THE DEPARTMENT OF ANESTHESIOLOGY & PERIOPERATIVE MEDICINE FACULTY OF MEDICINE QUEEN'S UNIVERSITY

POSTGRADUATE EDUCATION PROGRAM IN ANESTHESIOLOGY

ROTATION SPECIFIC GOALS AND OBJECTIVES

Latest Revision February 2018

TRADITIONAL COHORT OF RESIDENTS

GOALS AND OBJECTIVES FOR THE PGY 1 YEAR OF THE POSTGRADUATE PROGRAM IN ANESTHESIOLOGY

The discipline of Anesthesia interfaces with many other medical disciplines. The PGY 1 year is broadly based in order to provide the basis for a wide understanding of medicine and to facilitate success on the LMCC II examination, a current requirement of all Canadian licensing authorities for licensure.

Residents who are pursuing electives in the PGY year must have acceptable academic records AND meet the program's criteria for elective approval by the PGE Committee. The Anaesthesia rotation objectives are included in the general objectives (*vide supra*).

The core PGY 1 Year will consist of the following rotations:

Pediatrics	1 block
Emergency	2 blocks
General Internal Medicine	1 block
Cardiology	1 block
General/CV Surgery	2 blocks
Obstetrics/Gynecology	1 block
Elective Rotation	1 block
Anesthesiology	4 blocks, divided as:
Orientation rotation	1 block – early in the PGY 1 year
Introduction to Anesthesia	3 blocks (blocks 11-13)
(with buddy call)	

<u>Evaluation</u>

With the exception of the Anesthesia rotations, evaluation of PGY 1 rotations is by ITER.

PGY 1 Pediatrics

<u>Medical Expert</u>

General

At the completion of the rotation The PGY-1 Trainee will demonstrate:

- 1. Knowledge of normal behaviour, growth and development with specific knowledge of renal, respiratory, and cardiac physiologic development in a child.
- 2. Knowledge of current feeding practices of infants and children.
- 3. The ability to manage common paediatric problems in ambulatory and hospital settings.
- 4. The ability to use unique interview and examination techniques with children and their families.

The following goals when achieved will be useful knowledge for the LMCC Part II:

- 5. Knowledge of the natural history of acute/chronic disorders.
- 6. Knowledge of communicable diseases and immunization schedules.
- 7. Knowledge of the principles of genetic counseling.
- 8. The ability to give preventive/anticipatory guidance.
- 9. The ability to manage handicapped children and their families.
- 10. Knowledge of the special needs of the adolescent.

Specific

The PGY- 1 Trainee is expected to demonstrate an effective approach and appropriate management to the patient presenting with the following:

Neonatal:

- newborn assessment, neonatal cyanosis and jaundice
- normal growth and development (tall stature, short stature)
- failure to thrive, feeding problems
- prematurity, sudden infant death syndrome
- chromosomal disorders
- skin rashes

Developmental:

- learning disorders, sensory/speech disorders
- abnormal sexual maturation
- enuresis
- scoliosis, leg pain in childhood
- obesity

General Medicine:

- ingestion of poisons
- febrile illnesses and infections, HIV in children
- dyspnea, wheezing, stridor
- seizure disorder
- gastroenteritis/diarrhea, constipation
- child abuse

Procedures

The PGY-I Trainee will demonstrate an effective approach to:

- venous access
- lumbar puncture (perform at least one)

Communicator

- 1. The resident will be able to effectively communicate with children of all ages and their parents/caregivers
- 2. The resident will be able to discuss management plans with patients and family members in a clear understandable fashion

- 3. The resident will be able to take an appropriate history from various sources
- 4. The resident will be able to present cases to the attending staff in a clear, concise manner
- 5. Charting will be clear and legible at all times

Collaborator

- 1. The resident will consult effectively and appropriately with other health care personnel to achieve suitable care for the patient
- 2. The resident will act as a consultant when appropriate and make his/her suggestions in clear, concise language that is easy to decipher

<u>Manager</u>

- 1. The resident will effectively manage the pediatric inpatients, triage appropriately, as well as assess patients elsewhere in the hospital when needed
- 2. The resident will ensure that orders are done in a timely manner so that they can be carried out expeditiously
- 3. The resident will supervise junior members of the health care team appropriatley

Health Advocate

- 1. The resident will always be an advocate for the patient
- 2. The resident will ensure that the child's safety is placed above all else
- 3. The resident will ensure that all standards of care are met when caring for a child
- 4. The resident will use limited health care resources in an appropriate manner

<u>Scholar</u>

- 1. The resident will embark on self-directed learning and will continue to read around cases, consult the literature and improve his/her knowledge base
- 2. The resident will attend all rounds and teaching sessions
- 3. The resident will come to the hospital prepared are organized in order to care for the patients
- 4. The resident will teach junior members (medical students) of the health care team

Professional

- 1. The resident will always be respectful to patients and families as well as other health care professionals
- 2. The resident will conduct his/herself in an honest, responsible manner at all times
- 3. The resident will be a productive member of the health care team
- 4. The resident will act in an ethically and morally sound manner

Block Coordinator Dr. Melinda Fleming Dr. Kirk Leifso Revised: February 2018

PGY 1 Emergency Medicine

Medical Expert

General

At the completion of the rotation The PGY-1 Trainee will demonstrate the:

- 1. Ability to triage the critically ill patient and set priorities in management.
- 2. Ability to manage the initial stabilization of the patient with multi-system failure/trauma.

Specific

At the end of the rotation The PGY-1 Trainee will demonstrate an effective approach (including the appropriate assessment, differential diagnosis, and management) of the patient presenting with the following:

- trauma
- rape and sexual assault
- poisoning
- chest pain
- headache
- impaired consciousness (coma)
- seizures
- new onset neurologic deficit (stroke)
- shocks
- acute respiratory distress febrile illness and infections
- abdominal pain
- nausea/vomiting/dehydration
- emotional or psychiatric crisis
- syncope/dizziness
- acute joint pain, back pain, leg pain
- jaundice

Procedures

The PGY-1 Trainee will demonstrate skills in:

- basic and advanced Cardiac Life Support
- application of plaster cast
- suturing: skin, face, hands, etc.
- diagnostic tap: lumbar, chest
- closed reduction of fractures
- local and regional anaesthesia

Communicator

- 1. The resident will be able to effectively communicate with patients and their families
- 2. The resident will be able to communicate effectively with nursing staff
- 3. The resident will be able to take an appropriate history from various sources
- 4. The resident will be able to present cases to the attending staff in a clear, concise manner
- 5. Charting will be clear and legible at all times

Collaborator

- 1. The resident will consult effectively and appropriately with other health care personnel to achieve suitable care for the patient
- 2. The resident will arrange appropriate investigations and tests that are indicated

3. The resident will convey information to the necessary professionals to achieve optimal care for their patient

<u>Manager</u>

- 1. The resident will triage appropriately
- 2. The resident will ensure that orders are done in a timely manner so that they can be carried out expeditiously
- 3. The resident will supervise junior members of the health care team appropriately
- 4. The resident will demonstrate effective use of personnel, facilities, equipment and backup resources

Health Advocate

- 1. The resident will always be an advocate for the patient
- 2. The resident will ensure that the patient's safety is placed above all else
- 3. The resident will ensure that all standards of care are met
- 4. The resident will use limited health care resources in an appropriate manner

<u>Scholar</u>

- 1. The resident will embark on self-directed learning and will continue to read around cases, consult the literature and improve his/her knowledge base
- 2. The resident will attend all rounds and teaching sessions
- 3. The resident will come to the hospital prepared are organized in order to care for the patients
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Professional

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Block Coordinator Dr. Melinda Fleming Dr. Jaelynn Caudle Revised: February 2018

PGY 1 GENERAL INTERNAL MEDICINE

Medical Expert

General

At the completion of the rotation, the PGY-1 Trainee will demonstrate:

- 1. Ability to manage patients with a variety of acute and chronic disease of various organ systems.
- 2. Ability to appropriately refer patients to consultants and community services.
- 3. Ability to provide emotional support for patients and their families.
- 4. Ability to elicit the active participation of patients and families in their care where appropriate.

Specific

The PGY-1 Trainee will demonstrate the appropriate recognition and management of patients with common symptoms/disease complexes in the following subspecialties within Internal Medicine:

- Allergy, Immunology, Rheumatology
- Cardiovascular Medicine
- Endocrinology
- Gastroenterology
- Geriatrics
- Haematology
- Nephrology
- Neurology
- Respiratory Disorders
 - Oncology

Procedures

The PGY-1 Trainee is expected to know and possibly be able to demonstrate an effective approach to the following procedures:

- venipuncture
- arterial puncture for Blood Gas Analysis (taking/interpretation)
- inhalation therapy
- central venous access
- ACLS (maintenance)
- pulmonary function studies
- thoracenteses
- lumbar puncture

Communicator

- 1. The resident will be able to effectively communicate with patients and their families
- 2. The resident will be able to discuss management plans with patients and family members in a clear understandable fashion
- 3. The resident will be able to take an appropriate history from various sources
- 4. The resident will be able to present cases to the attending staff in a clear, concise manner
- 5. The resident should be able to provide emotional support for patients and their families
- 6. Charting will be clear and legible at all times

Collaborator

- 1. The resident will consult effectively and appropriately with other health care personnel to achieve suitable care for the patient
- 2. The resident will act as a consultant when appropriate and make his/her suggestions in clear, concise language that is easy to decipher
- 3. The resident will arrange appropriate investigations and tests that are indicated
- 4. The resident will convey information to the necessary professionals to achieve optimal care for their patient

<u>Manager</u>

- 1. The resident will effectively manage the inpatients, triage appropriately, as well as assess patients elsewhere in the hospital when needed
- 2. The resident will ensure that orders are done in a timely manner so that they can be carried out expeditiously
- 3. The resident will supervise junior members of the health care team appropriately

Health Advocate

- 1. The resident will always be an advocate for the patient
- 2. The resident will ensure that the patient's safety is placed above all else
- 3. The resident will ensure that all standards of care are met when caring for each patient
- 4. The resident will use limited health care resources in an appropriate manner

<u>Scholar</u>

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- 2. The resident will attend all rounds and teaching sessions
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Professional

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- 2. The resident will conduct his/herself in an honest, responsible manner at all times
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- 4. The resident will act in an ethically and morally sound manner

Block Coordinator Dr. Melinda Fleming Dr. David Taylor Revised: February 2018

PGY 1 CARDIOLOGY

Medical Expert

Goal:

The resident will assess the patient and begin to outline a course of therapy and investigation for a patient with a cardiac problem.

Objectives:

- 1. The resident should acquire the following knowledge about the normal heart and blood vessels as they progress through the cardiology rotation:
 - The resident will understand the embryology of the heart.
 - The resident will understand the anatomy of the heart.
 - The resident will understand the normal physiology of the cardiovascular system.
 - The resident will understand the generation and conduction of the electrical activity in the heart.
 - The resident will understand the mechanism of metabolic regulation within the heart.
- 2. In examining the heart and the blood vessels:
 - The resident will be able to take a complete cardiovascular history and physical examination of the heart, peripheral vasculature, precordium, and lungs.
 - The resident will be able to interpret the resting electrocardiogram and chest x-ray.
 - The resident will assess patients with abnormal myocardial contractility, electrical or conduction abnormalities in the heart, and myocardial ischemia and infarction.
- 3. Disorders of the cardiovascular system:
 - The resident will diagnose, investigate and manage patients with chest pain.
 - The resident will describe the pathophysiology of heart failure. The resident will be able to diagnose, investigate and treat heart failure.
 - The resident will discuss the pathophysiology of hypotension and shock. The resident will describe the physical findings, investigation and management of shock and acute pump failure.
 - The resident will describe the pathophysiology and investigation of high output states.
 - The resident will describe the disturbances of cardiac rhythm and conduction. The resident will describe and investigate mechanisms of arrhythmias and conduction abnormalities. The resident will be expected to manage all common arrhythmias and rhythm abnormalities.
 - The resident will have a clear differential diagnosis and plan of management of the patient with syncope.
 - The resident will describe the mechanisms of sudden death. The resident will discuss the predictors and prevention of sudden cardiac death.
 - The resident will discuss the current standards of cardiopulmonary resuscitation.
- 4. Disease of the heart and blood vessels:
 - The resident will describe the history, physical findings, investigation and current management of patients with:
 - rheumatic fever
 - aortic valve disease
 - mitral valve disease
 - tricuspid and pulmonary valve disease
- 5. Coronary Artery Disease:
 - The resident will understand the factors influencing atherogenic heart disease, cholesterol metabolism, and prevention of coronary atherosclerosis.
 - The resident will understand the pathophysiology and investigation of angina pectoris, myocardial infarction and other manifestations of myocardial ischemia.
 - The resident will discuss the diagnosis and treatment of nonatherosclerotic coronary artery disease including coronary artery spasm.

- *Systemic arterial hypertension.* The resident will understand the pathophysiology of hypertension. The resident will describe a plan of investigation and management to the hypertensive patient. The resident will outline the anaesthetic implications of hypertension.
- *Pulmonary Hypertension.* The resident will discuss the investigation, diagnosis and treatment of primary pulmonary hypertension, pulmonary embolism, pulmonary infarction, acute cor pulmonale and chronic cor pulmonale.
- The resident will discuss the pathophysiology, investigation, treatment and complications of bacterial endocarditis. The resident will also be familiar with commonly used protocols for prophylaxis of bacterial endocarditis.
- The resident will be familiar with myocardial disease. The resident will diagnose, treat and investigate cardiomyopathies.
- The resident will diagnose, manage and treat the patient with acute and chronic pericardial disease.
- The resident will describe the effects of trauma on the heart.
- The resident will describe the diagnosis, investigation and treatment of patients who have peripheral vascular disease. The resident will describe the current management of aneurysms of the aorta. The resident will describe the physical findings, investigation and treatment of patients who have peripheral venous disease.
- 6. The resident will be familiar with the following techniques and therapeutic procedures. The resident will describe the indications for each intervention and be able to interpret at a basic level the data generated from these techniques. The resident will discuss the complications of these techniques:
 - electrocardiography
 - exercise test
 - Holter monitoring
 - cardioversion
 - percutaneous transluminal coronary angioplasty
- 7. The resident will describe the indications for cardiac pacing. The resident will discuss the various forms of cardiac pacemakers.

Communicator

- 1. The resident will be able to effectively communicate with patients and their families
- 2. The resident will be able to discuss management plans with patients and family members in a clear understandable fashion
- 3. The resident will be able to take an appropriate history from various sources
- 4. The resident will be able to present cases to the attending staff in a clear, concise manner
- 5. The resident should be able to provide emotional support for patients and their families
- 6. Charting will be clear and legible at all times

<u>Collaborator</u>

- 1. The resident will consult effectively and appropriately with other health care personnel to achieve suitable care for the patient
- 2. The resident will act as a consultant when appropriate and make his/her suggestions in clear, concise language that is easy to decipher
- 3. The resident will arrange appropriate investigations and tests that are indicated
- 4. The resident will convey information to the necessary professionals to achieve optimal care for their patient

Manager

- 1. The resident will effectively manage the inpatients, triage appropriately, as well as assess patients elsewhere in the hospital when needed
- 2. The resident will ensure that orders are done in a timely manner so that they can be carried out expeditiously
- 3. The resident will supervise junior members of the health care team appropriately

Health Advocate

1. The resident will always be an advocate for the patient

- 2. The resident will ensure that the patient's safety is placed above all else
- 3. The resident will ensure that all standards of care are met when caring for each patient
- 4. The resident will use limited health care resources in an appropriate manner

<u>Scholar</u>

- 1. The resident will embark on self-directed learning and will continue to read around cases, consult the literature and improve his/her knowledge base
- 2. The resident will attend all rounds and teaching sessions
- 3. The resident will come to the hospital prepared are organized in order to care for the patients
- 4. The resident will teach junior members (medical students) of the health care team

Professional

- 1. The resident will always be respectful to patients and families as well as other health care professionals
- 2. The resident will conduct his/herself in an honest, responsible manner at all times
- 3. The resident will be a productive member of the health care team
- 4. The resident will act in an ethically and morally sound manner

Block Coordinator Dr. Melinda Fleming Dr. David Taylor/Dr. Peggy DeJong Reviewed: February 2018

PGY 1 GENERAL SURGERY

The resident may spend 2 months on general surgery, or one month on general surgery and one month on the cardiovascular surgery service.

<u>Medical Expert</u>

General

At the completion of the rotation The PGY-1 Trainee will demonstrate the:

- 1. Ability to diagnose and manage common acute and chronic problems in the office, emergency room and hospital relating to the surgical specialty rotation on which the resident is placed.
- 2. Effective utilization of consultants, knowledge of pre- and post-operative management.
- 3. Ability to explain and justify common operative procedures to patients.
- 4. Ability to treat common problems arising during pre- and post-operative period (e.g., diabetes, infections, fluid and electrolyte imbalance).

The resident will accomplish this by spending approximately equal amounts of time in the operating room, the clinic and on the wards. This will be aided by rounds and conferences where appropriate

Specific

The PGY-1 Trainee is expected to be able to describe and aid in the effective preoperative and postoperative management of the patient presenting with the following:

- acute abdomen
- appendicitis
- cholecystitis/lithiasis
- hernias (hiatus, inguinal, incisional, umbilical)
- tumors: benign/malignant breast, bowel, lung, skin, thyroid, pancreas)
- fluid resuscitation in the dehydrated/hypovolemic patient
- trauma (abdominal; and head, neck, thoracic and vascular)
- problems unique to large complicated surgical cases ie. Thoracoabdominal esophagogastrectomies, Whipple procedures, Liver resections, AAA repairs, thoracotomies
- routine pediatric surgical problems and procedures

Procedures

The PGY-1 Trainee will demonstrate skills in:

- incision and drainage of abscesses
- placement of a nasogastric tube
- insertion of chest tube (on thoracic service)
- simple skin suturing

Communicator

- 1. The resident will be able to effectively communicate with patients and their families on the ward, in the ER and in a clinic setting
- 2. The resident will be able to discuss management plans with patients and family members in a clear understandable fashion
- 3. The resident will be able to present cases to the attending staff in a clear, concise manner
- 4. The resident should be able to provide emotional support for patients and their families
- 5. The resident should be able to communicate effectively with all members of the OR team
- 6. Charting will be clear and legible at all times

Collaborator

- 1. The resident will consult effectively and appropriately with other health care personnel to achieve suitable care for the patient
- 2. The resident will act as a consultant when appropriate and make his/her suggestions in clear, concise language that is easy to decipher
- 3. The resident will arrange appropriate investigations and tests that are indicated

4. The resident will convey information to the necessary professionals to achieve optimal care for their patient

<u>Manager</u>

- 1. The resident will effectively manage the inpatients, triage appropriately, as well as assess patients elsewhere in the hospital when needed
- 2. The resident will ensure that orders are done in a timely manner so that they can be carried out expeditiously
- 3. The resident will supervise junior members of the health care team appropriately

Health Advocate

- 1. The resident will always be an advocate for the patient
- 2. The resident will ensure that the patient's safety is placed above all else
- 3. The resident will ensure that all standards of care are met when caring for each patient
- 4. The resident will use limited health care resources in an appropriate manner

<u>Scholar</u>

- 1. The resident will embark on self-directed learning and will continue to read around cases, consult the literature and improve his/her knowledge base
- 2. The resident will attend all rounds and teaching sessions
- 3. The resident will come to the hospital prepared are organized in order to care for the patients
- 4. The resident will teach junior members (medical students) of the health care team

Professional

- 1. The resident will always be respectful to patients and families as well as other health care professionals
- 2. The resident will conduct his/herself in an honest, responsible manner at all times
- 3. The resident will be a productive member of the health care team
- 4. The resident will act in an ethically and morally sound manner

Block Coordinator Dr. Melinda Fleming Dr. Diederick Jalink Reviewed: February 2018

PGY 1 OBSTETRICS AND GYNECOLOGY

Medical Expert

Obstetrics

General

At the completion of the rotation the PGY-1 Trainee will:

1. Be able to identify major perinatal issues that can lead to increased infant/maternal morbidity and mortality.

Specific

- 1. Be aware of the progression of normal labor and delivery including:
 - a. Four stages of labor;
 - b. Intrapartum fetal monitoring;
 - c. Determining the position and lie of the fetus; and
 - d. Identifying abnormal/high risk situations during labour;
- 2. Discuss options for intrapartum analgesia.
- 3. Discuss high risk obstetrical situations including:
 - a. Multiple gestation;
 - b. Prematurity;
 - c. PROM;
 - d. Assisted deliveries; and
 - e. Grand multiparity.
- 4. Be able to discuss the diagnosis and initial treatment of:
 - a. Antepartum hemmorhage;
 - b. Postpartum hemorrhage;
 - c. Pre-eclampsia/HELLP syndrome;
 - d. Fetal bradycardia; and
 - e. Retained placenta.

Procedures

The PGY-1 will have had the opportunity to gain experience in the following technical skills:

- 1. Physical examination of the pregnant patient;
- 2. Assessing cervical dilatation;
- 3. Vaginal delivery;
- 4. Assisting at Caesarean Section; and
- 5. Principles of episiotomies and repair of tears.

Gynecology

General

At the completion of the rotation the PGY-1 Trainee will:

1. Be able to identify major issues in the perioperative management of gynecologic surgery patients.

Specific

- 1. Demonstrate competency in preoperative assessments of patients for gynecologic surgery;
- 2. Gain experience in the postoperative management of patients following gynecologic surgery;
- 3. Be able to diagnose and initiate treatment of common postoperative complications:
 - a. Hypotension;
 - b. Oliguria;
 - c. Pain; and
 - d. Nausea and vomiting.
- 4. Be aware of the major treatment options for gynecologic cancers:
 - a. Efficacy
 - b. Common side effects; and
 - c. Complications.

