will demonstrate and understanding of the management of the side effects of the above procedures.

15.1.4. . Other associated facets of pain management

- 15.1.4.1. Utilize physical therapy and occupational therapy.
- 15.1.4.2. Utilize behavioral therapies.
- 15.1.4.3. Utilize fluoroscopic guidance for injections
- 15.1.4.4. Manage oral pain regimen with narcotics, anti-inflammatory drugs and neuromodulators.
- 15.1.4.5. Be aware of patients with substance abuse or psychiatric issues and establish appropriate treatment plans
- 15.1.4.6. The principles of pain management in special patient groups including the elderly, disabled, intellectually handicapped and those unable to communicate.

15.2. Communicator

- 15.2.1. Effective in communication with patients with acute or chronic pain as well as other caregivers concerning the patients' diagnostic and /or treatment plans.
- 15.2.2. Counsel the patient regarding the relevant pain condition
- 15.2.3. Be empathetic to the patient's discomfort
- 15.2.4. Discuss planned pain control strategies with patients.
- 15.2.5. Effectively communicate with other referring physicians and other providers involved in the patient's care

15.3. Collaborator:

- 15.3.1. Working as a team member
- 15.3.2. Working effectively with colleagues and co-workers in the clinic and on acute pain rounds
- 15.3.3. Consulting with other physicians in an appropriate manner to discuss issue relevant to patient care.

15.4. Manager:

- 15.4.1. Learn the importance of time management
- 15.4.2. Work with the team to organize and time manage the flow of patients at the time of consultation and during interventional procedures.
- 15.4.3. Read and prepare for interventional procedures

15.5. Scholar:

- 15.5.1. Learn evidence-based medicine as it relates to pain medicine.
- 15.5.2. Demonstrate continuing effort to improve performance
- 15.5.3. Acquire knowledge with academic activities related to pain medicine
- 15.5.4. Access relevant literature and evidence in pain management.
- 15.5.5. Appropriately apply findings from literature to pain management.
- 15.5.6. Self assess knowledge and skill in pain management.
- 15.5.7. Identify areas for further study.
- 15.5.8. Seek feedback regarding performance
- 15.5.9. Full documentation relating to hospital and CPSO requirements

15.6. Health Advocate:

- 15.6.1. learn to be proactive and prepare ahead for potential complications in the procedure room.
- 15.6.2. advocate for appropriate resources for the chronic pain patient

15.7. Professional:

- 15.7.1. Always be fully professional in their interaction with patients and family members, colleagues and other members of the health care team
- 15.7.2. Demonstrate compassion and respect for patients with pain problems
- 15.7.3. Be a respected consultant to referring physicians
- 15.7.4. Be able to educate patients regarding benefits and pitfalls of complementary and alternative therapies
- 15.7.5. Always be considerate of others' time and effort

16. REGIONAL ANAESTHESIA

16.1. Medical Expert:

16.1.1. Development of expertise in the practice and theory of regional anesthesia by becoming familiar with the regional techniques listed below:

16.1.2. Basic:

- 16.1.2.1. Axillary brachial plexus block;
- 16.1.2.2. Intravenous regional anesthesia (Bier block);
- 16.1.2.3. Wrist block; Digital nerve block;
- 16.1.2.4. Intercostobrachial nerve block;
- 16.1.2.5. Saphenous nerve block; Ankle block;
- 16.1.2.6. Spinal anesthesia;
- 16.1.2.7. Lumbar epidural anesthesia;
- 16.1.2.8. Combined spinal-epidural anesthesia;
- 16.1.2.9. Femoral nerve block

16.1.3. Intermediate:

- 16.1.3.1. Interscalene block;
- 16.1.3.2. Supraclavicular block;
- 16.1.3.3. Infraclavicular block;
- 16.1.3.4. Sciatic nerve block: posterior approach;
- 16.1.3.5. Popliteal block: all approaches;
- 16.1.3.6. Intercostal nerve block;
- 16.1.3.7. Thoracic epidural anesthesia

16.1.4. Advanced:

- 16.1.4.1. Continuous interscalene block;
- 16.1.4.2. Continuous infraclavicular block;
- 16.1.4.3. Continuous axillary block;
- 16.1.4.4. Continuous femoral nerve block;
- 16.1.4.5. Continuous popliteal block: all approaches.
- 16.1.4.6. Suprascapular nerve block;

16.1.5. Familiarise with nerve stimulator and ultrasound based techniques in regional anesthesia.

16.2. Communicator:

- 16.2.1. To communicate with the patient for obtaining an informed consent with disclosing the risks and benefits for performing regional anesthesia. after evaluation of pros and cons of both general anesthesia and regional blockade
- 16.2.2. Communicating with patients and family perioperatively.
- 16.2.3. Communicating with surgeons to establish the optimal care for the patient and their anesthetic/analgesic needs perioperatively

16.3. Collaborator:

- 16.3.1. Working effectively with colleagues and ancillary personnel in a busy Block Room to ensure optimal patient care , safety, and turnover in a stressful environment.
- 16.3.2. To liaise with the surgeon regarding the most suitable choice of regional anesthesia for the given patient.
- 16.3.3. To become familiar with protocols and methods to prevent the wrong sided block for

unilateral procedures.

16.3.4. Consult with other physicians in an appropriate manner

16.4. Manager:

16.4.1. Demonstrate rational selection of regional anesthesia for specific clinical situations;

16.4.2. demonstrate effective anxiolysis of patients by both pharmacological and interpersonal techniques;

16.4.3. demonstrate cost-effective management decision;

16.4.4. demonstrate ability to rescue failed regional anesthesia techniques;

16.4.5. demonstrate effective management of isolated peripheral nerve and central neuraxial blocks with respect to the physiologic consequences both intraoperatively and postoperatively;

16.4.6. demonstrate knowledge of practice management principles as they relate to regional anesthesia.

16.5. Scholar:

16.5.1. Attendance and presentation at Regional Anesthesia Rounds. Presentations at rounds are related to all anesthetic topics with some of the rounds emphasizing regional anesthesia topics.

16.6. Health Advocate:

16.6.1. The resident will learn to be proactive with patient concerns and prepare ahead for potential complications in the operating room and PACU.

16.7. Professional:

16.7.1. Time management and organize flow through the Block area.

16.7.2. Proper follow-up of their patients to assess the efficiency of the block they performed.

16.7.3. Being aware of the multi-disciplinary team that is required for successful regional anesthesia and analgesia

17. RESEARCH

- Every resident should gain the ability to think critically in the assessment of patients, methods of practice in anaesthesia and reading of the literature. This may be achieved by interaction with teachers, attendance at rounds and journal clubs, and by involvement in a research project.
- Research projects are available to all residents and a list of available suggested projects is distributed each year. Residents should also feel free to suggest a project to an appropriate supervisor.
- Research projects can be concurrent with clinical training or done in a dedicated block of six or twelve months.
 - Twelve month research periods require adjustment of Royal College requirements. This should be discussed well in advance with the Program Director by mid-way through the PG2 year.
 - Six months periods of research can be arranged later, even up to the end of the PG4 year.
 - Early exposure to research may be useful in career planning.
- All residents are urged to consider a research project but it is not mandatory.
- Research projects which require dedicated time away from clinical training require the prior approval of the Program Director and review by the Departmental Research Committee.

Every resident will:

17.1 be able to think critically in the assessment of patients, methods of practice in anaesthesia and

reading of the literature.

17.2 be knowledgeable of the basic principles of research

17.3 be able to discuss the ethical issues in the planning and administration of research projects