Procedures

The PGY-1 will have had the opportunity to gain experience in the following technical skills:

1. Assisting in gynecologic surgery.

Communicator

The Trainee will be able to:

- 1. Effectively communicate with patients and their families;
- 2. Discuss management plans with patients and family members in a clear understandable fashion;
- 3. Take an appropriate obstetrical and gynecologic history from patients and ancillary sources;
- 4. Present cases to the attending staff in a clear, concise manner;
- 5. Provide emotional support for patients and their families; and
- 6. Chart in a clear and legible fashion.

Collaborator

The Trainee will be able to:

- 1. Consult effectively and appropriately with other health care personnel to achieve suitable care for the patient;
- 2. Arrange appropriate investigations and tests; and
- 3. Convey information to the necessary professionals to achieve optimal care for their patient.

Health Advocate

The Trainee will be able to:

- 1. Be an advocate for the patient
- 2. Ensure that the patient's safety is placed above all else
- 3. Ensure that all standards of care are met when caring for each patient
- 4. Use limited health care resources in an appropriate manner

<u>Manager</u>

The Trainee will be able to:

- 1. Effectively manage the inpatient service, triage appropriately, as well as assess patients elsewhere in the hospital when needed;
- 2. Ensure that admissions and orders are done in a timely manner so that they can be carried out expeditiously; *and*
- 3. Supervise junior members of the health care team appropriately.

Scholar

The Trainee will be able to:

- 1. Embark on self-directed learning and will continue to read around cases, consult the literature and improve his/her knowledge base;
- 2. Attend all rounds and teaching sessions;
- 3. The resident will come to the hospital prepared and organized in order to care for the patients; and
- 4. Teach junior members (medical students) of the health care team.

Professional

The Trainee will be able to:

- 1. Always be respectful to patients and families as well as other health care professionals;
- 2. Conduct his/herself in an honest, responsible manner at all times;
- 3. Be a productive member of the health care team; *and*
- 4. Act in an ethically and morally sound manner.

Block Coordinator Dr. Melinda Fleming Dr. Julie Tessier Revised date: February 2018

PGY 1 ORIENTATION TO ANESTHESIOLOGY

During the first half of the PGY 1 year, residents will undertake a one-block rotation in clinical anesthesia. The goal is to orient them to the Department and to introduce them to the anesthesiologist's role in perioperative care.

<u>Medical Expert</u>

Preoperative assessment:

The resident will be able to:

- after an appropriate history and physical exam, correctly assign an ASA score to the patient.
- demonstrate an equivalent knowledge of the action, dose and problems associated with drugs commonly used in the resident's anesthetic practice to that knowledge required in the undergraduate course of medical pharmacology. Included should be; an induction agent, a volatile anesthetic, a narcotic and antagonist, muscle relaxants (Succinylcholine and a non-depolarizing relaxant) and an antagonist, a local anesthetic drug, and those drugs required for resuscitation (to the level of ACLS).
- demonstrate some knowledge of the interaction of the above drugs with other medications and with common patient problems.
- demonstrate some knowledge of the limitations of various basic monitoring equipment, and be able to select appropriate monitors for the patient's intraoperative course.

Clinical Performance

Patient Assessment:

• The resident will demonstrate a basic ability to assess a patient's airway, breathing, and cardiovascular system, during the pre-anesthetic, anesthetic, and post anesthetic periods.

Judgment and Management

- The resident will demonstrate the ability to perform a satisfactory machine check.
- The resident will be familiar with a fundamental plan of anesthesia useful in ASA Class 1-2 patients for peripheral surgery.
- The appropriate use of basic monitors is expected.
- The resident will demonstrate that (s)he is aware of his/her limitations.

Technical Skills

- The resident will demonstrate the ability to cannulate peripheral veins successfully (more often than not).
- The resident will demonstrate the ability to maintain an airway with either mask or endotracheal tube most of the time; and to recognize problems that may occur with the airway.
 - The resident will demonstrate the ability to perform, with assistance:
 - simple anesthetic procedures (eg. D&C, cystoscopy, laparoscopy) for ASA I and II patients,

Staff Intervention

• At this stage both direction and intervention by the staff are expected as part of the normal teaching and learning experience.

Communicator

- 1. The resident will be able to effectively communicate with patients and their families prior to their anesthetic
- 2. The resident will be able to discuss management plans with patients and family members in a clear understandable fashion
- 3. The resident will be able to present cases to the attending staff in a clear, concise manner
- 4. The resident should be able to communicate effectively with all members of the OR team
- 5. Charting will be clear and legible at all times

Collaborator

- 1. The resident will consult effectively and appropriately with other health care personnel to achieve suitable care for the patient and optimization prior to surgery
- 2. The resident will arrange appropriate investigations and tests that are indicated
- 3. The resident will convey information to the necessary professionals to achieve optimal care for their patient

<u>Manager</u>

- 1. The resident will effectively manage their OR ie: setting up in the morning, checking the machine, preparing appropriately for each case
- 2. The resident will ensure that their attending staff is aware of any complications or delays

Health Advocate

- 1. The resident will always be an advocate for the patient
- 2. The resident will ensure that the patient's safety is placed above all else
- 3. The resident will ensure that all standards of care are met when caring for each patient
- 4. The resident will use limited health care resources in an appropriate manner

<u>Scholar</u>

- 1. The resident will embark on self-directed learning and will continue to read around cases, consult the literature and improve his/her knowledge base
- 2. The resident will attend all rounds and teaching sessions
- 3. The resident will come to the hospital prepared are organized in order to care for the patients

Professional

- 1. The resident will always be respectful to patients and families as well as other health care professionals
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- 4. The resident will act in an ethically and morally sound manner

Block Coordinator Dr. Melinda Fleming Revised: November 2017

PGY 1 INTRODUCTION TO CLINICAL ANESTHESIOLOGY

During the last three blocks of the PGY 1 year (11-13), the resident will undertake a 12-week period of clinical anesthesia training. During the first block, residents will be introduced to more complicated cases, be oriented to the Labour and Delivery service, and be oriented to the Acute Pain Service. They will begin to learn the advanced technical skills required for these services. They will be introduced more fully to the policies and procedures of the Department. During the latter two blocks, residents will begin to take call with a senior resident "buddy". The terminal goal of the rotation is that the resident be ready to undertake independent call duties by the beginning of the PGY 2 year.

<u>Medical Expert</u>

Preoperative assessment:

The resident will be able to:

- after an appropriate history and physical exam, correctly assign an ASA score to the patient.
- demonstrate an equivalent knowledge of the action, dose and problems associated with drugs commonly used in the resident's anesthetic practice in a more indepth manner. Residents should be aware of indications, contraindications, side effects, dosage and pharmacokinetics/dynamics of commonly used drugs. Included should be; induction agents, volatile anesthetics, narcotics and antagonists, muscle relaxants and reversal agents, local anesthetics, and those drugs commonly required for resuscitation.
- demonstrate some knowledge of the interaction of the above drugs with other medications and with common patient problems.
- demonstrate some knowledge of the limitations of various basic monitoring equipment, and be able to select appropriate monitors for the patient's intraoperative course.

Clinical Performance

Patient Assessment:

- The resident will demonstrate a basic ability to assess a patient's airway, breathing, and cardiovascular system, during the pre-anesthetic, anesthetic, and post anesthetic periods.
- The resident will be familiar with a fundamental plan of anesthesia useful in ASA Class 1-2 patients for peripheral surgery as well as more complex cases
- The resident will be able to assess laboring patients who request an epidural
- The resident will be able to respond to code 99s and cardiac arrests appropriately as well as being an effective member of the trauma team
- The resident will learn to trouble-shoot common acute pain management problems and scenarios safely and efficiently
- The resident will demonstrate that (s)he is aware of his/her limitations.

Technical Skills

- The resident will demonstrate the ability to cannulate peripheral veins successfully
- The resident will demonstrate the ability to maintain an airway with either mask or endotracheal tube most of the time; and to recognize problems that may occur with the airway.
- The resident will be able to successfully place a labor epidural in a safe manner
- The resident will demonstrate the ability to perform with assistance:
 - simple anesthetic procedures (eg. D&C, cystoscopy, laparoscopy, arthroscopy) for ASA I and II patients,

Staff Intervention

• At this stage both direction and intervention by the staff are expected as part of the normal teaching and learning experience.

Communicator

- 1. The resident will be able to effectively communicate with patients and their families prior to their anesthetic
- 2. The resident will be able to discuss management plans with patients and family members in a clear understandable fashion
- 3. The resident will be able to present cases to the attending staff in a clear, concise manner
- 4. The resident should be able to communicate effectively with all members of the OR team
- 5. Charting will be clear and legible at all times

Collaborator

- 1. The resident will consult effectively and appropriately with other health care personnel to achieve suitable care for the patient and optimization prior to surgery
- 2. The resident will arrange appropriate investigations and tests that are indicated
- 3. The resident will convey information to the necessary professionals to achieve optimal care for their patient
- 4. The resident will hand over to the oncoming resident any problems experienced during their night on call including APMS patients and CV

<u>Manager</u>

- 1. The resident will effectively manage their OR ie: setting up in the morning, checking the machine, preparing appropriately for each case
- 2. The resident will ensure that the C/S room and the emergency pack are stocked when they are on call
- 3. The resident will ensure that their attending staff is aware of any complications or delays

Health Advocate

- 1. The resident will always be an advocate for the patient
- 2. The resident will ensure that the patient's safety is placed above all else
- 3. The resident will ensure that all standards of care are met when caring for each patient
- 4. The resident will use limited health care resources in an appropriate manner

<u>Scholar</u>

- 1. The resident will embark on self-directed learning and will continue to read around cases, consult the literature and improve his/her knowledge base
- 2. The resident will attend all rounds and teaching sessions
- 3. The resident will come to the hospital prepared are organized in order to care for the patients

Professional

- 1. The resident will always be respectful to patients and families as well as other health care professionals
- 2. The resident will conduct his/herself in an honest, responsible manner at all times
- 3. The resident will be a productive member of the health care team
- 4. The resident will act in an ethically and morally sound manner

References Clinical Anesthesiology, G. E. Morgan and M. S. Mikhail, 5th ed., 2013

> Block Coordinator Dr. Melinda Fleming Revised: November 2017

TRADITIONAL COHORT OF RESIDENTS BLOCK ROTATION OBJECTIVES OF THE POSTGRADUATE PROGRAM IN ANESTHESIOLOGY

Clinical experience in Queen's Anesthesiology during the PGY 2-5 years is a blend of Block and Horizontal rotation assignments. The following anesthesia rotations are defined 4-week Block assignments:

- Cardiac Anesthesia
- Transthoracic Echo
- CVRI
- Obstetric Anesthesia
- Chronic Pain
- Acute Pain/Regional
- Ambulatory Surgery
- Community Anesthesia
- Airway Block
- Pediatric Anesthesia (3 blocks)
- Community Thoracic Anesthesia (Oshawa)
- Electives

The other anaesthesiology rotation Goals & Objectives are achieved through continuous exposure on Horizontal rotations in adult and pediatric anesthesiology. Residents are assigned to different daily anesthesia locations (typically OR's, but also PAC, obstetric, in-patient consults, trauma, etc.) each day, such that, over the course of their entire residency they receive exposure to, and instruction on, all aspects of clinical anesthesiology.

Although much of the day-to-day clinical exposure is obtained during Horizontal rotations, the academic Goals & Objectives associated with each clinical domain of anaesthesiology are presented below as discrete units, much as there are chapters in a textbook. This allows the resident to easily identify the learning objectives related to each clinical domain. Each domain has a coordinator (see table below) who will be responsible for defining the Goals & Objectives for the area. The coordinators are aware of the National Curriculum for the Medical Expert competency in Anesthesiology, and use it to help guide the development of their Goals & Objectives.

Where a discrete Block assignment to the clinical domain exists (e.g. Cardiac anesthesia), the block coordinator will be responsible for developing an appropriate evaluation rubric and providing the resident with a summative evaluation in the form of a rotation ITER.

The objectives for the clinical domains are the combination of the basic science (Section III) and clinical science (Section IV) objectives. The objectives also contain an indication of the nature and number of technical procedures that must be performed by the residents during their block rotation.

The Goals & Objectives for the Critical Care and Medicine senior rotations are described in section V.

Evaluation

The Evaluation process for Anesthesia rotations is detailed in the Resident Handbook. This handbook can be found at:

http://meds.queensu.ca/anesthesiology/assets/revised%20resident%20handbook%20FINAL%20update%202009%2 0Oct.pdf

Hospital	Subspecialty	Coordinator	Schedule Name	Duration/yr	Revised
КСН	Cardiac	Dr. Rene Allard	Cardiac	1 block PGY 2 1 block PGY 5	<mark>2017 Nov</mark>
	CVRI/CSU	Dr. Tarit Saha	CVRI/CSU	1 block PGY 4	2018 Feb
	Transthoracic Echo	Dr. Asad Mir-Ghassemi	PocUS	1 block PGY 3	<mark>2017 Nov</mark>
	Vascular	Dr. Rene Allard	KGH	PGY 3-5	<mark>2017 Nov</mark>
	Thoracic	Dr. Cara Reimer	KGH	PGY 3-5	<mark>2017 Nov</mark>
	Neurosurgery	Dr. Imelda Galvin	KGH	PGY 3-5	2018 Feb
	Obstetrics **	Dr. Lindsey Patterson	KGH-OB	1 block PGY 2 1 block PGY 5	2018 Feb
	Orthopedics	Dr. Melanie Jaeger	KGH/HDH	PGY 2-5	2017 Nov
	Trauma ^{**} , Burns, Plastic Surgery	Dr. Mike McMullen	KGH/HDH	PGY 2-5	<mark>2017 Nov</mark>
	General Surgery	Dr. Dale Engen	KGH/HDH	PGY 2-5	2017 Nov
	Urology	Dr. Rachel Rooney	KGH	PGY 2-5	<mark>2017 Nov</mark>
	Acute Pain **/ Regional	Dr. Mike McMullen Dr. John Murdoch	KGH-AP	1 block PGY 2 1 block PGY 5	<mark>2017 Nov</mark>
	Gynecology	Dr. Jessica Burjorjee	KGH	PGY 2-5	2018 Feb
	Airway	Dr. Gopa Nair	KGH-AW	1 month PGY2	2018 Feb
	Anesthesia in Remote Locations	Dr. Janet van Vlymen	KGH	PGY 2-5	<mark>2017 Nov</mark>
	Elective	Various		6 blocks PGY 3-5	
HDH	Ambulatory: ENT, Ophth, Gen Surg, Dental/Orofacial, Ortho, Plastics	Dr. Janet van Vlymen	HDH	1 block PGY 3 1 block PGY 5	2017 Nov
	Preassessment Clinics	Dr. Joanna Dion	PAC (HDH)	PGY 2-5	<mark>2017 Nov</mark>
	Chronic Pain	Dr. Scott Duggan	СР	1 block PGY 4	2017 Nov
	Pediatrics	Dr. Joanna Dion	KGH/HDH	PGY 2-5	2017 Nov
CHEO *	Pediatrics	Dr. Amy Roeske	CHEO	3 blocks	2017 Nov
Peterborough	Community Anesthesia	Dr. Janet Hurst	PB	1 block	2017 Nov
OSHAWA	Community Thoracic Anesthesia	Dr. Fadi Hannouche	Oshawa	1 block	<mark>2017 Nov</mark>

^{*} Children's Hospital of Eastern Ontario (CHEO), Ottawa, Ontario

The CHEO rotation is three blocks long. The rotation is supported by the Queen's Regional Education Office. Accommodation and a travel allowance are provided. This block may be taken at any academic Pediatric Hospital if initiated by the resident and approved by the program director, however the REO will not provide financial support for Pediatric Anesthesia rotations taken at sites other than CHEO.

** The experience in the Pre-assessment clinics, in-patient Consults, Trauma and Resuscitation, additional Obstetrical anesthesia, and additional APMS experience occurs throughout the PGY 2 to PGY 5 years, while on call and during horizontal anesthesia assignments.

[#] Peterborough Regional Health Centre, Peterborough, Ontario Peterborough is the location of the mandatory Community Anesthesia experience. The rotation is supported by the Queen's Regional Education Office. Accommodation and a travel allowance are provided. Residents who wish to explore other community rotations may do so during their elective time in the PGY 3-5 years. These elective rotations are not financially supported by the REO.

KHSC KGH Site Cardiac Anesthesiology Rotation Objectives

Residents completing two one-month rotations in Cardiac Anesthesiology (one month to be completed in the junior years, the other month to be completed in the senior years) will achieve competence in the perioperative management of patients undergoing coronary bypass grafting, valve replacement and/or repair, and ascending aortic surgery.

The resident will also gain exposure to – and an understanding of the role of – perioperative echocardiography in the management of cardiac surgical patients in the operating room.

MEDICAL EXPERT

The trainee will endeavour to develop knowledge of the basic sciences as applied to the perioperative period for coronary artery bypass grafting (on- and off-pump), valve replacement and/or repair, and ascending aortic surgery.

A. Physiology and Anatomy

The resident is expected to be able to describe:

- Anatomy of major cardiovascular structures (cardiac valves, left/right ventricles, aorta, and pulmonary artery)
- 4 phases of the cardiac cycle
- Determinants of systolic and diastolic function
- Determinants of cardiac output
- Physiologic differences between the normally functioning left and right ventricular systems
- Natural history and pathophysiology of the following valvular heart disease:
 - Aortic stenosis
 - o Aortic insufficiency
 - o Mitral stenosis
 - Mitral regurgitation
 - Tricuspid regurgitation.
- Normal coronary anatomy and be aware of common variants
- Physiologic determinants of myocardial oxygen supply and demand
- Pathophysiology of atherosclerotic heart disease
- Electrophysiologic basis of myocardial contraction
- Normal conduction pathways and regulation of cardiac rate and rhythm
- Common abnormalities in cardiac conduction pathways and their clinical significance
- Pathophysiology of ascending aortic aneurysms and aortic dissections

B. Pharmacology

The resident should know the pharmacology (mechanism of action, indications, dose and

administration, elimination, and complications/contraindications) of agents commonly used around the time of cardiac surgery, and their relevance to the perioperative period:

- Heparin
- Protamine
- Antiplatelet agents (including aspirin and ADP receptor blockers (e.g. clopidogrel))

- Antifibrinolytic agents (including tranexamic acid)
- Procoagulant agents (including DDAVP, factor VIIa, FEIBA)
- Blood products (pRBC, FFP, platelets, cryoprecipitate, albumin), including transfusion reactions and complications
- Intravenous anesthetics
- Benzodiazepines
- Opioids
- Neuromuscular blockers and reversal agents
- Sympathomimetic agents
- Parasympathomimetic agents
- Other common systemic inotropes, vasopressors, and vasodilators
- Pulmonary vasodilators (as used for pulmonary hypertension, e.g. inhaled epoprostenol)
- Anti-arrhythmic agents, for both prophylaxis and treatment of perioperative dysrhythmias
- Commonly used medications in patients presenting for cardiac surgery (Beta-Blockers, ACE inhibitors, Calcium Channel Blockers, Hypolipidemic agents, Hypoglycemic agents (oral and insulin))

C. Monitoring

The resident will be able to:

- Interpret an EKG for:
 - o ischemia
 - acute infarction
 - o dysrhythmia
 - o paced rhythms
- Explain the principals of non-invasive BP monitoring
- Manage (including indications, contraindications, placement and ongoing care):
 - o arterial cannulae
 - o central venous cannulae
 - o PA catheters
- Understand the role of transesophageal echocardiography in cardiac surgery (see below for more detailed objectives)
- Assess the adequacy of mechanical ventilation using both clinical and laboratory parameters
- Assess the adequacy of circulatory function using clinical and laboratory parameters
- Interpret laboratory monitoring of the coagulation system including use of the ACT
- Assess perioperative blood loss
- Perform temperature monitoring

D. Clinical Assessment & Management

By the end of the rotation, the resident will have achieved the following clinical competencies:

- Ability to perform a complete preoperative evaluation, including obtaining a detailed history, performing an appropriate physical examination, ordering relevant laboratory and ancillary investigations, and reviewing cardiac investigations (e.g. angiogram, echocardiogram)
- Ability to provide an appropriate management plan based on the preoperative evaluation
- Knowledge of pathophysiology of and anesthetic considerations for the following:
 - Coronary artery disease, acute myocardial ischemia and infarction
 - Complications of myocardial infarction, thrombolytic therapy, PCI
 - Coronary artery bypass grafting with cardiopulmonary bypass
 - Coronary artery bypass grafting without cardiopulmonary bypass (off-pump)
 - Valvular heart disease and valve replacement or repair
 - o Cardiac tamponade, pericardial window surgery, reopening post cardiac surgery
 - Constrictive pericarditis
 - o Dilated, restrictive, and obstructive cardiomyopathy

- o CHF systolic and diastolic dysfunction
- o Aberrant conduction (e.g. heart block), pacemakers, ICDs
- o Dysrythmias, EP procedures
- Ascending aortic dissection, ascending aortic aneurysm, ascending aortic surgery Cardiac tumours
- o Urgent and non-urgent cardiac reoperation
- Heart transplant recipient coming for non-cardiac surgery
- Heparin induced thrombocytopenia and heparin resistance
- Knowledge of early complications of cardiac surgery:
 - o Cardiogenic shock
 - o Vasoplegic shock
 - Graft occlusion
 - o Dysrhythmias
 - o Bleeding
 - Knowledge of special issues related to cardiac surgery and anesthesia
 - Cardiopulmonary bypass
 - o Cardioplegia
 - Deep hypothermic circulatory arrest
 - Intra-aortic balloon pump
 - o Blood conservation
 - o Novel anticoagulants
 - o Fast-track cardiac anesthesia
 - o Postoperative neurocognitive dysfunction

E. Perioperative Echocardiography

Daily exposure to perioperative transesophageal echocardiography (TEE) will be provided in the cardiac surgery operating rooms. The aim is to demonstrate the utility of this modality in guiding anesthetic and surgical care of cardiac surgery patients.

By the end of the rotation, the trainee will be able to demonstrate:

- Knowledge of the indications for perioperative TEE in cardiac surgery
- Knowledge of the contraindications to and potential complications of perioperative TEE
- Knowledge of the appropriate alternative diagnostic techniques
- Recognition of major cardiac structures in standard TEE views
- Recognition of the echocardiographic presentations of myocardial ischemia and infarction
- Recognition of the echocardiographic appearance of normal/abnormal ventricular function
- Ability to understand an echocardiography report and apply the results to the clinical situation

COMMUNICATOR

At the senior level resident will be encouraged to develop their unique style as a communicator.

Effective communication skills will be taught and encouraged at several levels:

- Between Resident and Patient and his/her family:
 - Obtain accurate and relevant history and perform detailed physical examination using effective listening skills
 - Explain anesthetic procedures (arterial line, central line, intubation, TEE, etc.) in a clear and compassionate manner
 - Outline risks and obtain informed consent
- Between Resident and Cardiac Anesthesiology Attending
 - Communicate patient information and outline anesthetic management plan to the attending in a professional and efficient manner

- Between Resident and Operating Room Personnel
 - Discuss special needs (monitoring, etc.) with nurses, perfusionists and OR personnel in a professional and respectful manner
 - Ensure clear and audible communication with perfusionist, surgeon, and nurses to ensure safety and prevent errors (drugs, positioning, etc.)
- Between Resident and Surgeon
 - Outline anesthetic concerns to the surgeon, especially if it involves a high-risk patient, cancellation or postponement of the surgery pending further investigation

COLLABORATOR

The resident will be encouraged to recognize the need to utilize their attending physician, other specialists, and ancillary operating room personnel for the perioperative care and management of patients:

- Recognize their limitations, and seek appropriate preoperative consultation from medical experts in other disciplines
- Learn how to effectively collaborate with the cardiac surgeon in providing the best care possible
- Foster healthy team relationships, including with allied health professionals such as OR nurses, anesthesia assistants, and clinical perfusionists

LEADER

Residents are taught:

- Collaborative care plans and 'fast-track' cardiac anesthesiology and surgery as they relate to resource optimization
- The utility of point-of-care testing and transfusion protocols to reduce unnecessary transfusion
- The impact of limited resources (e.g. cancellations and delays) on the patient, the family, wait lists, and human resource allocations
- To anticipate post-operative disposition of the patient and arranging for appropriate resources (e.g. ICU bed)
- To work effectively and efficiently within a health care organization

HEALTH ADVOCATE

Health advocacy requires clinical experience at an advanced level. Senior residents will learn from staff in action in this area. Resident will learn:

- To respond to the individual patient health needs and issues as part of patient care (e.g. the importance of blood conservation strategies, arrhythmia prevention, patient safety measures, and perioperative monitoring in improving patient outcomes)
- To identify the determinants of health in a cardiac surgery patient population
- To promote the health of individual patients coming for cardiac surgery

SCHOLAR

Residents will be encouraged to develop scholarship in several areas:

- Identify important determinants in the perioperative period that impact the health and success of the cardiac surgery patient
- Identify areas of controversy in the perioperative management of cardiac surgery patients using clinical observations
- Teaching sessions and literature reviews

- Seek to practice evidence based medicine
- Contribute to the medical education of other health professionals (medical clerks, nurses in training, respiratory therapists in training, etc.)
- Develop an educational pattern of self-study and critical appraisal of their own performance and knowledge

PROFESSIONAL

Residents must *always*:

- Demonstrate respectful, compassionate behavior toward patients, their families and other health care providers
- Demonstrate an appropriate sense of responsibility and commitment for their patients
- Strive to maintain insight and perspective regarding their own behaviour
- Remain calm and organized in stressful, emergency situations
- Utilize personal resources effectively in order to maintain personal health and sustainable practice

Evaluation:

The attending staff will complete a feedback form, detailing the performance of the resident in each sphere, every day. Attending staff are expected to discuss this feedback with the trainee each day. The Block Coordinator then collates these forms. A summary ITER will be completed and reviewed by the Block Coordinator with the resident at an exit interview at the end of the rotation. The residents will complete daily evaluations of the attending staff and their learning experience. They will also have the opportunity to complete an end-of-rotation summary evaluation form, and to provide verbal feedback to the Block Coordinator at their exit interview. Resident feedback will be used to improve teaching techniques.

References:

This reference list is by no means intended to be definitive or exhaustive. However, it provides good starting points to the exploration of the knowledge content required for this rotation, as detailed in the above objectives.

Hensley, FA et al. (2012). A Practical Approach to Cardiac Anesthesia. Philadelphia: Lippincott Williams & Wilkins.

Kaplan, J et al. (2016). Kaplan's Cardiac Anesthesia: In Cardiac and Noncardiac Surgery. St. Louis: Elsevier Saunders.

Dr. Rene Allard Block Coordinator Revised November 2017

KHSC – KGH site Anesthesiology –Point-of-Care Ultrasound (POCUS) Rotation Objectives

Residents completing a one-month rotation in Point Of Care Ultrasound (POCUS) with emphasis on Focused Cardiac Ultrasound (FoCUS) will achieve basic competence (Level I, see attached) in the performance of bedside POCUS. This will include an understanding of ultrasound and echocardiography basic principles, an ability to acquire adequate POCUS images from standard views, an ability to accurately interpret acquired images, the ability to generate concise reports, and an ability to appropriately apply the acquired information to perioperative patient care.

MEDICAL EXPERT

The resident will endeavour to develop knowledge of the basic and clinical sciences as applied to use of POCUS for the care of patients in the perioperative period to answer basic hemodynamic questions.

Specifically, they will learn about:

- A. Machine care & image acquisition
- Understand the ultrasonography screen and probe conventions
 - o Low-frequency (2-3 MHz) transducers usually used in Transthoracic echocardiography
 - (TTE), focused assessment with sonography in trauma (FAST) and lung US.
 - Frequency proportional to axial resolution
 - Frequency inversely proportional to penetration within tissue
 - Index mark palpable ridge or light
 - o The index mark indicated the part of the image that appears on the right side of the screen
 - The screen is shown with the narrowest portion of the sector scan at the top of the screen
 - o In general, lateral and superior structures are displayed on the right side of the screen
 - High-frequency transducers for superficial suctures can be used in lung US as well.
- List the standard probe manipulation and their effect on image acquisitions
 - Tilting transducer is angled on the long axis of the transducer face to aim the ultrasound beam at structures in different planes
 - Rocking transducer angled side to side on the transducer face's short axis either toward or away from the transducer orientation marker. This "in-plane" movement pushes one of the transducer corners into the skin surface
 - Rotating transducer is turned along its central axis like a corkscrew
 - o Sliding transducer is held at a fixed angle, and the entire transducer is moved on the body.
- B. Ultrasound basics
- Understand basics of ultrasound physics
- List the ultrasound factors that are important in optimal image acquisitions
 - o Frequency
 - o Depth
 - Sector size temporal resolution
 - o Tips
 - US imaging is based on a reflected sound wave
 - Images are best seen with object is perpendicular to US beam
- C. Standard views & anatomy
- List and define the standard windows and echocardiography planes
 - o Nomenclature of standard views

- Window position of the transducer
 - Areas that avoid airfilled lungs, bone
- View(image plane)
 - Long-axis extends for LV apex to aortic root
 - Can be obtained in the parasternal and apical windows
 - Short-axis transecting the heart perpendicular to long-axis
 Can be obtained in the parasternal and subcostal windows
 - 4 C 94 chamber) view perpendicular to both the Long and short axes
 - Can be obtained in the apical and subcostal windows
 - Apex to base intersecting R&L atria and ventricles
- List the surface anatomy important in obtaining the standard views
 - Parasternal views cardiac notch lung free space due to no middle lobe
 - 2-3 cm left of the sternal border, 2-5th interspace, overlies the RV
 - 0

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- Be able to list the optimal patient and probe positions to obtain the standards views
 - o Parasternal Long-L lateral decubitus gravity cause lung to fall away from midline
 - 2-5th interspace
 - Scan plane oriented along a line extending from R shoulder to L hip
 - Index mark direct at R shoulder at the 10 o'clock position
 - Parasternal Short
 - Short axis views are obtained optimally with the patient in the same position as for the parasternal long axis view. The transducer is rotated 90 degrees clockwise from the long axis position. The transducer reference index will now point towards the patients' left shoulder.
 - 4C
 - Imaging of the heart in the apical region is performed with the patient rotated between 60 and 90 degrees to the left with the transducer applied inferiorly and lateral to the point of cardiac impulse. The reference index of the transducer is pointed towards the left side of the patient.
 - o Subcostal
 - Supine position, knees flexed
- Recognize the normal anatomy of the parasternal long axis view
 - Ideal for visualizing
 - Overall function
 - RV:LV ratio
 - Aortic root
 - Key landmarks

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- RV, LA
- LV(anteroseptal and inferolateral walls)& LV outflow tract
- Mitral valve
- Aortic root
- Recognize the normal anatomy of the parasternal short axis views
 - Ideal for visualizing
 - LV function
 - Mitral valve
 - Aortic valve
 - RV:LV ratio
 - Key landmarks
 - 4 levels: apex, papillary muscles, MV, AV
- Recognize the normal anatomy of the apical 4 and 5 chamber views
 - o Ideal for visualizing

- LV(septal and lateral walls), RV, LA, RA
- IAS, IVS
- MV, TV
- Ao root, AAo 5C
- Recognize the normal anatomy of the subcostal 4 chamber view and IVC view
 - o Ideal for visualizing
 - LV, RV, LA, RA
 - IAS, IVS
 - MV, TV
 - IVC, Liver, Abdo Aorta
- List conditions that predispose to poor images
 - o Mechanical ventiliation
 - o COPD
 - o Pneumonthorax
 - o Obesity
- List and define the standard windows for Focused Assessment with Sonography in Trauma (FAST)
 - Nomenclature of standard views
 - Window position of the transducer
 - View (image plane)
 - The hepatorenal recess– probe placed in right upper quadrant laterally along the thoracoabdominal junction.
 - The perisplenic view- Probe placed in left flank along the posterior axillary line.
 - The subxiphoid pericardial window–Probe placed subxiphoid area and directed into the chest toward the left shoulder.
 - The suprapubic window—The probe should be placed just above the pubic symphysis and directed inferiorly into the pelvis.
- Be able to list the optimal patient and probe positions to obtain the standards views
 - The hepatorenal recess
 - Place the transducer in a coronal plane in the midaxillary line between the 9th and 11th intercostal spaces with the transducer marker pointing cephalad.
 - Adjust the transducer position and angle to visualize the right upper quadrant, focusing on the potential space between the liver and kidney.
 - Fan the transducer from anterior to posterior through the entire hepatorenal recess to visualize the inferior tip of the liver, looking for free fluid.
 - The inferior pole of the right kidney should be visualized along with the right paracolic gutter.
 - Angle the transducer superiorly to image the right subdiaphragmatic space.
 - The perisplenic space
 - Place the transducer in a coronal plane on the posterior axillary line between the 6th and 9th intercostal spaces with the transducer marker pointing cephalad. The image may be improved by rotating the transducer 10-20 degrees clockwise with the transducer marker pointing slightly posteriorly.
 - If repositioning is possible, the patient can be placed in a right lateral decubitus position to allow more posterior access to the splenic window.
 - Evaluate the left subdiaphragmatic and splenorenal spaces for any signs of free fluid. Similar to the right upper quadrant, fan the transducer through the splenorenal space from anterior to posterior.

- The inferior poles of the kidney and spleen should be visualized along with the superior portion of the left paracolic gutter..
- The subxiphoid pericardial window
 - Supine position, knees flexed.
 - Pressing the probe into the abdomen and angling the probe so that it is nearly parallel to the skin.
- The suprapubic view
 - Place the transducer in a transverse plane just superior to the pubic symphysis with the transducer marker pointed toward the patient's right. Fan the transducer inferiorly into the pelvis until the bladder is visualized. Set the imaging depth to view the bladder in the top one-third to one-half of the screen. Posterior acoustic enhancement should be appreciated posterior to the bladder.
 - It is important to fan the transducer to visualize the entire bladder from fundus to neck to thoroughly evaluate the rectovesicular or rectouterine spaces for a free fluid collection.
 - Rotate the transducer 90 degrees clockwise to obtain sagittal views of the bladder and scan the entire bladder from left to right.
- Recognize the normal anatomy of the hepatorenal recess
 - Ideal for visualizing
 - Below the diaphragm
 - Between the liver and kidney
 - The inferior pole of the right kidney
 - o Key landmarks
 - Liver
 - Right kidney
 - Diaphragm
- Recognize the normal anatomy of the perisplenic view
 - Ideal for visualizing
 - Below the diaphragm
 - Between the spleen and left kidney
 - The inferior pole of the left kidney
 - Key landmarks
 - Spleen
 - Left kidney
 - Diaphragm
- Recognize the subxiphoid pericardial window
 - o Ideal for visualizing
 - LV, RV, LA, RA
 - Pericardial space
- Recognize the normal anatomy of the suprapubic window
 - o Ideal for visualizing
 - The bladder
 - Rectovesicular space
 - Rectouterine space
- List conditions that predispose to poor images
 - Empty ladder
 - o Obesity

List and define the standard windows for Lung US

o Nomenclature of standard views and findings

- The four hemithorax exam points (BLUE protocol)
- Defining and recognize pleural lines
- Defining and recognize lung sliding and differential diagnosis of its presence/absence
- Defining and recognize A line and the differential diagnosis of an "A-line pattern"
- Defining and recognize B lines and the differential diagnosis of an "B-line pattern"
- Defining and recognize pleural effusion

Be able to list the optimal patient and probe positions to obtain the standards views

- The BLUE protocol
 - Thoracic ultrasound may be performed with the patient in a semi-recumbent position.
 - Place hand horizontally over the anterior chest with the upper fifth finger abutting the clavicle, the digits of both hands together, and the nails at mid-chest. The lower fifth finger approximates the lower anterior border of the lung. The wrists cross over the anterior axillary line. Point 1 is located between the third and fourth finger of the upper hand. Point 2, often near the nipple in male adults, is located in the middle of the palm of the lower hand. Point 3 requires the user to slide the transducer along the lateral chest wall from the anterior to mid-axillary line at the level of the phrenic line made by the lower fifth finger. Point 4 also called the posterolateral alveolar pleural syndrome (PLAPS) point, is found at the intersection of posterior axillary line and the transverse phrenic line.
 - The transducer should be held like a pen, perpendicular to the chest wall with the transducer orientation marker pointing cephalad. The screen marker should be set to the left upper side of the screen. Thus, when interpreting thoracic ultrasound images, the screen to the left will be superior, while the screen to the right will be inferior. When the diaphragm is visualized, the screen to the left of the diaphragm (cephalad) will display the thoracic cavity, while the screen to the right (caudad) will display the subdiaphragmatic organs.
- o The pleural line
 - Center the transducer over an intercostal space so that rib shadows appear at the periphery of the screen. The pleural line is the first horizontal, curvilinear, hyperechoic line below the ribs and represents the interface between parietal and visceral pleura
- o The lung sliding
 - Lung sliding is a shimmering or sliding of the visceral pleura against the parietal pleura during respiration.
- o The A-lines
 - Horizontal, hyperechoic lines that are equidistant repetitions of the pleural line are called *A-lines*.
- o The B-lines
 - Laser like vertical lines that arise from the pleural line and extend to the bottom of screen and erase A-lines.
- The Pleural effusion
 - In a supine patient, should begin by scanning along the posterior axillary line. The diaphragm is identified as a hyperechoic, curved structure that moves with respirations, and its location is confirmed by visualizing subdiaphragmatic organs. Pleural fluid is typically less echogenic than the adjacent liver or spleen.

Recognize the ultrasonographic findings of a normal lung

• Identify A-lines with lung sliding

- Key landmarks
 - Ribs
 - Pleural lines
 - Diaphragm
 - Liver
 - Spleen

List conditions that predispose to poor images

- Rib shadows
- o Obesity

C. LV structure and function, including fractional shortening measurement

- Understand how to assess global and regional LV dysfunction
 - Normal Ventricle behavior
 - Wall movement inward
 - Wall thickening
 - o Dysfunctional myocardial
 - Thickens less \rightarrow hypokinesis
 - Doesn't thicken \rightarrow akinesis
 - Moves paradoxically \rightarrow dyskinesis
 - Balloons out and is thinned \rightarrow aneursymal
- Understand LV function in relation to the coronary anatomy
- D. <u>RV structure and function, including RVSP measurements</u>
- Understand how to assess RV size
- Understand how to assess RV function
- Understand how to measure RVSP
- Recognize the signs of pulmonary hypertension
- Recognize clinical examples of LV dysfunction \rightarrow MI, cardiomyopathy
- Recognize clinical examples of RV dysfunction \rightarrow MI, PE, pul HTN
- E. <u>Volume assessment & pleura, pericardium, and tamponade</u> The determinants of oxygen delivery

The determinants of cardiac output

The Frank-Starling law and preload

Perioperative fluid management

Fixed fluids (liberal vs. restrictive) vs. goal-directed therapy

Static preload measures and the 'fluid challenge'

Traditional (JVP, CVP, PCWP)

Limitations

Complications

Echo-derived (LVEDV, LVEDA)

Dynamic preload measures and 'fluid-responsiveness'

Traditional (Systolic pressure variation, RAP variation, SV variation)

Passive leg raise, respiratory variation

Echo-derived (IVC diameter and collapsibility, SVC collapsibility, Doppler flow variation)

Pleural effusion

Definition

Diagnosis by physical exam and traditional imaging modalities

Diagnosis by ultrasound, differential diagnosis

Pericardial effusion

Definition

Diagnosis by ultrasound, differential diagnosis, quantification

Tamponade

Definition

Diagnosis by physical exam

Diagnosis by ultrasound (specific echo signs)

Pneumothorax

Definition

Diagnosis by physical exam and traditional imaging modalities

Diagnosis by ultrasound, differential diagnosis

Interstitial pulmonary pathologies

Definition

Physical exam findings and traditional imaging/diagnostic modalities

Ultrasonographic pattern and differential diagnosis (pulmonary edema, congestive heart failure, ARDS, pneumonia, etc)

F. <u>Doppler, hemodynamics, and CO measurements</u> The Doppler effect and blood flow velocities

Pulsed Wave Doppler

Velocity at specific location, but limited velocity range

Continuous Wave Doppler

Measurement of high velocities, but cannot determine location of velocity

Cardiac output measurement by echo

Use of PWD at LVOT to measure SV

Practical application of echo-derived CO

Pitfalls of echo-derived CO

G. Indicators of severe AS

Clinical importance of identifying severe AS

Review of normal echocardiographic aortic valve anatomy

Markers of AS by history and physical exam

Identification of severe AS

AHA/ASE criteria for severe AS (AVA, mean gradient, jet velocity)

Associated echo findings of AS (thickened/calcified cusps, restricted cusps, LVH, LAE)

Echo assessment of AS

Planimetry

Measurement of Doppler gradients

The continuity exam

Pitfalls of each assessment method

 H. <u>Diagnosing dyspnea based on distribution of lung profiles</u> Differential diagnosis of dyspnea (1) COPD/asthma, (2) pneumonia, (3) cardiogenic

pulmonary edema (4) pulmonary embolism

Review of lung ultrasound profiles A, B and C

Association between lung profiles and lung sliding

Interpretation of ultrasound lung profiles

I. <u>Application of FAST in advanced trauma life support (ATLS)</u> Assess for both intra-abdominal hemorrhage (RUQ, LUQ, and pelvic windows), as well

as hemopericardium (subxiphoid window)

Clinical decision making for stable versus unstable trauma patients

COMMUNICATOR

At the senior level resident will be encouraged to develop their unique style as a communicator.

Effective communication skills will be taught and encouraged at several levels:

- Between Resident and Patient and his/her family:
 - o Obtain accurate and relevant history and perform relevant physical examination
 - o Explain POCUS procedures in a clear and a compassionate manner
 - o Outline risks and benefits and obtain informed consent
- Between Resident and Anesthesiology Attending
 - Communicate relevant patient information and POCUS findings, and outline specific perioperative management plan as a result of acquired information to the attending in a professional and efficient manner
- Between Resident and Allied Health Professionals
 - Discuss patients and specific hemodynamic concerns in a professional and respectful manner
- Between Resident and Surgeon
 - Outline perioperative hemodynamic concerns to the surgeon, and recommendations based on information from POCUS
- Between Resident and Cardiologist
 - Discuss patients and POCUS findings, and seek expert consultation and opinion when necessary to ensure best patient outcomes

COLLABORATOR

The resident will be encouraged to recognize the need to utilize their attending physician, other specialists, and ancillary hospital personnel for the perioperative care and management of patients:

- Recognize their limitations, and seek appropriate preoperative consultation from medical experts in other disciplines (e.g. Cardiology)
- Learn how to effectively collaborate with the primary attending anesthesiologist and surgical team to provide the best care possible
- Foster healthy team relationships, including with allied health professionals such as nurses, cardiac ultrasonography technicians, etc.

PHYSICIAN MANAGER

Residents are taught:

- The utility of POCUS to more quickly and accurately identify and treat hemodynamic disturbances
- The impact of limited resources (e.g. cancellations and delays) on the patient, the family, wait lists, and human resource allocations, and the potential of POCUS to help mitigate this
- To work effectively and efficiently within a health care organization

HEALTH ADVOCATE

Health advocacy requires clinical experience at an advanced level. Senior residents will learn from staff in action in this area. Resident will learn:

- To respond to the individual patient health needs and issues as part of patient care (e.g. addressing identified perioperative hemodynamic concerns such as significant hypotension, hypovolemia, ventricular dysfuncton, valvulopathy, dyspnea, etc.)
- To identify the hemodynamic determinants of health in a surgery patient population
- To promote the health of individual patients coming for surgery as they related to their hemodynamic status

SCHOLAR

Residents will be encouraged to develop scholarship in several areas:

- Identify important hemodynamic variables in the perioperative period for which POCUS can provide important information to positively influence patient outcomes
- Present a case at case management rounds that demonstrates the utility of POCUS in the perioperative period
- Contribute to the medical education of other health professionals (medical clerks, nurses in training, respiratory therapists in training, etc.)
- Seek to practice evidence based medicine
- Develop an educational pattern of self-study and critical appraisal of their own performance and knowledge

PROFESSIONAL

Residents must *always*:

- Demonstrate respectful, compassionate behavior toward patients, their families and other health care providers
- Demonstrate an appropriate sense of responsibility and commitment for their patients
- Strive to maintain insight and perspective regarding their own behaviour
- Remain calm and organized in stressful, emergency situations
- Utilize personal resources effectively in order to maintain personal health and sustainable practice

Structure of the Rotation

- Residents will have 12-month access to the CAE Healthcare ICCU "Focused Transthoracic Cardiac Echo" online course, and will be expected to have completed the first two parts prior to beginning on the first day of the rotation (this would include "Part 1: Basic principles and 2-D echo" and Part 2: Color Doppler, M-mode and Harmonic imaging"). Following this, residents are expected to complete one to two courses per week during the four-week rotation, along with their corresponding exams.
 - Week 1 "Transthoracic echocardiography Anatomy, views, orientation: Parasternal longaxis and Parasternal short-axis"
 - Week 2 "Transthoracic echocardiography Anatomy, views, orientation: Apical four and five-chamber and Subcostal four-chamber, IVC, aorta"
 - Week 3 "Focued assessment of trauma- Anatomy, views, orientation"
 - Week 4 "Lung ultrasound Anatomy, views, orientation"
- Resident will have access to teachingmedicine.com website to complete skill modules on lung and trauma ultrasound and expected to have completed the modules by the end of rotation.
- The first three Monday mornings of the rotation, additional didactic mini-lectures will be provided by attending staff to review basic topics
 - Basics and views & LV and RV structure and function
 - o Volume assessment & pleura, pericardium, tamponade
 - Doppler, hemodynamics, and aortic stenosis
 - FAST basic normal and abnormal views
 - Lung ultrasound basic normal and abnormal views
- The first Tuesday of the rotation will involve a morning session with an attending staff to go over objectives and expectations of the rotation, the basic operation of our echo machines and the workflow of image archiving, as well as a demonstration of POCUS scanning with normal views and anatomy. The afternoon session will involve using the Queen's Simulation Centre TTE simulator to practice scanning and image acquisition.
- Resident will perform independent POCUS scanning throughout the rotation which will on specific days be supervised by attending trained staff. Resident will be encouraged to find patients to scan in SDAC, PACU, the OR holding area, and the operating room, either electively or specifically requested by an attending anesthesiologist.
- Every Thursday of the rotation, and two Fridays out of four, resident will review acquired scans with staff. These days also provide an opportunity for observed scans with guided feedback.
- On the last Friday of rotation, the resident will present a case at Case Management Rounds related to specific POCUS findings and their impact on perioperative patient management.
- The final Monday of the rotation, one of the Block Coordinators will review the ICCU/teachingmedicine.com log and examination results, the scanning logbook, and daily evaluations. They will administer both a written and practical exam, and give the resident their final evaluation.

Expectations:

In order to pass the rotation, residents will be expected to:

- Complete the CAE Healthcare ICCU "Focused Transthoracic Cardiac Echo" online module along with its interim and final exams, and submit the results to the Block Coordinators
- Complete the teachingmedicine.com website online skill modules for lung and trauma ultrasound. Block coordinators will chase their activities as instructor on website.
- Complete a logbook of 50 scanned patients and their written reports (see attached) for focused TTE, each report and accompanying archived images reviewed by an anesthesiology staff.
- Complete a logbook of 25 scanned patients and their written reports (see attached) for FAST, each report and accompanying archived images reviewed by an anesthesiology staff.
- Complete a logbook of 25 scanned patients and their written reports (see attached) for lung US, each report and accompanying archived images reviewed by an anesthesiology staff.
- Complete a written multiple choice exam regarding POCUS at the end of the rotation with a score equal to or greater than 75%
- Complete a practical bedside scanning exam of image acquisition and interpretation at the end of the rotation with a satisfactory performance
- Complete one Case Management Rounds presentation related to specific POCUS findings and their impact on perioperative patient management

Assessment:

The attending staff assigned to supervise the resident will complete a feedback form, detailing the performance of the resident in each sphere, every Thursday and two Fridays during the rotation (days during which the resident will have direct supervision). Attending staff are encouraged to discuss this feedback with the trainee on each of those days. The Block Coordinators then collates these forms. The resident will also be evaluated based on their Case Management Rounds presentation, their performance of the ICCU and teachingmedicine.com online teaching curriculum, their completion of the logbook, and the end-of-rotation didactic and practical POCUS exams (to be completed on the last day of the rotation). A summary ITER will be completed and reviewed with the resident at an exit interview at the end of the rotation. The residents will also have the opportunity to complete an end-of-rotation summary evaluation form, and to provide verbal feedback to the Block Coordinators at their exit interview. Resident feedback will be used to improve teaching techniques.

References:

Residents will be provided with a 12-month registration to CAE Healthcare's ICCU "Focused Transthoracic Echo" online course, found at:

https://caehealthcare.com/courses

Residents will be provided with a free access to online skill modules, found at:

https://teachingmedicine.com

The online course will serve as the primary reference material for this rotation, along with supplemental material provided during the Monday morning lectures.

Revised November 2017 by POCUS faculty members Dr. Rene Allard Dr Glenio Mizubuti Dr Asadollah Mir Ghassemi Dr. Robert Tanzola

> <mark>Block Coordinator</mark> Dr Asadollah Mir Ghassemi

KHSC KGH site Vascular Anesthesiology Rotation Objectives

Residents rotating through the Vascular Surgery room longitudinally during their residency training will achieve competence in the perioperative management of patients undergoing aortic, carotid, and peripheral vascular surgery, both via open and endovascular approaches.

MEDICAL EXPERT

The trainee will endeavour to develop knowledge of the basic sciences as applied to the perioperative period for abdominal aortic aneurysm repair, carotid endarterectomy, and peripheral vascular surgery.

A. Physiology and Anatomy

The resident is expected to be able to describe:

- Vascular anatomy, vascular supply of major organs
- · Vascular physiology specifically as it relates to vascular surgical procedures
- Specifics of general internal medicine as they relate to the cardiovascular, respiratory and coagulation systems

B. Pharmacology

The resident should know the pharmacology (mechanism of action, indications, dose and

administration, elimination, and complications/contraindications) of agents commonly used around the time of vascular surgery, and their relevance to the perioperative period:

- Heparin
- Protamine
- Antiplatelet agents (including aspirin and clopidogrel)
- Blood products (pRBC, FFP, platelets, cryoprecipitate, albumin) and blood alternatives, including transfusion reactions and complications
- Intravenous anesthetics
- Benzodiazepines
- Opioids
- Neuromuscular blockers and reversal agents
- Sympathomimetic agents
- Parasympathomimetic agents
- Other common systemic inotropes, vasopressors, and vasodilators
- Anti-arrhythmic agents
- Commonly used medications in patients presenting for vascular surgery (Beta-Blockers, ACE inhibitors, Calcium Channel Blockers, Hypolipidemic agents, Hypoglycemic agents (oral and insulin))

C. Monitoring

The resident will be able to:

• Interpret an EKG for:

- o ischemia
- acute infarction
- o dysrhythmia
- Explain the principals of non-invasive BP monitoring
 - Manage (including indications, contraindications, placement and ongoing care):
 - o arterial cannulae
 - o central venous cannulae
- Assess the adequacy of mechanical ventilation using both clinical and laboratory parameters
- Assess the adequacy of circulatory function using clinical and laboratory parameters
- Interpret laboratory monitoring of the coagulation system including use of the ACT
- Assess perioperative blood loss
- Perform temperature monitoring
- Understand the basic principles of special cerebral perfusion monitoring techniques

D. Clinical Assessment & Management

By the end of the rotation, the resident will have achieved the following clinical competencies:

- Be able to perform a complete preoperative evaluation, including obtaining a detailed history, performing an appropriate physical examination, ordering relevant laboratory and ancillary investigations, and reviewing vascular investigations (e.g. angiogram, ultrasound, CT)
- Be able to provide an appropriate management plan based on the preoperative evaluation
- Knowledge of pathophysiology of and anesthetic considerations for the following:
 - Coexisting coronary artery disease
 - Coexisting congestive heart failure
 - Carotid endarterectomy
 - Aortic reconstruction (for both aneurysm and dissection)
 - Endovascular surgery for aortic aneurysm
 - Emergency aortic surgery
 - o Lower-extremity revascularization
 - Emergency surgery for peripheral vascular insufficiency
 - o Heparin induced thrombocytopenia and heparin resistance
- Knowledge of special issues related to vascular surgery and anesthesia
 - Physiology of aortic cross-clamping
 - Neurologic monitoring and protection for carotid surgery
 - o Spinal cord ischemia and protection
 - o Risks and benefits of regional anesthesia in vascular surgery

COMMUNICATOR

At the senior level resident will be encouraged to develop their unique style as a communicator.

Effective communication skills will be taught and encouraged at several levels:

- Between Resident and Patient and his/her family:
 - Obtain accurate and relevant history and perform detailed physical examination using effective listening skills
 - Explain anesthetic procedures (epidural, spinal, arterial line, central line, intubation, etc.) in a clear and compassionate manner
 - o Outline risks and obtain informed consent
- Between Resident and Anesthesiology Attending
 - Communicate patient information and outline anesthetic management plan to the attending in a professional and efficient manner
- Between Resident and Operating Room Personnel
 - Discuss special needs (monitoring etc.) with nurses and other operating room personnel in a professional and respectful manner

- Ensure clear and audible communication with surgeon and nurses to ensure safety and prevent errors (e.g. during the Surgical Safety Checklist)
- Between Resident and Surgeon
 - Outline anesthetic concerns to the surgeon, especially if it involves a high-risk patient, cancellation or postponement of the surgery pending further investigation

COLLABORATOR

The resident will be encouraged to recognize the need to utilize their attending physician, other specialists, and ancillary operating room personnel for the perioperative care and management of patients:

- Recognize their limitations, and seek appropriate preoperative consultation from medical experts in other disciplines
- Learn how to effectively collaborate with the vascular surgeon in providing the best care possible
- Foster healthy team relationships, including allied health professionals such as OR nurses and anesthesia assistants

LEADER

Residents are taught:

- Guidelines concerning anesthetic practice and equipment, specifically as they relate to the practice of vascular anesthesia
- The impact of limited resources (e.g. cancellations and delays) on the patient, the family, wait lists, and human resource allocations
- To anticipate post-operative disposition of the patient and arranging for appropriate resources (e.g. ICU bed)
- To work effectively and efficiently within a health care organization

HEALTH ADVOCATE

Health advocacy requires clinical experience at an advanced level. Senior residents will learn from staff in action in this area. Resident will learn:

- To respond to the individual patient health needs and issues as part of patient care (e.g. the importance of pain management, patient safety measures, and perioperative monitoring in improving patient outcomes for vascular surgery)
- To identify the determinants of health in a vascular surgery patient population
- To promote the health of individual patients coming for vascular surgery

SCHOLAR

Residents will be encouraged to develop scholarship in several areas:

- Identify important determinants in the perioperative period that impact the health and success of the vascular surgery patient
- Identify areas of controversy in the perioperative management of vascular surgery patients using clinical observations
- Teaching sessions and literature reviews
- Seek to practice evidence based medicine
- Contribute to the medical education of other health professionals (medical clerks, nurses in training, respiratory therapists in training, etc.)

• Develop an educational pattern of self-study and critical appraisal of their own performance and knowledge

PROFESSIONAL

Residents must *always*:

- Demonstrate respectful, compassionate behavior toward patients, their families and other health care providers
- Demonstrate an appropriate sense of responsibility and commitment for their patients
- Strive to maintain insight and perspective regarding their own behaviour
- Remain calm and organized in stressful, emergency situations
- Utilize personal resources effectively in order to maintain personal health and sustainable practice

Evaluation:

The attending staff will complete a feedback form, detailing the performance of the resident in each sphere, every day. Attending staff are expected to discuss this feedback with the trainee each day. A summary ITER will be completed and reviewed with the resident by the Program Director. The residents will complete daily evaluations of the attending staff and their learning experience. Resident feedback will be used to improve teaching techniques.

References:

This reference list is by no means intended to be definitive or exhaustive. However, it provides good starting points to the exploration of the knowledge content required for this rotation, as detailed in the above objectives.

Valentine, EA et al. "Anesthesia for Vascular and Endovascular Surgery." in Barash, PB et al. Clinical Anesthesia. 2017; 40:1112-1143.

Norris, EJ. "Anesthesia for Vascular Surgery." In Miller, RD et al. Miller's Anesthesia. 2014; 69:2106-2157.

Dr. Rene Allard Block Coordinator Revised November 2017

KHSC – KGH site Thoracic Anesthesia Objectives

KEY COMPETENCIES FOR THORACIC ROTATION

MEDICAL EXPERT:

- Understand and perform the components of the preoperative thoracic surgical assessment
- Understand and explain the rationale for and components of preoperative cardiopulmonary testing in thoracic surgical patients
- Demonstrate knowledge of the anatomy of the tracheobronchial tree and technical facility in bronchoscopy
- Demonstrate technical skill in lung isolation in the patient with and without a difficult airway
- Describe the pulmonary physiology of the lateral position as it relates to one-lung ventilation
- Describe the types of perioperative monitoring used in thoracic anesthesia and have a rationale for placement and use of invasive monitoring
- Demonstrate knowledge of the advantages and disadvantages of and indications for different lung isolation techniques in thoracic anesthesia
- Be able to list a differential diagnosis for and have an approach to treat desaturation during onelung anesthesia
- · Have an approach to ventilatory parameter choices during one-lung anesthesia
- Describe the implications that chronic parenchymal lung diseases (obstructive lung disease, bullous disease, restrictive lung disease) have on anesthetic management
- Describe the implications that the following have on anesthetic management: pulmonary hypertension, mediastinal mass and superior vena cava syndrome, bronchopleural fistula, lung abscess, pulmonary hemorrhage/hemoptysis
- Have an approach to anesthesic management for specific thoracic procedures including: rigid bronchoscopy, tracheal resection, mediastinoscopy, thoracoscopy, lung resection (wedge resection, lobectomy, pneumonectomy), and gastro-esophageal surgery (cricopharyngeal myotomy, esophagectomy, Nissen fundoplication)
- Have an approach to anesthetic management of emergency thoracics procedures: bronchopleural fistula, retrieval of foreign body, pulmonary hemorrhage
- Demonstrate knowledge of risks and benefits and skill in provision of different modes of postoperative analgesia in thoracics
- Be able to describe unique postoperative thoracic complications (i.e. post-pneumonectomy pulmonary edema, cardiac herniation, respiratory failure, post thoracotomy chronic pain)

COMMUNICATOR:

- Demonstrate effective communication with patient (description of procedures, informed consent) and staff anesthesiologist (anesthetic consideration and plan)
- Demonstrate an understanding through day-to-day interaction in the thoracic operating room of the importance of surgeon-anesthesiologist communication
- Provide clear and concise charting on anesthetic records including: type of lung isolation, ventilatory parameters, timing of one-lung ventilation

COLLABORATOR:

- Seek perioperative consultation with colleagues when required in the preoperative clinic, the perioperative theatre and postoperatively
- Work with the APMS staff when appropriate to ready patients for the operating room on the day of surgery, or when epidurals are not functioning postoperatively in the PACU

MANAGER:

- Demonstrate an understanding and appreciation of operating room efficiency
- Demonstrate knowledge of appropriate utilization of post-operative critical care bed resources appropriate to the patient and procedure

HEALTH ADVOCATE:

• Provide patient advocacy for various perioperative issues (i.e. patient safety, analgesia, post-op monitoring)

SCHOLAR:

- Demonstrate the ability to critically review the thoracic anesthesia literature by giving a rationale for chosen interventions in the day-to-day management of thoracic patients
- Assist in education of other members of OR team when appropriate

PROFESSIONAL:

- Demonstrate a sense of responsibility, integrity, honesty and compassion when caring for patients; this includes following up on unusual cases or complications
- Demonstrate respect for patients and colleagues

TEXTBOOK REFERENCES:

- 1. *Slinger P.* Principles and Practice of Anesthesia for Thoracic Surgery, 1st Ed., New York, Springer, 2011.
- Slinger P, Campos JH. Anesthesia for Thoracic Surgery (Chapter 66) in Miller, RD, Anesthesia, 8th Ed. New York, Churchill Livingstone, 2015.
- 3. *Kavanagh B, Hedenstierna G.* Respiratory Physiology and Pathophysiology (Chapter 19) in Miller, RD, Anesthesia, 8th Ed. New York, Churchill Livingstone, 2015.

Block coordinator – Thoracic Dr. Cara Reimer Revised: November 2017

KHSC:

Neuroanesthesia/Neurosciences Objectives

Introduction:

The resident can read ahead of the rotation to gain familiarity with this material prior to beginning the rotation in neuroanesthesia. Most of the required information is contained in any of the standard textbooks of anesthesia. In general, topics include:

- a. Basic neurophysiology, including an understanding of the synapse, the neuromuscular junction and the action of anesthetics.
- b. Determinants of cerebral blood flow including the effect of anesthetic agents, both intravenous and inhalational, on normal cerebral metabolism and cerebral blood flow.
- c. Arterial and venous anatomy of the brain and the spinal cord; and the production and absorption of CSF.
- d. The responses of the brain to injury and strategies for cerebral protection.

Objectives:

MEDICAL EXPERT

The general anesthetic considerations for neurosurgical patients are no different than any other group of patients coming for anesthesia. However, there are some specific considerations that are particular to neuroanesthesia

The resident will be able to:

- 1. Understand the principles of neurophysiology including regulation of cerebral blood flow, intracranial pressure, cerebral oxygenation and autonomic regulation
- 2. Understand the principles and methods of neurological monitoring including EEG, ICP measurement, evoked potential's and measures of cerebral oxygenation and cerebral blood flow
- 3. Understand the anesthetic implications of neurological disease and neurological trauma
- 4. Understand the principles of neuro-protection
- 5. Appreciate the effects of anesthetic medications on neurophysiology
- 6. Appreciate the effects of patient positioning, temperature, ventilation, oxygenation and blood pressure on cerebral blood flow and oxygenation
- 7. Appropriately assess the neurosurgical patient preoperatively
- 8. Choose the appropriate monitoring for neurosurgery
- 9. Select an appropriate neuro- protective anesthetic technique for common neurosurgical procedures as listed below
- 10. Demonstrate knowledge of common neurosurgical emergencies listed below
- 11. Understand and manage postoperative pain in patients undergoing neurosurgical procedures
- 12. Understand the need for prompt and accurate postoperative neuro-assement
- 13. Identify indications for post operative intensive care

Specific topics in neurosurgery/neuroanesthesia:

Residents will be able to discuss in detail the following topics:

Neurological conditions

Guillain-Barré syndrome Myasthenia gravis Amlotrophic lateral sclerosis Dystrophia myotonica Muscular dystrophy Neurofibromatosis Tuberous sclerosis Arnold Chiari malformation Tetanus Trigeminal neuralgia Epilepsy Brain tumours Ischemic stroke Chronic spinal injury Dementia Parkinson disease Huntington's disease Spongiform encephalopathies Multiple sclerosis Charcot Marie Tooth disease

Neurosurgical procedures

Craniotomy for biopsy and resection of tumors Craniotomy for control and evacuation of intracranial haemorrhage, surgical correction of AV malformations and clipping of cerebral aneurysms Awake craniotomy Burr hole evacuation of subdural haematoma Placement and revision of CSF shunts and ventricular drains Posterior fossa surgery Pituitary surgery Carotid endarterectomy Cervical, thoracic and lumber spinal surgery Surgery for correction of scoliosis Interventional neuroradiology Implantation of neuro-stimulation devices

Neurosurgical Emergencies

Subarachnoid, intra cerebral and subdural hemorrhage Acute elevations in intracranial pressure Rupture or impending rupture of cerebral aneurysms Perioperative seizures Perioperative alterations in level of conscious Cerebral vasospasm Acute hydrocephalus

<u>Neuro-trauma</u>

Traumatic brain Injury Spinal cord injury

Neuroanesthetic considerations in particular patient groups

Children, Pregnancy, Critically ill patients, Elderly patients

COMMUNICATOR

Residents will be able to:

- 1. Communicate effectively with patients to elicit all necessary information
- 2. Communicate and empathize with patients in order to relieve their anxiety, answer all questions and agree upon a course of action that is acceptable to all involved
- 3. Chart appropriately, legibly and clearly
- 4. Effectively communicate with other professionals in order to manage patients
- 5. Offer advice and management plans when asked to consult on a patient from another service

COLLABORATOR

Residents will effectively and respectfully:

- 1. Collaborate with other services, particularly ICU and NCCU regarding pre- and post- operative care of patients
- 2. Review management plans and courses of action with the surgeons at all times
- 3. Consider advice from allied health professionals
- 4. Work with the operating room team in a positive manner

MANAGER

- 1. Residents will manage their operating room i.e.: ensure necessary equipment and medications are available and have their room set up in the fashion so that they will be ready to deal with the unexpected
- 2. Residents will start to become proactive in ensuring appropriate post-operative placement for their patients, i.e. ICU bed, step down bed, etc

HEALTH ADVOCATE

Residents will acknowledge the difficulties and decision-making involved in utilization and allocation of finite health care resources

SCHOLAR

The resident will:

- 1. Demonstrate ongoing self-directed learning
- 2. Understand the notion of evidence based practice
- 3. Develop a working understanding of research methodology
- 4. Come to the operating room each morning having read up on the cases for the day, and having reviewed the charts (or seen the patients)
- 5. Follow up their patients the following day to ensure that unforeseen complications are addressed

PROFESSIONAL

The resident will:

- 1. Demonstrate a sense of responsibility toward their patients
- 2. Foster a respectful doctor-patient relationship
- 3. Demonstrate ongoing self-assessment and insight
- 4. Perform appropriately under stressful situations
- 5. Remain aware of his/her own limitations at all times and ask for help/supervision appropriately

References:

1. Miller's Anesthesia, 7th Edition, 2010; Ch 13, Cerebral Physiology and the Effects of Anesthetic Drugs, p 305-39; Ch 14, Neuromuscular Physiology and Pharmacology, p 341-60; Ch 46, Neurologic Monitoring, p 1477-1514, Ch 63, Neurosurgical Anesthesia, p 2045-87.

2. Clinical Anesthesia, Barash et al, 7th Edition, 2006; Ch 15, Autonomic Nervous System, p 362-407; Ch. 36, Anesthesia for Neurosurgery, p 996=1029

3. Stoelting's Anesthesia and Coexisting Diseases, 6th Edition, Ch. 10,Diseases Affecting the Brain, p 218-55; Ch. 11,Spinal Cord Disorders, p255-64; Ch 12 Disease's of the Autonomic and Peripheral Nervous System, p264-73

Evaluation:

The resident will receive daily evaluations, which will be reviewed by the Program Director and incorporated into their ITER.

Neuroanesthesia Block Coordinator Dr Imelda Galvin Revised: February 2018

KHSC Obstetrical Anesthesia Objectives

Introduction:

Residents will spend one month on the Obstetrics rotation as a junior resident and one month as a senior resident. As well, they will be exposed to Labour and Delivery Anesthesia throughout the residency when they are on call. Throughout the residency, they are expected to attain the following objectives by reading and with discussion with the faculty. Residents are expected to be familiar with the objectives listed in the Clinical Science Objectives portion of this manual.

OBJECTIVES

MEDICAL EXPERT

PGY2 and PGY3 Year

1. Manual skills development:

- Epidural catheter placement with a success rate @ 70% by the end of their introductory first month and 90% by the end of their second month, with no more than 3 PDPH's;
- SAB placement (success rate @80%) by the end of the second month, with >90% success for the remainder of the program.

2. Obstetric Physiology

- A. Know the relevant maternal and fetal physiological changes that occur with pregnancy such that residents will be able to select and perform the appropriate labour analgesia. This will include both pharmacologic and non-pharmacologic options.
- B. Residents will be familiar with and able to manage labour analgesia/anesthesia in hypertensive obstetric patients no matter what the cause of the hypertension.
- C. Residents will be familiar with the indications, contraindications, and techniques of SAB, epidural, and other regional anaesthesia techniques for labour and delivery, and for problems post delivery such as retained products of conception.
- D. Residents will know the relevant maternal and fetal physiological changes that occur with pregnancy such that they can appropriately initiate and maintain a patient with a general anaesthetic for a Cesarean Section, including the appropriate management of an anticipated difficult airway.
- E. The resident will know the anesthetic implications of:
- ectopic pregnancy,
- abruptio placenta,
- placenta previa,
- uterine atony,
- uterine laceration/rupture,
- retained placenta,
- inverted uterus.
- F. Discuss anaesthetic considerations including aorto-caval compression, volume replacement and coagulation disorders.
- G. The resident will be able to perform a neonatal resuscitation consistent with the NRP protocol.
- H. The resident will know the main complications of anesthesia during pregnancy and take appropriate steps to minimize the risk to the patient.
- I. Anesthetic Management of Non-Obstetric Surgery During Pregnancy
- Describe advantages and disadvantages of performing elective operations during the first, second and third trimesters of pregnancy?
- Explain precautions that should be taken in each trimester?

- When is FHR monitoring indicated? Describe management options when intraoperative FHR monitoring shows abnormal fetal heart rate tracings (fetal bradycardia or decreased FHR variability).
- Describe special anesthetic considerations in parturients who undergo trauma or emergency operations.
- Discuss effects of maternal hypotension, hyperventilation, hypoventilation, blood transfusion on the fetus well being.

PGY4 and PGY5

1. Manual skills development:

Goal: to master skills, with an emphasis on efficiency. Demonstrate mastery of month 1 skills by:

- Epidural catheter placement:
- most completed in less than 15 min
- low epidural replacement rate
- low rate of PDPH
- high patient satisfaction rate
- 80% success rate
- SAB placement
- time target 5 minutes
- success rate more than 90%
- Performing difficult cases (including high risk parturients)
- Learn to perform CSE
- Will be familiar with a technique to establish an epidural blood patch.

2. Anesthetic and Obstetric Management of High-Risk Pregnancy.

- A. For each of the following disease categories:
- 1. List common obstetric concerns and standard management strategies
- 2. Describe anesthetic implications of the disease or condition, focusing on maternal and fetal considerations
- 3. Describe how to assess the severity of the disease and how to determine when a patient's condition warrants further investigations, invasive monitoring and E/ICU care.
- 4. Describe the anesthetic considerations and management options for vaginal and cesarean delivery in the following situtions:
- Hypertensive Disorders of Pregnancy
- Hypertensive disorders other than PET (chronic hypertension)
- Preeclampsia / eclampsia
- Multiple gestation
- Preterm labor
- Abnormal fetal presentations
- Abnormal fetal heart rates
- Antepartum hemorrhage
- Chorioamnionitis
- Endocrine disease (Diabetes, Thyroid d.)
- Substance abuse
 - o identify risks and complications;
 - recommend post-operative pain control strategies
 - develop plan to prevent withdrawal complications
 - ethanol abuse (evaluate for related medical disorders)
 - opioid abuse and barbiturate use
 - o cocaine abuse
 - Immunological Disease (autoimmune, etc.), including HIV infection
- Neurological disorders (including VP/LP shunts, increased ICP)
 - o Multiple sclerosis
 - o diagnosis and clinical manifestations

- o effects of pregnancy
- Spinal cord injury
- Myasthenia gravis
- Seizure disorders
- o Sciatica, herniated lumbar discs
- Respiratory disease
- Cardiovascular diseases: For each cardiac condition, one should be able to:
 - 1. Discuss effect of pregnancy on the cardiac condition;
 - 2. Explain when invasive monitors are needed for delivery and postpartum care
 - 3. Provide consultation to obstetricians and patients on the pathophysiology of cardiac lesions
 - 4. Recommend perioperative management and preferred anesthetic plans for patients with mild to moderate disease

Congenital Heart Disease (repaired or not)

- o left to right shunt
- right to left shunts (Tetralogy of Fallot)
- pulmonary hypertension (Eisenmenger's Syndrome)
- coarctation of aorta
- o IHSS

Ischemic Heart Disease

Cardiomyopathy

Valvular Heart Disease

- aortic stenosis
- o aortic insufficiency
- o mitral stenosis
- o mitral regurgitation
- Hematological or thromboembolic diseases;
- Morbid obesity
- Systemic or local infection (including viremia, HIV, CMV, sepsis)
- Malignant hyperthermia
- Renal Disease
- Liver Disease
- Musculoskeletal Disorders (scoliosis)
- B. Pre Labour Consult Clinic
- Enhanced ability to act as consultant
- Formulate anesthesia plans for high risk parturients:
 - prior to onset of labor
 - when patient is admitted to labor floor
 - for problems that arise following delivery of the baby

COMMUNICATOR

Residents are expected to:

- Communicate openly with patients and families regarding anesthetic care
- Communicate effectively with nursing and obstetrical staff regarding management plans
- Ensure neonatology is aware and involved in all levels of decision making where it affects the infant

COLLABORATOR

Residents should:

- Foster healthy relationships with the obstetrical and nursing staff
- Consult other physicians and surgeons when appropriate
- Consult with other allied health care professionals when appropriate

LEADER

Residents should be adept at balancing the multiple demands placed on the anesthesiologist on the labor and delivery unit and prioritize care and attention effectively

HEALTH ADVOCATE

- Residents should be aware of and always follow the recommended practice guidelines outlined by the CAS and other regulating bodies
- Residents should place the health and well-being of the mother and infant above all else and assume the role of patient advocate if appropriate
- Residents should be aware of, and have an understanding of patient safety as it relates to obstetric anesthesia, and what their role is as a practicing physician. Specific guidelines include:
 - o Maternal hemorrhage,
 - Maternal hypertensive disease,
 - Maternal venous thromboembolism

SCHOLAR

Residents will:

- Base their management decisions on peer-reviewed literature
- Continue to acquire new knowledge and skills to enhance patient care
- Teach other learners in the environment
- Attend rounds and seminars to enhance their learning

PROFESSIONAL

Residents should:

- Strive to develop insight and self-assessment
- Treat colleagues and patients with respect and courtesy
- Demonstrate a strong sense of responsibility and ownership for their patients
- Perform calmly and efficiently under stressful/emergency situations

References:

- 1. Schneider and Levinson
- 2. Chestnut

Evaluation:

- 1. Daily evaluation
- 2. Monthly ITER (Completion of all modules, PBLs, etc)

Block Coordinator Dr. Lindsey Patterson Revised February 2018

KHSC: KGH/HDH sites Anesthesia for Orthopedic Surgery Objectives

MEDICAL EXPERT:

- 1. The resident will be able to perform a detailed preoperative assessment and preparation of the patient for Orthopedic Surgery including:
 - the appropriate management of a patient's concomitant disease
 - deciding when additional investigations are required
 - optimization of the patient prior to surgery
 - proper prediction and arrangement of post-operative care
- 2. The resident will be able to outline the pros and cons of various anesthetic techniques. The resident will know the risks/benefits of GA vs Regional as well as how co-morbidities and VTE prophylaxis affect those techniques.
- 3. The resident will be able to outline the anesthetic considerations in:
 - major lower extremity arthroplasty surgery
 - spinal surgery
 - shoulder surgery
 - fractures
 - surgery under tourniquet
 - use of cement
- 4. The resident will be able to select and perform the necessary procedures for appropriate postoperative pain management.
- 5. The resident will be able to recognize and treat postoperative complications such as:
 - fat embolism
 - pulmonary embolism
 - compartment syndrome
- 6. The resident will know the ATLS Trauma Protocol and the role of anesthesia in the assessment and initial stabilization of the trauma patient. The resident will be expected to complete ATLS training early in the PGY1 year of training.
- 7. The resident will know the assessment and management principles in Acute Trauma for the following problems:
 - Blunt Trauma
 - Penetrating Trauma
 - Airway Trauma/Airway Management
 - Head and Spinal Cord Injury
 - Thoracic Trauma
 - CVS Trauma
 - Abdominal Trauma
 - Major Orthopedic Trauma
 - Hypotension in the trauma patient
 - The resident will have a plan for the management of the acutely traumatized patient in the OR.
- 9. The resident will be able to coordinate the management of the trauma patient who returns to the OR for repeated surgical procedures.
- 10. The resident will be able to list the anesthetic considerations in:
 - Burn patients
 - Quadriplegic patients
 - Major reimplantation surgery
 - Cosmetic surgery

COMMUNICATOR:

8.

1. The resident will demonstrate compassion and respect when communicating with patients and families.

2. The resident will be able to recognize when further involvement of the family is necessary either for consent purposes or for help in decision-making.

COLLABORATOR:

- 1. The resident will be able to effectively communicate with the surgical team regarding:
 - a. The preoperative status of the patient and further investigations/optimization required
 - b. The extent of the planned procedure and implications on the anesthetic
 - c. Any problems encountered intraoperatively, either anesthetic or surgical
 - d. The postoperative care including DVT prophylaxis and the implications of the anesthetic on such care
 - e. The postoperative pain management planned for the patient
- 2. The resident will collaborate with other health care disciplines in and outside the OR when necessary.
- 3. The resident will utilize the abilities of other health care team members such as nursing, respiratory therapy, perioperative assistants and surgeons when in the operating room.
- 4. The resident will be an active participant in the surgical safety checklist, taking a leadership role where appropriate

MANAGER:

- 1. The resident must be aware of the operating room management committee and its role.
- 2. The resident must be able to function as a member of the daily operating room managing team.
- 3. The resident must be aware of the interactions of the various OR personnel in a typical day.
- 4. The resident must be able to coordinate surgeons, anesthesiologists and nurses to run an efficient operating room.

HEALTH ADVOCATE:

The resident will act as the patient's health advocate in ensuring all guidelines and standards of care are met.

SCHOLAR:

The resident will be able to critically evaluate the literature and alter his/her anesthetic practice accordingly.

PROFESSIONAL:

- 1. The resident should be able to critically evaluate his/her own practice.
- 2. The resident should be able to manage anesthetics in a professional manner, including discussing options with patients, families and other consulting services.
- 3. The resident should be able to work with the surgical services, recognizing differences in person opinion, methods of practice, and communication styles, all the while maintaining the highest standards of care.

Evaluation:

1. Daily evaluation 2. Oral exams

References:

Miller, Barash

<u>KHSC: KGH/HDH</u> Trauma, Burns, Plastic Surgery Subspecialty Objectives

Anesthesia for Trauma

MEDICAL EXPERT:

The resident will demonstrate a solid understanding of the ATLS Trauma Protocol and the role of anesthesia in the assessment and initial stabilization of the trauma patient.

The resident will be expected to complete ATLS training early in the PGY2 year

The resident will know the assessment and management principles in Acute Trauma for the following problems:

- Blunt Trauma
- Penetrating Trauma
- Airway Trauma/Airway Management
- Head and Spinal Cord Injury
- Thoracic Trauma
- CVS Trauma
- Abdominal Trauma
- Major Orthopedic Trauma
- Hypotension in the trauma patient

The resident will demonstrate the ability to develop a detailed perioperative management plan for an acutely traumatized patient in the OR.

The resident will be able to coordinate the management of the trauma patient who returns to the OR for repeated surgical procedures.

COMMUNICATOR:

The resident will be able to effectively communicate with the surgical and critical care teams regarding:

- The preoperative status of the patient and further investigations/optimization required
- The extent of the planned procedure and implications on the anesthetic
- Any problems encountered intraoperatively, either anesthetic or surgical
- The postoperative care including DVT prophylaxis and the implications of the anesthetic on such care
- The postoperative pain management planned for the patient

The resident will demonstrate compassion and respect when communicating with patients and families.

The resident will be able to recognize when further involvement of the family is necessary either for consent purposes or for help in decision-making.

COLLABORATOR:

The resident will demonstrate the ability to function efficiently as a member of the hospital's trauma team. This will involve working with our team members to rapidly assess the patient and form a prioritized treatment plan.

The resident will utilize the abilities of other health care team members such as nursing, respiratory therapy, perioperative assistants and surgeons both in the operating room and outside of the OR when necessary.

MANAGER:

The resident will demonstrate the ability to function as a member of the daily operating room managing team and make arrangements necessary to expedite the care of the trauma patient.

The resident must be able to apply appropriate criteria to triage emergency cases in the setting of multiple trauma patients requiring operative management.

The resident must be aware of the interactions of the various OR personnel and resources in a typical day.

The resident must be able to coordinate surgeons, anesthesiologists and nurses to run an efficient operating room.

HEALTH ADVOCATE:

The resident will act as the patient's health advocate in ensuring all guidelines and standards of care are met.

SCHOLAR:

The resident will be able to crucially evaluate the recent literature and alter his/her anesthetic practice accordingly.

PROFESSIONAL:

The resident should be able to critically evaluate his/her own practice.

The resident should be able to manage anesthetics in a professional manner, including discussing options with patients, families and other consulting services.

The resident should be able to work with the surgical services, recognizing differences in personal opinion, methods of practice, and communication styles, all the while maintaining the highest standards of care.

Evaluation:

1. Daily evaluation

References:

 Capan LM, Miller SM and Scher. in: *Clinical Anesthesia* (8th ed) eds. Barash, Cullen, and Stoelting. Chapter
 pp. 1486-1536, 2017
 Smith CE, Trauma Anesthesia (1st Ed) Chap 2,3,6,7,10, 16,1826 and 28

Anesthesia for Burns and Plastic Surgery

Objectives:

MEDICAL EXPERT:

- 1. The resident will develop an appropriate management plan for the perioperative care of a patient who has sustained a major thermal injury. This management plan will address the following areas:
 - a. Initial Assessment and Cardiovascular Resuscitation
 - b. Fluid Management (crystalloid vs. colloid, application of Parkland regimen)
 - c. Assessment of Airway Injury and Implications for Management
 - d. Detection and Management of Carbon Monoxide Poisoning
 - e. Anesthetic Management for Operative Excision and Grafting Procedures with attention to potential for massive transfusion.

f. Development of a multimodal analgesic regimen for postoperative pain management for the burn patient.

2. The resident will appreciate the alterations in anesthetic management required for a patient with a chronic spinal cord injury (quadriplegia) with a particular focus on the prevention of autonomic hyperreflexia in this patient population.

3. The resident will be familiar with the anesthetic management for major reimplantation surgery and cosmetic surgery.

Evaluation:

1. Daily evaluation

References:

1. MacLennan, N. Heimbach, DM. Cullen, BF. Anesthesia for Major Thermal Injury. Anesthesiology 1998; 89(3) pp. 749-770.

2. Capan LM and Miller, SM "Trauma and Burns". in Barash PG, Cullen BF and Stoelting RK. Clinical Anesthesia. 5th Ed. 2006. Chapter 48 pp.1279-1282.

3. Liovich-Sapola JA. "Anesthesia for Burns" in Smith CE. Trauma Anesthesia 1st Ed. 2008. Chapter 21 pp.322-342.

Dr. Michael McMullen Block Coordinator Reviewed November 2017

KHSC-HDH site Chronic Pain Rotation Objectives

The goal of this one-month rotation is to develop an approach to the diagnosis, investigation and management of patients diagnosed with chronic non-malignant and cancer pain. Pain is a subjective experience involving multiple characteristics including biological and psychosocial factors, all of which must be considered for comprehensive assessment and management. The Chronic Pain Rotation will be based primarily at the Kingston Health Sciences Centre – Hotel Dieu Site Chronic Pain Clinic. The Clinic consists of both physician specialists and allied health personal including nursing, physiotherapists, occupational therapists, psychologists and social workers. One day per week will be scheduled at Kingston Orthopedic and Pain Institute (KOPI) to provide residents with additional exposure to interventional pain treatments. Emphasis will be focused on promotion of best evidence based practice.

Our Mission Statement:

The goal of the Kingston Health Sciences - Hotel Dieu Site Chronic Pain Team is to restore patients with chronic pain to healthy living. We strive to minimize suffering and disability through evidence-based interventions and by encouraging behavioural modifications and lifestyle changes. We are committed to research and education and to furthering our understanding of pain so that dependence on medications can be minimized and self-perception may be changed from one of disability to one of wellness.

At the completion of pain medicine rotation, the resident will have acquired the following competencies and will be able to:

MEDICAL EXPERT/CLINICAL DECISION-MAKER

General Requirements

- Demonstrate diagnostic and therapeutic skills for ethical and effective chronic pain patient care.
- Access and apply relevant information in evaluating and formulating a treatment plan for chronic pain patient.
- o Demonstrate effective consultation services with respect to chronic pain patient care.

Specific Requirements

- Demonstrate knowledge of anatomy, physiology, pathophysiology and pharmacology of the pain system.
- o Demonstrate the role of psychological factors affecting pain perception and disability
- Demonstrate knowledge of age and sex related variables in medicine as they apply to chronic pain patient care.
- Demonstrate knowledge of general principles of evaluation and management of patients with chronic pain: What constitutes an appropriate clinical history and physical examination in patients with persistent pain? Methods of measuring pain in humans.
- Demonstrate knowledge of myofascial pain, pathophysiology, presenting clinical findings and treatment

Demonstrate knowledge of specific diagnostic/treatment modalities (indications, contraindications, complications, technique, and outcome measures):

Medications: analgesics, anxiolytics, neurolytic, antidepressants, anti-epileptics, sympatholytics, anti-inflammatory, etc.

Cognitive therapy

Physical therapy & exercise therapy Neuro-augmentive therapy Psychological therapy Surgical techniques Multidisciplinary approach to pain management Tests: radiological, electrophysiological, biochemical, etc

- Demonstrate knowledge of interventional techniques commonly employed in chronic pain medicine practice, including:
 - Peripheral nerve blocks
 - Sympathetic blockades
 - Trigger points injections
 - Epidural steroid injections
 - Blocks for diagnosis and treatment of the facet joint syndrome
 - Intraarticular joint injections
 - Neuromodulation
 - Intrathecal drug delivery
- Demonstrate knowledge of basic legal and bioethical issues encountered in chronic pain medicine practice including informed consent.

Subsequent clinical experience investigating and treating patients with specific types of pain complaints will allow the resident to apply these general objectives to specific clinical problems such as:

- Complex Regional Pain Syndrome
- Neuropathic pain syndromes
- Central pain syndrome
- Myofascial pain syndromes
- Visceral pain
- Pelvic pain
- Headaches
- Cancer pain
- Pain related to peripheral vascular insufficiency
- Role of personality disorders
- Compensation and disability

COMMUNICATOR

General Requirements

- o Establish a professional relationship with patients and families.
- o Obtain and collate relevant history from patients, and families.
- o Listen effectively.
- Discuss appropriate information with patients and families and other members of the health care team.

Specific Requirements

- o Demonstrate consideration and compassion in communicating with patients and families.
- Provide accurate information appropriate to the clinical situation.
- Communicate effectively with medical colleagues, nurses, and paramedical personnel in inpatient, outpatient, and operating room environments.
- o Demonstrate appropriate oral and written communication skills.

• Ensure adequate information has been provided to the patient prior to undertaking invasive procedures.

COLLABORATOR

General Requirements

- o Consult effectively with other physicians and health care professionals.
- o Contribute effectively to other interdisciplinary team activities.

Specific Requirements

• Demonstrate ability to function in the clinical environment using the full abilities of all team members.

MANAGER

General Requirements

- Utilize personal resources effectively in order to balance patient care, continuing education, and personal activities.
- Allocate finite health care resources wisely.
- Work effectively and efficiently in a health care organization.
- o Utilize information technology to optimize patient care, and life long learning.

Specific Requirements

- o Demonstrate basic knowledge of the management of pain clinic.
- Demonstrate knowledge of the guidelines concerning controlled medication use as a treatment for cancer and chronic nonmalignant pain in Canada.
- o Demonstrate knowledge of the guidelines concerning adequate use of adjuvant medications
- Demonstrate principles of quality assurance, and adequate follow up for patients with chronic pain.

HEALTH ADVOCATE

General Requirements

- o Identify the important determinants of health affecting chronic pain patients.
- o Contribute effectively to improved health of patients and communities.
- Recognize and respond to those issues where advocacy is appropriate.

Specific Requirements

- Provide direction to hospital administrators regarding compliance with national practice guidelines for chronic pain management.
- Recognize the opportunities for anesthesiologists to advocate for resources for chronic pain management.

SCHOLAR

General Requirements

- Develop, implement, and maintain personal continuing education regarding chronic pain management.
- Critically appraise sources of medical information.

Specific Requirements

- o Develop criteria for evaluating the pain medicine literature.
- o Critically assess the literature using these criteria.
- o Describe the principles of good research.
- o Using these principles, judge whether a research project is properly designed.

PROFESSIONAL

General Requirements

- o Deliver highest quality care with integrity, honesty and compassion.
- o Exhibit appropriate personal and interpersonal professional behaviors.
- o Practice medicine ethically consistent with the obligations of a physician.

Specific Requirements

- Include the patient in discussions concerning appropriate diagnostic and management procedures.
- Respect the opinions of fellow consultants and referring physicians in the management of patient problems and be willing to provide means whereby differences of opinion can be discussed and resolved.
- Show recognition of limits of personal skill and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.
- Establish a pattern of continuing development of personal clinical skills and knowledge through medical education.

References:

- 1. Cousins, M.J. & Bridenbaugh, P.O. Neural Blockade . 4th ed., Lippincott-Raven, 2009.
- Deer, T.R et al. <u>Comprehensive Treatment of Chronic Pain By Medical, Interventional and integrative Approaches: The American Academy of Pain Medicine Textbook on Patient Management</u>, Springer, 2013.
- 3. Fishman S et al.. Bonica's Management of Pain. 4th ed. Lippincot Williams & Wilkins, 2010.
- 4. Furman M.B. Atlas of Image-Guided Spinal Procedures. Elsevier Saunders, 2013.
- 5. Lynch M.E. et al., Clinical Pain Management Wiley-Blackwell, 2011
- 6. Waldman, S.D. <u>Pain management 2nd ed</u>. Elsevier Saunders, 2011.

Clinical assignments

Monday/Tuesday - Dr. Duggan's Clinic, Jeanne Mance 3, Room #JM3- 084-0 **0815-1600** Mondays - Dr. Haley's Clinic, Jeanne Mance 3, Room #JM3- 084-0 **0815-1600** Wednesdays - KOPI with Dr. Murphy, 797 Princess St, Suite 500 **0815-1600** Thursdays – Independent learning as per objectives of the rotation. Fridays - Dr. Haley's Clinic – HDH, Jeanne Mance 3, Room #JM3- 084-0 **0815-1600**

In-patient Consults - Specifically addressed pain consults to Chronic Pain Service

Evaluation

The clinical faculty will perform a daily evaluation of resident knowledge, reasoning, patient assessment, management, and technical skills by direct observation and questioning in the clinical areas, and by chart reviews, as well as a monthly ITER

Dr. Scott Duggan, Medical Director KHSC– Hotel Dieu Site Chronic Pain Clinic Revised: November 2017

KHSC Anesthesia in Remote Locations Objectives

MEDICAL EXPERT OBJECTIVES:

- 1. The resident will be familiar with the special considerations created by the location and the expertise of the personnel available when anesthetizing patients in locations outside the OR.
- 2. The resident will be able to:
 - Define the criteria for appropriately selecting patients for anesthesia outside the OR
 - Select the necessary monitoring for patients before, during and after the procedure
 - Demonstrate the correct monitoring and safety precautions when transporting patients to and from the remote location
 - Define the criteria for selecting the appropriate site to recover patients who have had anesthesia in a remote location
- 3. The resident will be able to list the considerations and techniques for sedation/anesthesia for:
 - radiologic procedures MRI, CT, Angiography, Interventional Radiology
 - cardioversion, ICD placement
 - Emergency room procedures
 - ECT

MANAGER OBJECTIVES:

• The resident will be able to define how to implement the relevant guidelines for sedation/anesthesia for anesthesia in remote locations in a hospital setting.

HEALTH ADVOCATE:

• The resident will be familiar with the relevant guidelines for the provision of sedation by Anesthesiologists and non-Anesthesiologists.

COMMUNICATOR, COLLABORATOR, SCHOLAR AND PROFESSIONAL ROLES:

• As per the overall guidelines

Evaluation:

as above

References:

- 1. Souter K. Nonoperating Room Anesthesia. Barash (8th Edition) 2017 Chapter 32
- 2. Merchant R et al. Guidelines to the Practice of Anesthesia Revised Edition 2016 Appendix 6 Position Paper on Procedural Sedation. Can J Anesth 2016; 63:86-112
- 3. ASA guidelines for non-operating room locations [Online] last amended October 26, 2013. <u>http://www.asahq.org/~/media/Sites/ASAHQ/Files/Public/Resources/standards-guidelines/statement-on-nonoperating-room-anesthetizing-locations.pdf</u>
- 4. Metzner et al. Risks of anesthesia or sedation outside the operating room: the role of the anesthesia care provider. Curr Opin Anaesthesiol 23:523-31, 2010.
- Practice Advisory on Anesthetic Care for Magnetic Resonance Imaging. Anesthesiology 2015; 122: 495-520.
- Deiner S. Electroconvulsive Therapy and Anesthesia. International Anesthesiology Clinics 47:81-92, 2009.
- 7. Metzner J. Posner KL Domino KB. The risk and safety of anesthesia at remote locations: the US closed claims analysis. Current Opinion in Anaesthesiology. 22(4):502-8, 2009.

Dr. Janet van Vlymen Block Coordinator Revised: November 2017

KHSC: KGH/HDH Sites General Surgery Objectives

MEDICAL EXPERT

- Residents will be able to perform thorough preoperative evaluations of the patient considering the necessary preparation and premedications for the patient. The patient's concomitant disease will be taken into consideration.
- The resident will be able to outline the necessary considerations and demonstrate competency in delivering anaesthetics for patients needing:
 - o cholecystectomy
 - o appendectomy
 - bowel obstruction and perforation
 - o bowel resection
 - o acute gastrointestinal bleeding
 - o splenectomy
 - o pancreatic resection
 - o hepatic resection
 - o portal shunting procedures
 - o anorectal surgery
 - Whipple's procedure
 - o Bariatric surgery
 - o POEM's
 - \circ endoscopy
- The resident will be able to provide suitable postoperative management in the recovery room and will provide postoperative analgesia by a number of techniques including IV PCA opioids, continuous thoracic epidural analgesia, and PCEA.
- The resident will be able to discuss the effects of abdominal surgery on pulmonary function postoperatively.
- The resident will be able to describe the following potential complications:
 - Pulmonary Complications
 - Postoperative Intestinal Dysfunction
- The resident will be able to decide which patients are appropriate for consideration of laparoscopic surgical techniques.
- The resident will be cognizant of the relative and absolute contraindications, and the risks/benefits of laparoscopic surgery.
- The resident will be able to describe the physiologic implications of laparoscopic abdominal surgery including the effects of:
 - Positioning
 - \circ C0₂ Pneumoperitoneum

- o The resident will describe the indications for conversion to an open procedure.
- The resident will be able to describe the various types of lasers and their uses in surgery.
- The resident will be cognizant of the hazards of laser surgery and will know the appropriate precautions.
- The resident will be able to describe the management of an airway fire.

COMMUNICATOR

- The resident will be able to effectively communicate with the surgical team regarding:
 - The preoperative status of the patient and further investigations/optimization required
 - The extent of the planned procedure and implications on the anesthetic
 - Any problems encountered intraoperatively, either anesthetic or surgical
 - The postoperative care including DVT prophylaxis and the implications of the anesthetic on such care
 - o The postoperative pain management planned for the patient
- The resident will be able to
 - o Communicate effectively with patients to elicit all necessary information
 - Communicate and empathize with patients in order to relieve their anxiety, answer all questions and agree upon a course of action that is acceptable to all involved
 Chart appropriately, legibly and clearly
- The resident will demonstrate compassion and respect when communicating with patients and families.
- The resident will be able to recognize when further involvement of the family is necessary either for consent purposes or for help in decision-making.

COLLABORATOR

- The resident will
 - o collaborate with other health care disciplines outside the OR when necessary.
 - utilize the abilities of other health care team members such as nursing, respiratory therapy, perioperative assistants and surgeons when in the operating room.
 - Collaborate with other services, particularly ICU and PACU regarding pre and post operative care of patients
 - o Review management plans and courses of action with the surgeons at all times
 - Consider advise from allied health professionals
 - Work with the operating room team in a positive manner

MANAGER

- Residents will manage their operating room ie: ensure necessary equipment and medications are available and have their room set up in the fashion so that they will be ready to deal with the unexpected
- Residents will start to become proactive in ensuring appropriate post operative placement for their patients, ie ICU bed, step down bed, etc
- The resident must be aware of the operating room management committee and its role.
- The resident must be able to function as a member of the daily operating room managing team.
- The resident must be aware of the interactions of the various OR personnel in a typical day.
- The resident must be able to coordinate surgeons, anesthesiologists and nurses to run an efficient operating room.

HEALTH ADVOCATE

- Residents will acknowledge the difficulties and decision-making involved in utilization and allocation of finite health care resources
- The resident will act as the patient's health advocate in ensuring all guidelines and standards of care are met.

SCHOLAR

- The resident will be able to critically evaluate the literature and alter his/her anesthetic practice accordingly
- Residents will be able to effectively self-evaluate in order to practice ongoing self-directed learning

PROFESSIONAL

- The resident should be able to critically evaluate his/her own practice.
- The resident should be able to manage anesthetics in a professional manner, including discussing options with patients, families and other consulting services.
- The resident should be able to work with the surgical services, recognizing differences in person opinion, methods of practice, and communication styles, all the while maintaining the highest standards of care.
- Residents will be punctual, efficient, respectful and professional at all times

Evaluation:

Meeting with coordinator during R4 year to ensure objectives and competencies are being met.

References:

- 1. Miller, Miller's Anesthesia, 6th Edition, pp 2209-2306.
- 2. Barash, Clinical Anesthesia, 5th Edition, pp 1053-1111.
- 3. Jaffe, Anesthesiologist's Manual of Surgical Procedures, 3rd Edition, pp 375-590.

Subspecialty Coordinator Dr. Dale Engen Revised: November 2017

KHSC – KGH Site Urology Block Objectives

MEDICAL EXPERT

Anatomy:

The resident will be able to:

- Describe the anatomy and innervation of the genitourinary system
- Indicate appropriate levels of neural blockade needed for surgical procedures on each component of the genitourinary system

Physiology:

The resident will be able to:

- Understand renal physiology including the functioning of the neprhon, renal blood flow, glomerular filtration, renal tubular function, regulation of blood volume, extracellular fluid volume, osmolarity of body fluids and plasma concentration of various ions and regulation of body pH
 - Outline criteria for the diagnosis of:
 - Renal insufficiency
 - Acute renal failure (AFR)
 - Chronic renal failure(CRF)
 - Describe uremic syndrome
 - Describe the influence of anesthesia and surgery on renal function

Pharmacology:

•

The resident will be able to:

- Discuss the impact of CRF on the pharmacokinetics of drugs used in anesthetic practice
- Indicate which of the drugs used commonly perioperatively depend heavily on renal excretion
- Identify which common anesthetic agents **can be** used safely in patients who are dialysis-dependent and which agents should be **avoided**.

Clinical Scenarios:

The resident will be able to outline the particular **surgical** factors that influence anesthetic technique and management for:

- Circumcision/orchiectomy/orchidopexy
- TUR-P and TUR-BT
- Placement/removal of ureteric stents/calculi
- Percutaneous nephroscopy and nephrolithotripsy
- Laparoscopic procedures
- Extracorporeal shock wave lithotripsy
- Perineal prostatectomy
- Radical retropubic prostatectomy
- Radical cystectomy and ileal conduit
- Radical nephrectomy for tumour
- Donor nephrectomy
- Renal transplantation
- Management of anephric patient for non-urologic surgery

In each case the resident will be able to discuss:

- Pros and cons of alternative anesthetic techniques
- Appropriate monitoring
- Perioperative pain management

The resident will be able to:

- Identify intra operative and post operative complications associated with many of the above procedures such as: Transurethral resection syndrome, bladder perforation, acute bacteremia following TURP, complications of extra peritoneal insufflation and laser safety.
- Outline procedures for identification and management of such complications

Specific Skills:

- The resident will be able to place a subarachnoid block using either midline or paramedian approach, having selected an appropriate drug dose and analgesic level, and will achieve successful surgical anesthesia 90% of the time.
- The resident will be able to place paravertebral blocks for initial management of post-nephrectomy or retropubic prostatectomy pain.
- The resident will demonstrate the ability to place an epidural catheter preoperatively and use it for preemptive analgesia and combined regional/GA for major urologic procedures.

COMMUNICATOR

The resident will demonstrate:

- the ability to obtain a targeted relevant medical history thoroughly and efficiently.
- sensitivity to and awareness of the concerns of the patient and the family.
- the ability to prepare the patient well for procedures and maintain communication throughout the procedure
- the ability to discuss risks and benefits of alternative approaches honestly without inducing undue alarm.

COLLABORATOR

The resident will:

- demonstrate the ability to communicate and organize with our nephrology consultants the appropriate pre op and post op care of dialysis dependent patients
- demonstrate the ability to collaborate with the urologist the appropriate care for often very elderly and medically complex patients requiring TURP and TURBT and procedures
- Communicate changes in patient status openly and appropriately to other members of the health care team when needed.
 - Ask for help appropriately, recognizing his/her limitations in knowledge and/or skills.

MANAGER

The resident will:

- demonstrate the ability to organize anesthetic tasks efficiently without sacrificing quality.
- work cooperatively as part of a team.
- use resources wisely without sacrificing standards of care.

HEALTH ADVOCATE

The resident will:

- arrange post-hospital follow-up by the family physician of health issues identified perioperatively.
- initiate appropriate education of patients/families re: health related issues.

SCHOLAR

The resident will:

- demonstrate ongoing review of procedures/policies with the goal of detecting areas of potential improvements.
- actively participate in the discussion of problems with other physicians and health care professionals and initiate and/or cooperate in structured investigation in these areas.

PROFESSIONAL

The resident will:

• demonstrate appropriate personal and interpersonal behaviors with patients, families and other health care workers.

PGY 4 & 5 Expectations

Building upon the aforementioned goal and objectives the PGY 4 and 5 residents will:

Case Management Expectations:

- be able to critically appraise new medical literature and apply it when appropriate
- be able to formulate and provide a comprehensive anesthetic management plan for the above listed procedures and complications
- formulate and provide a comprehensive anesthetic management plan for a dialysis patient requiring a non urologic procedure
- identify patient based and procedure based risk factors for post operative renal failure and appropriately institute renal preservation strategies

Technical Skill Expectations:

• With minimal assistance will be capable of adeptly placing a spinal, epidural or paravertebral blocks as part of a comprehensive intra operative and post operative anesthetic and pain management plan

Evaluation:

1. Daily evaluation sheets transitioning to EPAs.

Recommended Reading:

Anesthesia and the Renal and Genitourinary Systems. Miller et al. Anesthesia 6th Edition, ELSEVIER, Churchill Livingston, Chapter 54.

Clinical Anesthesia. Barash et al. 5th Edition, Lippincott Williams and Wilkins. Chapter 35

Pharmacology and Physiology in Anesthetic Practice. Stoelting et al. 4th Edition, Lippincott Williams and Wilkins, Chapter 54

Anesthesiologist's Manual of Surgical Procedures, Jaffe et al. 4th Edition. Lippincott Williams and Wilkins, Chapter 9 and 12.6.

Block Coordinator Dr. Rachel Rooney Revised: November 2017

KHSC AP

REGIONAL ANESTHESIA AND ACUTE PAIN MANAGEMENT

MEDICAL EXPERT

Residents are expected to make rounds on the patients on the pain service each day, with the Acute Pain Nurse and Anesthesia Attending when they are on the Acute Pain Management Service. Residents will manage acute pain patients after hours when on-call for Anesthesia throughout the duration of their Anesthesia training. They will also be available to the PACU to place peripheral and central neuraxial blocks when required.

Knowledge: The junior resident should be aware of the following concepts, whereas the senior resident should be able to demonstrate an appropriate knowledge depth in all the following areas and discuss

- 1. Understand general principles of local anesthetic pharmacology, including classification of chemical groups.
- 2. Understand pharmacokinetics and pharmacodynamics of various local anesthetics, including:
 - onset
 - duration
 - biotransformation and excretion
 - motor/sensory differentiation
 - toxicity
- 3. Understand principles and indications for various local anesthetic adjuvants, including:
 - epinephrine
 - phenylephrine
 - narcotics
 - sodium bicarbonate
- 4. Be knowledgeable about maximum recommended doses of local anesthetics, with emphasis on the variations that occur in relations to the site of administration
 - be familiar with the ASRA&PM guidelines on treatment of Local Anesthetic Toxicity
- 5. Be familiar with relevant anatomy for regional techniques, including:
 - 1. Spinal canal and its contents:
 - variations in vertebral configurations
 - spinal nerves (lateral exit, covering, sensory distribution)
 - epidural, sub-dural, and subarachnoid spaces
 - radiological anatomy of the cervical, thoracic, and lumbar spine
 - ultrasonography of the thoracic and lumbar spine to assist neuraxial blocks
 - 2. Neural plexuses of the limbs
 - relationship of nerves, arteries and bones
 - motor innervations of the nerves
 - brachial plexus
 - o ulnar nerve
 - o radial nerve
 - o median nerve
 - o musculocutaneous nerve
 - o axillary nerve
 - lumbar plexus
 - o femoral nerve
 - o lateral femoral cutaneous nerve
 - o obturator
 - lumbosacral plexus
 - o sciatic nerve
 - o tibial nerve
 - o peroneal nerve

- somatic nerves of the trunk
 - o iliohypogastric nerve
 - o ilioinguinal nerve
 - o genitofemoral nerve
- intercostal nerve
 - paravertebral nerve
- 6. Understand the principles of sedation for providing regional anesthetic procedures and be able to describe alternative techniques
- 7. Have a basic understanding of the principles of ultrasonography
- 8. Understand indications and contraindications to regional anesthetic techniques, including:
 - central neuraxial blocks
 - peripheral nerve blocks
 - IV regional anesthetic blocks
- 9. Understand the anatomy, pathophysiology and appropriate management of complications and side effects of regional anesthetic techniques, including:
 - local anesthetic complications
 - CNS toxicity
 - o cardiac toxicity
 - o allergy
 - o preservatives
 - total spinal/epidural anesthesia, sub-dural blocks
 - spinal and epidural hematoma, abscess
 - anterior spinal artery syndrome
 - post-dural puncture headache
 - pneumothorax
 - physiologic side effects
 - o cardiovascular
 - respiratory phrenic nerve block, intercostal nerve block
 - perioperative nerve injury, including assessment of neurologic deficits
- 10. The resident will be able to describe the anatomy and physiology of pain pathways, the
- neuroendocrine response to acute pain and its effects of major organ systems.
- 11. The resident will have knowledge of the clinical pharmacology of medications used in treatment of acute pain, including:
 - i. Medications: opioids, local anesthetics, NSAIDS, alpha-2 agonists, NMDA antagonists
 - ii. Route of administration: oral, SC, IM, IV (including PCA) epidural, intrathecal
 - iii. Regional anesthesia techniques: neuraxial and peripheral nerve blocks (as outlined in the above objectives)
- 12. The resident will be able to outline the advantages of one pain relief delivery system over another, and give specific doses, rates and details of these delivery systems.
- 13. The resident will demonstrate knowledge of the policies which must be in place to safely and effectively treat acute pain, monitor its efficacy and promote safety within a multidisciplinary team.

Technical Skills: a junior resident is expected to perform these skills with assistance and constant supervision of the attending. The senior resident is expected to be able to independently perform these skills

- 1. Be able to identify major nerves using the ultrasound
- 2. Use the ultrasound to facilitate placement of peripheral nerve blocks
- 3. Residents will be expected to be able to perform the following technical and knowledge-based skills pertinent to regional anesthesia:
 - Neuraxial blocks
 - Subarachnoid blocks
 - o Epidural blocks
 - Paravertebral nerve blocks
 - Peripheral nerve blocks
 - Upper extremity blocks

- axillary block
- supraclavicular block
- infraclavicular block
- interscalene block
- intravenous regional anesthesia
- Lower extremity blocks
 - femoral nerve block
 - saphenous nerve block
 - sciatic nerve block
 - popliteal block
 - ankle block
- 4. The resident will describe and treat common and life threatening adverse reactions to medications used to treat acute pain.
- 5. The resident will know the pathophysiology and management of post-spinal headache, including the indications for, and side effects of, an epidural blood patch.
 - The resident will have the skills and ability to perform an epidural blood patch

COMMUNICATOR

- 1. Residents must demonstrate effective communication skills in dealing with patient's problems.
- 2. Residents must demonstrate respect and compassion, be able to communicate that the patient's problems have been understood, and describe options, side effects and complications of therapy in a manner such that the patient can make an informed decision regarding treatment
- 3. For the patient's families, the resident must be able to accurately provide information on each patient's condition, and the prognosis for the treatment. The resident must demonstrate an ability to make decisions and when the family must be relied upon for substitute decision-making when the patient is incapable of deciding for himself or herself.
- 4. The resident must be able to interact with other physicians caring for the patient in a respectful and professional manner
- 5. The resident must be able to effectively communicate with nursing and other paramedical personnel in a manner that ensures the best possible care for the patient

COLLABORATOR

- 1. Residents must demonstrate a professional attitude and competent manner when acting as a consultant as well as be able to consult other disciplines when appropriate. This entails an implicit knowledge of his/her own limitations and those of one's colleagues.
- 2. Residents must involve the attending anesthesiologist in the room and the surgeon in all decisions pertaining to a patient's post operative analgesia management plans

MANAGER

- 1. The resident should demonstrate responsibility in providing consultations in a timely manner.
- 2. The resident should be aware of the cost of various treatment modalities and the necessity of allocating resources appropriately.
- 3. The resident should be aware of the monitoring requirements of various regional techniques according the CAS guidelines.
- 4. The resident should be aware of the value of quality assurance, and morbidity & mortality reviews for the Acute Pain Management Service.

HEALTH ADVOCATE

The resident should demonstrate that he/she is knowledgeable of all guidelines concerning the provision of regional anesthesia and in acute pain management to properly ensure the patient's well-being.

SCHOLAR
Understand and critically evaluate outcome studies related to the influence of regional anesthesia on perioperative outcome.

PROFESSIONAL

Residents will be expected to:

- 1. be responsible for the Acute Pain Service and manage the patients in a timely and professional manner
- 2. respond to calls from the PACU when they are needed for acute pain issues
- 3. continue to read around problems and cases to continually improve their knowledge base
- 4. follow up on patients who experienced complications and/or side effects
- 5. work with other members of the APMS
- 6. provide appropriate handover to residents on-call at the end of their day

Textbooks for Reference:

- Atlas of Regional Anesthesia. David Brown
- Complications of Regional Anesthesia. Brendan Finucane Guideline articles:
- 2010 Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy, ASRA&PM Evidence-Based Guidelines (3rd Edition), RAPM, 2010; 35: 64-101
- ASRA Practice Advisory on Local Anesthetic Systemic Toxicity, RAPM, 2010; 35(2), p152
- ASRA Practice Advisory on Neurologic Complications in Regional Anesthesia and Pain Medicine; 33(5); 2008, p404
- Acute Pain Management: Scientific Evidence: Australian and New Zealand College of Anaesthetists Faculty of Pain Medicine, 4th Edition 2015
- <u>www.usra.ca</u>
- <u>www.nysora.com</u>

Evaluation:

• Daily clinical evaluations

Junior Resident Regional/Acute Pain Rotation

The junior regional/APMS rotation has objectives that are on the website. As clinical exposure to regional anesthesia may be variable, the following self-study schedule is to ensure that the appropriate competencies in regional anesthesia are introduced regardless of clinical exposure. The objectives and competencies are meant to cover only parts of the National Curriculum and are by no means meant to replace that document as a comprehensive outline of the objectives and competencies required by the end of your training. This is also only addressing the Regional Anesthesia component of the rotation. But seeing as the clinical exposure to acute pain is reliable and extensive, we were confident that you will learn the objectives and achieve the required competencies in acute pain management. We wanted to focus your self-study efforts on the Regional Anesthesia component.

We will be implementing a 10 MCQ test each week on the required reading for that week. You must achieve a mark of at least 7/10 to advance to the next week. If you do not, you will repeat the test until you achieve a 7/10.

WEEK ONE

<u>usra.ca</u>

click on Regional Anesthesia

Review all sections under the 'General' heading Introduction (all subheadings) Basic Principles (all subheadings) Scanning technique (all subheadings) Needling technique (all subheadings)

www.asra.com

click on practice advisories

LAST 2008 Practice Advisory on Neurologic Complications

WEEK TWO

<u>usra.ca</u>

click on 'specific blocks' on the left Upper Limb Axillary block (all subheadings) Infraclavicular block (all subheadings) Interscalene block (all subheadings)

Supraclavicular block (all subheadings)

WEEK THREE

usra.ca

click on 'specific blocks' on the left Lower Limb Femoral nerve block (all subheadings) Saphenous nerve block (all subheadings) Sciatic nerve block – Popliteal region (all subheadings) Sciatic nerve block - subgluteal region (all subheadings)

WEEK FOUR

usra.ca

under 'truck', click on 'Neuraxial block' (all subheadings) 'Transversus abdominis plane block' (all subheadings)

www.asra.com

click on *Practise Advisories* 2010 Anticoagulation Guidelines 3rd edition

Core Competencies for Residency Training in UGRA

			Dete	Staff/Resident
	The resident is able to:	γ	Date	Signature
	Derform gentle ultrasound examinations, providing appropriate sedation			
	Demonstrate proper patient selection			
	Use appropriate monitoring during LIGRA			
	Demonstrate proper perve localization techniques			
	Perform effective and safe nerve blocks			
Ę	The resident understands			
be	General principles of ultrasound physics			
ŵ	Benefits and limitations of UGRA techniques			
Sal	Differences between in-plane vs. out-of-plane technique and their indications			
dic	Key artifacts and pitfall errors associated with UGRA			
Me	Ultrasound anatomy of the major neurovascular structures of the upper and			
_	lower extremities and is familiar with the major scientific literature related to			
	UGRA			
	The applications of color Doppler interrogation			
	Equipment specifications			
	Infection control and equipment cleaning			
	The resident is able to			
1	Communicate sensitively and effectively with patients and their families			
or	regarding ultrasound findings			
irat	Explain any complexities of UGRA in terms that the patient can understand			
nn	Collaborate with the surgical team regarding PNBs for their patients			
nm olla	Collaborate with other members of the health care team to ensure quality			
ត្តដ	patient care			
0	Document appropriately			
	The resident is able to:			
	Demonstrate team leadership/management skills for the management of an			
lgei	effective regional anesthesia service			
ana	Recognize costs associated with UGRA practice			
Ŵ	Develop time management skills to perform the required tasks in a			
	reasonable amount of time with satisfactory quality			
te	The resident is able to:			
alth oca	Use evidence-based, cost-conscious strategies in caring for all patients			
dvo				
A				
	The resident is able to:			
	Use textbook and online and computer-based resources to broaden			
ola	knowledge base regarding UGRA techniques			
sch	Understand and critically evaluate outcome studies related to the influence of			
0	UGRA on perioperative outcome			
	The resident has shown to:			
	Be open to constructive criticism regarding ultrasound skills			
ms	Be open and honest with all patient and health care personnel interaction			
Professionalis				

Dr. Michael McMullen Block Coordinator Reviewed: November 2017

KHSC: Gynecology Objectives

This block of clinical material parallels the General Surgery Block objectives very closely.

MEDICAL EXPERT

- Residents will be able to perform a detailed preoperative evaluation taking into consideration the patient's concomitant disease with the goal of optimizing the patient for their surgery.
- The resident will be able to outline the necessary patient, anesthetic and surgical considerations and demonstrate competency in planning and delivering an anesthetic for the following procedures:
 - o D&C
 - o Endometrial ablation
 - o Myomectomy
 - o Hysterectomy
 - o Vulvectomy
 - Surgery for pelvic malignancy
 - o Pelvic exenteration
 - Tubal ligation/reversal
 - o Urinary incontinence surgery
 - Laparoscopic/laparoscopic assisted surgery
- The resident will be able to provide a suitable postoperative management plan including postoperative analgesia by a variety of techniques including IV PCA, IV lidocaine infusion, epidural, transversus abdominus plane and peripheral nerve block.
- The resident will be able to describe risk factors for postoperative nausea and vomiting and apply evidence based strategies to prevent it.

COMMUNICATOR

- The resident will be able to effectively communicate with the surgical team regarding:
 - o The preoperative status of the patient and further investigations/optimization required
 - The extent of the planned procedure and implications on the anesthetic
 - Any problems encountered intraoperatively, either anesthetic or surgical
 - The postoperative care including DVT prophylaxis, pain management and appropriate monitoring location and the implications of the anesthetic on such care.
- The resident will be able to
 - o Communicate effectively with patients to elicit all necessary information
 - Communicate and empathize with patients in order to relieve their anxiety, answer all questions and agree upon a course of action that is acceptable to all involved
 - Chart appropriately, legibly and clearly and communicate with APMS regarding postoperative planning
- The resident will demonstrate compassion and respect when communicating with patients and families.
- The resident will be able to recognize when further involvement of the family is necessary either for consent purposes or for help in decision-making.

COLLABORATOR

- The resident will
 - o collaborate with other health care disciplines outside the OR when necessary.
 - utilize the abilities of other health care team members such as nursing, respiratory therapy, perioperative assistants and surgeons when in the operating room.
 - Collaborate with other services, particularly ICU and PACU regarding pre and post operative care of patients
 - o Review management plans and courses of action with the surgeons at all times
 - o Actively seek and consider advise from allied health professionals
 - o Work with the operating room team in a positive manner

MANAGER

- Residents will manage their operating room ie: ensure necessary equipment and medications are available and have their room set up in the fashion so that they will be ready to deal with the unexpected
- Residents will start to become proactive in ensuring optimal perioperative care of their patients including appropriate postoperative placement (ie. ICU, ECU, remote oximetry, ward bed, ambulatory)
- The resident must be aware of the operating room management committee and its role.
- The resident must be able to function as a member of the daily operating room managing team.
- The resident must be able to coordinate surgeons, anesthesiologists and nurses to run an efficient operating room.

HEALTH ADVOCATE

- Residents will acknowledge the difficulties and decision-making involved in utilization and allocation of finite health care resources
- The resident will act as the patient's health advocate in ensuring all guidelines and standards of care are met.

SCHOLAR

- The resident will be able to critically evaluate the literature and alter his/her anesthetic practice accordingly
- Residents will be able to effectively self-evaluate in order to practice ongoing self-directed learning

PROFESSIONAL

- The resident should be able to critically evaluate his/her own practice.
- The resident should be able to manage anesthetics in a professional manner, including discussing options with patients, families and other consulting services.

- The resident should be able to work with the surgical services, recognizing differences in person opinion, methods of practice, and communication styles, all the while maintaining the highest standards of care.
- Residents will be punctual, efficient, respectful and professional at all times

Evaluation:

1. Daily evaluation sheets

Dr. Jessica Burjorjee Block Coordinator Revised February 2018

KHSC KGH/HDH Ambulatory Anesthesia Objectives

MEDICAL EXPERT

- 1. The resident will be familiar with and able to demonstrate the appropriate preoperative assessment, preparation and premedication in an ambulatory setting to include consideration of:
 - NPO status
 - Drugs that reduce the risk of aspiration
 - Postoperative nausea prophylaxis and treatment
 - Anxiolytics, sedatives, and opioids
 - Chronic medications
- 2. The resident will be able to appropriately select patients suitable for ambulatory anesthesia including the following considerations:
 - Length of surgery
 - Need for transfusion
 - Concomitant disease
 - Extremities of age
- 3. The resident will be familiar with the salient features of the design and management of a facility catering to efficient ambulatory anesthesia
- 4. The resident will be able to describe appropriate anesthetic techniques for ambulatory anesthesia including:
 - Appropriate selection of general, regional, sedation, or local anesthesia
 - Intraoperative consideration of potential postoperative problems
 - Postoperative pain management
 - Time in PACU
 - Prophylaxis and treatment of postoperative nausea and vomiting
 - Appropriate selection of muscle relaxants, narcotics, local anesthetics
 - Airway intervention
 - Considerations for regional anesthetic techniques
 - Postoperative arrangements following central neuraxial blocks and plexus blocks
 - Monitored anesthesia care techniques
- 5. The resident will be able to describe:
 - Discharge criteria and patient instructions
 - Criteria for hospital admission
- 6. The resident will have a plan for postoperative complications.

COMMUNICATOR

- Develop communication skills in ambulatory anesthesia to benefit the patient, the surgeon, and other members of the health care team.
- Demonstrate the ability to discuss the risks and benefits of the various anesthetic techniques relevant to the patient and procedure.
- Obtain the relevant medical history thoroughly and efficiently

COLLABORATOR

- Collaborates with the surgeons and other members of the health care team to ensure optimal patient assessment and preparation
- Asks for help appropriately, recognizing their limitations in knowledge and skills •

MANAGER

- Considers health care resources when determining patient's perioperative management plan •
- Demonstrates knowledge of the departmental guidelines for management of patients in the ambulatory setting.

HEALTH ADVOCATE

Provides appropriate education to ensure patients are well informed and well prepared for • their procedure.

SCHOLAR

- Demonstrates ongoing review of procedures / policies with goal of detecting areas of • potential improvement
- Critically evaluates the medical literature pertaining to ambulatory • anesthesia

PROFESSIONAL

Demonstrates integrity and honesty when interacting with patients, families, and other health • care professionals

Evaluation:

1. Daily evaluation sheets

Recommended Reading:

- Lichtor J.Lance. Anesthesia for Ambulatory surgery. Barash (8th Edition) 2017 Chapter 31
 Masabaccha M. Monitored Anesthesia Care. Barash (8th Edition) 2017 Chapter 30
 Hausman L. Office-based Anesthesia. Barash (8th Edition) 2017 Chapter 32

Dr. Janet van Vlymen **Block Coordinator** Reviewed: November 2017

KHSC ENT Anesthesia Objectives

MEDICAL EXPERT:

- 1. The resident will be able to describe the basic anatomy of the nose, mouth, larynx and neck
- 2. The resident will understand the hazards, scientific principles, and anesthetic approaches to laser surgery on the larynx.
- 3. The resident will list the anesthetic problems anticipated in a patient presenting for tracheostomy.
- 4. The resident will discuss the determinants of pressure in the middle ear and will be able to list the effects of, and contraindications to, the use of N_20 .
- 5. The resident will discuss the physiological effects of chronic upper airway obstruction.
- 6. The resident will manage patients with a variety of upper airway pathology. This must include knowledge (and practical experience if possible) of the following conditions:
 - congenital anomalies affecting the upper airway (for example, Treacher Collins and Pierre Robin syndrome)
 - epiglottitis
 - croup
 - cancer affecting the upper airway
 - post-tonsillectomy bleeding
 - tonsillar abscess
 - trismus
- 7. The resident will be able to describe the anesthetic considerations for the following surgery:
 - nasal surgery
 - tonsillectomy/adenoidectomy
 - myringotomy/mastoid and middle ear surgery including cochlea implant
 - laryngoscopy/laryngeal surgery
 - foreign body inhalation
 - bronchoscopy (rigid, flexible, jet ventilation, apnea technique)
 - ENT tumors
 - ENT infections
 - maxillo-facial trauma
 - temperomandibular joint surgery
 - tracheostomy
 - induced hypotension
- 8. The resident will have a plan for the postoperative pain management for patients having ENT surgery.

COMMUNICATOR

- Develop communication skills with other members of the health care team to benefit the patient
- Demonstrate the ability to discuss the risks and benefits of the various anesthetic techniques relevant to the patient and procedure.
- Learn to communicate with the surgeon to discuss the need for further investigations, postponement of surgery, or special perioperative needs.

COLLABORATOR

• Collaborates with the other members of the health care team to ensure optimal patient assessment and preparation

MANAGER

- Considers health care resources when determining perioperative needs.
- Demonstrates knowledge of the departmental guidelines for management of patients in the perioperative period

HEALTH ADVOCATE

- Provides appropriate education to ensure patients are well informed and well prepared for their procedure.
- Encourages patients to optimize their health status perioperatively

SCHOLAR

- Demonstrates ongoing review of procedures / policies with goal of detecting areas of potential improvement
- Critically evaluates the medical literature pertaining to otolaryngology

PROFESSIONAL

• Demonstrates integrity and honesty when interacting with patients, families, and other health care professionals

Evaluation:

Daily evaluation sheets

Recommended Reading:

- 1. Ferrari LR, Gotta AW. Anesthesia for Otolaryngeal Surgery. Barash (5th ed) 2006 Chapter 34
- 2. Rampil Ira J. Anesthesia for Laser Surgery. Miller (6th ed) 2005 Chapter 67

Dr. Janet vanVlymen Block Coordinator Reviewed: November 2017

KHSC-HDHsite Ophthalmology Anesthesia Objectives

MEDICAL EXPERT

- 1. The resident will be familiar with the preoperative assessment and preparation necessary for these patients. In particular the resident will be familiar with:
 - concomitant diseases
 - considerations re: intraocular pressure
 - effects of ophthalmologic medications
 - effects of anesthetic agents on the eye
 - anticoagulation and eye surgery
- 2. The resident will develop the communication skills necessary to engage and secure the cooperation of the elderly ambulatory care patient. The resident will correctly identify patients for whom a general anesthetic is necessary.
- 3. The resident will be familiar with the anatomy, technique of and complications of Retrobulbar and Peribulbar Blocks.
- 4. The resident will know the implications and cardiovascular management of the oculocardiac reflex.
- 5. The resident will be able to list the anesthetic considerations in:
 - Open eye injuries
 - Cataract Surgery
 - Retinal Surgery
 - Strabismus Surgery
 - IOP measurements in childhood glaucoma
- 6. The resident will be able to outline the anesthetic implication of the instillation of SF_6 into the eye.
- 7. The resident will demonstrate a technique for achieving smooth emergence from GA without bucking and coughing.
- 8. Post operative ocular complications

COMMUNICATOR

- Develop communication skills with other members of the health care team to benefit the patient
- Demonstrate the ability to discuss the risks and benefits of the various anesthetic techniques relevant to the patient and procedure.
- Learn to communicate with the surgeon to discuss the need for further investigations, postponement of surgery, or special perioperative needs.

COLLABORATOR

• Collaborates with the other members of the health care team to ensure optimal patient assessment and preparation

MANAGER

- Considers health care resources when determining perioperative needs.
- Demonstrates knowledge of the departmental guidelines for management of patients in the perioperative period

HEALTH ADVOCATE

- Provides appropriate education to ensure patients are well informed and well prepared for their procedure.
- Encourages patients to optimize their health status perioperatively

SCHOLAR

- Demonstrates ongoing review of procedures / policies with goal of detecting areas of potential improvement
- Critically evaluates the medical literature pertaining to ophthalmology

PROFESSIONAL

• Demonstrates integrity and honesty when interacting with patients, families, and other health care professionals

Evaluation: Daily evaluation sheets

Recommended Reading:

McGoldrick KE, Gayer SI. Anesthesia and the Eye. Barash (5th ed) Chapter 33

Dr. Janet vanVlymen Block Coordinator Reviewed: November 2017

KHSC Dental & Orofacial Anesthesia Objectives

MEDICAL EXPERT

- 1. The resident will be able to list the anesthetic considerations in:
 - Maxillary / Mandibular surgery
 - Anesthesia in a dental office
 - Dental surgery in an uncooperative patient

COMMUNICATOR

- Develop communication skills with other members of the health care team to benefit the patient
- Demonstrate the ability to discuss the risks and benefits of the various anesthetic techniques relevant to the patient and procedure.
- Learn to communicate with the surgeon to discuss the need for further investigations, postponement of surgery, or special perioperative needs.

COLLABORATOR

• Collaborates with the other members of the health care team to ensure optimal patient assessment and preparation

MANAGER

- Considers health care resources when determining perioperative needs.
- Demonstrates knowledge of the departmental guidelines for management of patients in the perioperative period
- Demonstrates knowledge of CAS guidelines regarding Anesthesia monitoring and environmental safety in remote locations

HEALTH ADVOCATE

- Provides appropriate education to ensure patients are well informed and well prepared for their procedure.
- Encourages patients to optimize their health status perioperatively

SCHOLAR

- Demonstrates ongoing review of procedures / policies with goal of detecting areas of potential improvement
- Critically evaluates the medical literature pertaining to dental anesthesia

PROFESSIONAL

• Demonstrates integrity and honesty when interacting with patients, families, and other health care professionals

Evaluation:

1. Daily evaluation sheets

Recommended Reading:

- 1. Kenny DJ, Parry JA. Dental Treatment: Surgical Considerations. Bissonnette (1st Edition) 2002. Chapter 77.
- 2. Lola Adewale. Dental Treatment: Anesthetic Considerations and Postoperative Management. Bissonnette (1st Edition) 2002. Chapter 78.
- Souter KJ. Anesthesia Provided at Alternate Sites. Barash (5th Edition) 2006 Chapter 51: 1341 1342.
- Hausman LM. Rosenblatt MA. Office-Based Anesthesia. Barash (5th Edition) 2006 Chapter 52.

Dr. Janet vanVlymen Block Coordinator Reviewed: November 2017

KHSC: HDH site Pre-Assessment Clinic Objectives

Residents will attend pre-assessment clinics for the equivalent of about one month of time over their PGY2-5 years. The following objectives apply to these clinics.

MEDICAL EXPERT:

General Objectives:

The resident will learn to:

- 1. Reduce perioperative morbidity by screening patient data and initiating further patient encounters / investigations as appropriate.
- 2. Perform preoperative anesthetic assessments with accurate assessments of the airway and cardiac, respiratory, and neurologic systems.
- 3. Know the common anesthetic classification systems (e.g. ASA status. NYHA, Mallampati, etc).
- 4. Address patient inquiries as to pertinent complications and risks of anesthesia.
- 5. Appreciate the processes involved preoperative evaluation and testing and be able to describe the key factors in the organization of an anesthesia consult clinic.
- 6. Maintain a professional attitude and behaviour while interacting with patients and other members of the health care team.

Specific Objectives:

The resident will:

- 1. Become proficient in airway evaluation.
- 2. Improve skills at directed history and physical examination.
- 3. Identify patients who require further necessary preoperative preparation, consultation or investigation.
- 4. Be knowledgeable about the most current guidelines for cardiac evaluation and care before non-cardiac surgery.
- 5. Understand the basic principles of cardiac investigations, their interpretation, limitations, and their costs / benefits.
- 6. Learn effective outpatient preparation strategies for surgical patients presenting with common medical problems such as asthma, diabetes mellitus, ischemic heart disease, and sleep apnea.
- 7. Recognize the difficulties and limitations of preoperative evaluation with short time intervals before anticipated surgery.
- 8. Develop anesthetic management plans with the consultant anesthesiologist.
- 9. Be able to present the various anesthetic techniques available for the surgical procedure and inform the patient about the specific risks and benefits of each technique.
- 10. Be able to discuss the strategies for blood conservation techniques and the potential risks of blood transfusion.
- 11. Inform patients which pain management services may be offered to them and the potential advantages and disadvantages of each.
- 12. Be able to prepare and educate the patient regarding the need for specialized postoperative care (e.g. monitoring, ICU admission, potential for postoperative ventilation).
- 13. Address the role and indications for common preoperative therapies (anxiolytics, bronchodilators, antisialagogues, steroids, perioperative β-blockers, antacids etc).
- 14. Learn to communicate with the referring physician and operating room staff to ensure all necessary equipment, precautions, preparations are complete by the time of surgery. (eg. difficult airway equipment, latex allergy precautions, need for postoperative monitoring.)

COMMUNICATOR:

• Develop communication skills in preoperative consultation to benefit the patient, the referring physician, and the consultant.

- Demonstrate the ability to discuss the risks and benefits of the various anesthetic techniques relevant to the patient and procedure.
- Be able to dictate a clear, concise anesthetic consultation letter including the anesthetic considerations and a clear plan for the perioperative management.
- Know the appropriate organization, content, format and length of consultation notes.
- Learn to communicate with the referring physician directly to discuss the need for further investigations, postponement of surgery, or special perioperative needs.

COLLABORATOR:

• Collaborates with the family physician and / or the referring physician to ensure optimal patient assessment and preparation (e.g., baseline test results, blood pressure management)

MANAGER:

- Considers health care resources when determining preoperative testing needs.
- Demonstrates knowledge of the departmental guidelines for management of patients in the perioperative period (e.g., sleep apnea, sickle cell anemia, malignant hyperthermia, implantable cardioverter-defibrillator, ambulatory surgery, monamine oxidase inhibitors).

HEALTH ADVOCATE:

- Provides appropriate education to ensure patients are well informed and well prepared for their procedure.
- Encourages patients to optimize their health status preoperatively (e.g., smoking cessation, blood pressure control, use of nCPAP etc)

SCHOLAR:

- Demonstrates ongoing review of procedures / policies with goal of detecting areas of potential improvement
- Critically evaluates the medical literature pertaining to preoperative evaluation

PROFESSIONAL

• Demonstrates integrity and honesty when interacting with patients, families, and other health care professionals

Evaluation:

1. Daily Evaluation

References:

- 1. Hata TM, Moyers JR. Preoperative Evaluation and Management in: *Clinical Anesthesia* (5th ed).
- 2. Barash, Cullen, and Stoelting. Chapter 18 pp. 475-501, 2006
- 3. Fleisher LA et al. ACC/AHA Guidelines on Perioperative Cardiovascular Evaluation and Care for Noncardiac Surgery: Executive Summary. *J Am Coll Cardiol* 2007;50:1707-3.
- Choosing Wisely Canada. Canadian anesthesiologists society "Top 5 Unnecessary Tests Physicians and Patients should Question". <u>http://www.cas.ca/English/Choosing-Wisely-Top-5</u> Accessed November 7, 2017.
- 5. Choosing Wisely Canada. Drop the PreOp. <u>http://www.choosingwiselycanada.org>toolkits</u>. Accessed November 7, 2017.

Dr. Joanna Dion Block Coordinator Reviewed: November 2017

Pediatric Anesthesia Block Objectives CHEO

Subspecialty Objectives for Pediatric Anesthesia Training

The pediatric anesthesia training in the Queen's University programme consists of 12 week's clinical pediatric exposure at Children's Hospital of Eastern Ontario (CHEO) in Ottawa and ongoing exposure to paediatric cases in Kingston during the PGY1 to PGY5 residency years. The Goals and Objectives for pediatric anesthesia training have been divided up into an introductory rotation (PGY 2 & 3 residents), and a senior rotation (PGY4 & 5 residents). The goals and objectives list the minimum of what is expected of a resident in terms of their knowledge base (including clinical <u>case management</u>), procedural <u>skills</u>, and <u>attitude and communication</u> skills. The minimal expected basic and clinical science pediatric core knowledge base will occur over the PGY2-5 years at various stages and rates with specific areas of knowledge being acquired with the corresponding Pediatric Core program lectures and the clinical rotation in pediatric anesthesia. The depth of comprehension of a resident's knowledge base and their technical skills is expected to increase, as residents become more senior.

Pediatric Anesthesia

Goals:

Given a pediatric patient presenting for any type of surgery, the resident will outline a plan of management and institute a safe anesthetic for that patient as well as demonstrate an awareness of the psychological impact of the experience for the child and his/her family.

MEDICAL EXPERT OBJECTIVES:

- 1. The resident will outline the important differences between adult, pediatric, neonatal, and ex-premature patients' anatomy and physiology in relationship to anesthesia.
- 2. The resident will understand the altered pharmacodynamics in the newborn infant compared to older children and adults.
- 3. The resident will be able to describe, in particular, the differences in the adult and pediatric airway and be proficient in the assessment of the pediatric airway, and the management of the difficult paediatric airway.
- 4. The resident will be able to perform an appropriate preoperative evaluation of a pediatric patient using relevant historical, physical, and laboratory information.
- 5. The resident will know the currently acceptable criteria for accepting children for anesthesia and the guidelines pertaining to outpatient anesthesia and preoperative fasting.
- 6. Residents will be able to institute the appropriate perioperative fluid and electrolyte, and temperature management in the perioperative period for surgical paediatric patients.
- 7. The resident will demonstrate an appropriate approach to, and management of, common postoperative issues including postoperative pain, agitation, nausea and vomiting, PACU discharge criteria, and criteria for unplanned admission.

- 8. The resident will learn the principles of using paediatric anesthesia circuits and equipment and will be able to choose the appropriate equipment for any case.
- 9. The resident will describe the anesthetic implications of the following disorders:
 - haematologic disorders including anemia, sickle cell states, thalassemia, ITP, hemophilia
 - atypical plasma cholinesterases
 - diabetes mellitus
 - malignant diseases
 - non-cardiac surgery in children with congenital heart diseases
 - Down's Syndrome
 - malignant hyperpyrexia
 - cystic fibrosis
 - renal insufficiency or failure
- 10. The resident will understand the anesthetic implications of pediatric syndromes and unusual disorders to the depth described in Stewart's Manual of Pediatric Anesthesia.
- 11. The resident will describe the special considerations of the premature infant coming for surgery and also will understand the longer term problems of providing anesthetic care to patients who were born prematurely but present for surgery at a later date.
- 12. The resident will describe the anesthetic management of patients presenting for common neurosurgical procedures. These will include:
 - patients with hydrocephalus
 - increased intracranial pressure
 - intracranial hematoma
 - craniosynostosis
 - myelomeningocele
 - encephalocele
 - spinal cord tumors
 - intracranial tumors.
 - common neuroradiologic techniques.
- 13. The resident will describe the anesthetic management and potential complications of patients presenting for common procedures in the following areas:
 - ophthalmology
 - dental surgery
 - elective ENT procedures
 - kyphoscoliosis
- 14. The resident will discuss, diagnose and treat the more common forms of pediatric lung disease. In the newborn, the resident will discuss the importance of pulmonary surfactant; respiratory distress syndrome of the newborn; and abnormal breathing patterns. In the older child the resident will diagnose and treat croup, bronchiolitis, cystic fibrosis and epiglottitis. The resident will describe in detail the anesthetic management of upper airway obstruction in a child.
- 15. The resident will describe the anesthetic management of common congenital defects that may require surgery during the neonatal period. As a minimum the resident will describe the management of:
 - congenital lobar emphysema
 - congenital diaphragmatic hernia
 - tracheoesophageal fistula and esophageal atresia
 - congenital hypertrophic pyloric stenosis
 - omphalocele and gastroschisis
 - biliary atresia.

- 16. The resident will describe the anesthetic technique used in management of common closed heart operations including patent ductus arteriosus, aortic coarctation, palliative surgery to increase pulmonary blood flow, palliative surgery to increase intra-atrial mixing, and palliative surgery to decrease pulmonary blood flow. The resident will describe an acceptable technique of preoperative assessment of patients with congenital heart disease. The resident will describe a plan of management for patient presenting for non-cardiac surgery who has congenital heart disease.
- 17. The resident will be familiar with the perioperative management of children with common paediatric cardiovascular anomalies including: Tetralogy of Fallot, patent ductus arteriosus, aortic coarctation, atrial septal defects and ventricular septal defects.
- 18. The resident will utilize the appropriate regional anesthetic techniques in pediatric anesthesia and pediatric analgesia.
- 19. The resident will be familiar with the practical aspects of providing anesthesia for children outside of the OR including anesthesia for MRI, CT scan, other investigative procedures
- 20. During anesthesia rotations at CHEO and during the residency in Kingston, the resident will be expected to provide anesthesia in as many of the following cases as possible, and be able to completely describe the approach to anesthesia management in all:
 - circumcision
 - common inguinal, femoral, and umbilical hernia repair*
 - pyloric stenosis*
 - neonatal surgery (including TE fistula)
 - reimplantation of ureters
 - ex-premature child*
 - cystoscopy*
 - orchidopexy
 - cranioplasty
 - posterior fossa surgery
 - cleft lip and palate repair*
 - foreign body in the airway*
 - patent ductus arteriosus
 - non-open heart cyanotic congenital heart disease*
 - bronchoscopy
 - tonsillectomy*
 - myringotomy and tubes*
 - Scoliosis Repair*
 - (*=essential)
- 21. The resident will be expected to know how to manage the following situations in paediatric anesthesia:
 - rapid sequence of induction
 - child with a recent URTI
 - malignant hyperpyrexia
 - muscle biopsy
 - controlled hypotension
 - child of Jehovah's Witness parents

COMMUNICATOR:

1. The resident will be able to use a variety of approaches in dealing with children of all ages in their preparation for anesthesia and surgery.

- 2. The resident will recognize the psychological impact of hospitalization, anesthesia, and surgery on both the patients and their families.
- 3. The resident will provide accurate, appropriate information in a timely fashion to the family.
- 4. The resident will ensure that informed consent is obtained prior to undertaking invasive procedures.
- 5. The resident will effectively communicate with all members of the treatment team using effective verbal communication skills.
- 6. The resident's written communication, including charting of the perioperative events, will consist of concise and clear documentation.

COLLABORATOR:

- 1. The resident will demonstrate the capacity to consult effectively with the neo and perinatologist, the pediatricians and the surgeons to assure optimal management of patients.
- 2. The resident will work effectively as an integral member of the perioperative team. This will include the ability to resolve conflicts, provide feedback and assume a leadership role where appropriate.

MANAGER:

- 1. The resident will utilize resources effectively to provide anesthesia services to the pediatric patient
- 2. The resident will practice according to national standards and provincial guidelines for the management of pediatric patients.

HEALTH ADVOCATE:

1. The resident will demonstrate increasing expertise and leadership in maintaining and improving the standards of pediatric anesthesia practice and patient care.

SCHOLAR:

- 1. The resident should have the ability to critically review the literature and understand and evaluate new information and research.
- 2. The resident should contribute to the learning of others.
- 3. The resident should contribute to the development of new knowledge when possible.

PROFESSIONAL:

1. The resident should demonstrate an increasing sense of responsibility and "case ownership".

- 2. The resident should deliver the highest quality of care with integrity, honesty and compassion.
- 3. The resident should demonstrate appropriate respect for the opinion of patients and team members in the provision of quality pediatric care.

Graded Objectives

The following paragraphs list the objectives in relation to the time when the resident should acquire the knowledge, skills, and attitudes necessary to practice Paediatric Anesthesia.

Introductory (PGY2 and PGY3) Pediatric Anesthesia Objectives

PGY2 & PGY3 Knowledge:

To gain an appreciation of:

- 1. The psychological impact of hospitalization, anesthesia, and surgery on both the patient and their family.
- 2. The anatomical, pharmacological, and physiological differences between the neonate, infant, child and adult.
- 3. The various approaches in providing perioperative anesthetic care for children of all ages, including the fasting guidelines as applied to pediatric patients.
- 4. The differences in the adult and pediatric airway and the assessment of the pediatric airway.
- 5. Pediatric anesthesia equipment, circuits, and monitors.
- 6. The approach to, and management of common postoperative issues including postoperative pain, agitation, nausea and vomiting, PACU discharge criteria, and criteria for unplanned admission.
- 7. An appropriate preoperative evaluation of a pediatric patient using relevant historical, physical, and laboratory information.
- 8. The skills to participate in and / or present M&M rounds, clinical pediatric research projects and department rounds.
- 9. The process of critically searching, evaluating and applying the pediatric anesthesia literature knowledge base available from computers, textbooks and journals.

PGY2 & PGY3 Case Management expectations:

- 1. Manage ASA class 1 and 2 patients greater than 2 years of age with limited assistance for uncomplicated surgery including induction, maintenance, emergence, charting and transportation to the PACU.
- 2. Accurately estimate fluid requirements, and replace (crystalloid, colloid, and blood) for routine cases.
- 3. To be able to identify and formulate a differential diagnosis and treatment plan for basic intraoperative problems including laryngospasm, hypertension, hypotension, bradycardia, tachycardia, desaturation, low urine output, and high airway pressure.
- 4. Identify anatomical landmarks, and list the complications and contraindications to regional and local blocks (caudal, epidural, iliohypogastric, ilioinguinal nerve block, and local infiltration). Prescribe appropriate doses of local anesthetic for a pediatric patient.
- 5. Assess, and manage acute postoperative pain for uncomplicated pediatric surgical procedures.

PGY2 & PGY3 Technical Skills:

The resident will be expected to acquire confidence and ability to adeptly.

- 1. Secure intravenous access in the pediatric patient.
- 2. Prepare and check anesthetic equipment (including invasive monitors and fluid warmers) and prepare both routine and resuscitative anesthetic medications.
- 3. Perform both an inhalational induction as well as intravenous induction (including RSI with CP) in the pediatric patient.
- 4. Select an appropriate sized LMA and perform LMA placement.
- 5. Select an appropriate sized ETT and perform both oral and nasal intubation in the elective normal pediatric patient with minimal assistance.
- 6. Assess the patient for appropriate timing of extubation.
- 7. Prescribe appropriate doses (LA, opioid) and perform caudal anesthesia.
- 8. Utilize appropriate monitors for transportation of the pediatric patient.
- 9. Prescribe appropriate postoperative oxygen, analgesics and anti-emetic therapy.

PGY2 & PGY3 Attitude and Communication Skills:

- 1. Reassure and comfort the pediatric patient and the patient's parents.
- 2. Work and communicate effectively with the anesthesia faculty and nursing staff.
- 3. Demonstrate an awareness of one's own limitations and seek assistance when appropriate.
- 4. Demonstrate an enthusiasm to acquire new knowledge and clinical skills.

Senior (PGY4 and PGY5) Pediatric Anesthesia Objectives

PGY4 & PGY5 Knowledge Objectives:

- 1. To build on the introductory knowledge objectives identified above.
- 2. To critically appraise and incorporate new information from the medical literature.
- 3. To master the basic and clinical science core knowledge content objectives as applied to pediatrics identified in Section VI.
- 4. To be able to discuss and describe a comprehensive anesthetic management plan for pediatric patients for:
 - aortic coarctation repair
 - burns
 - congenital diaphragmatic hernia
 - craniosynostosis
 - croup and epiglottitis
 - encephalocoele
 - increased intracranial pressure
 - necrotizing enterocolitis
 - non-cardiac surgery in patients with congenital heart disease
 - omphalocoele and gastroschisis
 - palliative cardiac surgery to increase intra-atrial mixing
 - palliative cardiac surgery to increase or decrease pulmonary blood flow
 - spinal cord tumors
 - tracheo-esophageal fistula and esophageal atresia

PGY4 & PGY5 Case Management Expectations:

- 1. To build on, and successfully complete the PGY2 and PGY3 case management expectations listed above.
- 2. Manage ASA class 1 and 2 patients greater than 1 month of age with limited assistance for uncomplicated surgery including induction, maintenance, emergence, charting and transportation to the PACU.
- 3. To be able to both describe a comprehensive anesthetic management plan and provide anesthesia for the following procedures:
- appendectomy
- bowel resection
- bronchoscopy and esophagoscopy
- circumcision
- cleft lip and palate surgery
- compound and closed extremity fractures
- cystoscopy
- dental surgery
- foreign body in the airway
- Harrington rod instrumentation and other scoliosis surgery
- hydrocephalus
- hernia repair
- myringotomy and tubes
- intracranial tumors
- laser surgery of the airway
- neonatal surgery
- nephrectomy
- orchidopexy
- PDA ligation
- Pectus excavatum repair
- Post tonsillectomy bleed
- posterior fossa surgery
- pyloric stenosis
- re-implantation of ureters
- sedation for satellite anesthesia (MRI, CT, LP for BM etc)
- strabismus surgery
- surgery for infants < 60 post conceptual age
- surgery in a child with recent URI
- surgery in the patient with a difficult airway
- surgery for an uncooperative patient
- tonsillectomy

PGY4 & PGY5 Technical Skills:

Building on the PGY2 & PGY3 skills, the resident will be expected to acquire confidence and ability to adeptly:

- 1. Secure intravenous access in the premature and newborn infant.
- 2. Secure 'large' bore intravenous access in the pediatric patient undergoing a major surgical procedure or requiring resuscitation.
- 3. Select an appropriate ETT size and perform intubation in the premature and newborn infant.
- 4. Perform aseptic arterial and central line insertion in the pediatric patient.
- 5. Prescribe appropriate doses and demonstrate the technical ability to perform spinal anesthesia in the infant as well as epidural anesthesia in the pediatric patient.
- 6. Demonstrate an increasing confidence in performing local and regional anesthesia techniques as applied to pediatric patients.

PGY4 & PGY5 Attitude and Communication Skills:

- 1. To demonstrate an increasing sense of responsibility and 'case ownership', as well as demonstrate adequate preparation in reading for assigned clinical cases.
- 2. To demonstrate willingness and an ability to impart acquired knowledge to more junior residents, medical students and other health care professionals.
- 3. To demonstrate willingness and an ability to act as a supervisor and instructor to more junior residents, medical students and other health care professionals.

Block Coordinators: Kingston: Dr. Joanna Dion CHEO: Dr. Amy Roeske Reviewed: November 2017

KHSC Airway Objectives

Overall Educational Objectives As Key Competencies

CANMeds Role	KEY COMPETENCIES FOR AIRWAY MODULE AND ROTATION			
<u>MEDICAL</u> EXPERT	Demonstrate proficiency in the following required competencies:			
	 Airway assessment Airway anatomy 			
	Application of the American Society of Anesthesiologists and Canadian Airway Focus Group difficult airway algorithms			
	 Optimization of mask ventilation and direct laryngoscopy The laryngeal mask airway (LMA) and insertion techniques The combitube and insertion techniques (mannequin) Trans-tracheal jet ventilation theory and technique (mannequin) Cricothyroidotomy theory and techniques (anatomy labs) Retrograde intubation theory and techniques (anatomy labs) Flexible fiberoptic bronchoscope (FOB) facilitated intubation Nasal intubation (with and without adjuncts) 			
	 Awake intubation Preoperative preparation, sedation, and monitoring Topical anesthesia techniques Superior laryngeal nerve block (theory) Cricothyroid puncture for topical anesthesia Acceptable dose of local anesthetic 			
	 Knowledge of indications, contraindications, complications, assembly (where applicable), use, and care of airway adjuncts listed below Gum elastic bougie Lighted stylet Videolaryngoscope (eg. Glidescope) and rigid indirect fiberoptic laryngoscope (eg. Bullard) Intubating laryngeal mask Straight blades (eg. Miller) Articulating blade (eg. McCoy) 			
	 Intubation of patients with normal and simulated difficult airways using <u>at least two</u> of the following techniques Gum elastic bougie Lighted stylet Videolaryngoscope (eg. Glidescope) and/or rigid indirect fiberoptic laryngoscope (eg. Bullard) LMA-facilitated flexible fiberoptic bronchoscopy and intubation Intubating laryngeal mask insertion and intubation Straight blade (eg. Miller) Articulating blade (eg. McCoy) 			
	 Optional competencies: Inhalation induction and LMA insertion Inhalation induction and endotracheal intubation Assistance with tracheostomy under local anesthesia 			

<u>COMMUNICATOR</u>	 Demonstrate effective communication with patient (description of procedures, informed consent) 				
	Effectively communicate with OR team regarding equipment, assistance required and plan for airway management				
	 Provide thorough documentation on anesthetic record of perioperative events specifically related to airway management 				
COLLABORATOR	 Collaborate with OR team members to ensure optimal management of patients (i.e. ENT surgeon when required) 				
	Provide appropriate handover during transition of care using verbal and written means				
MANAGER	Demonstrate proper care and maintenance of airway equipment				
	Make use of the rotation to maximize involvement in the management of difficult airway cases.				
<u>HEALTH</u> ADVOCATE	□ Take steps to improve future patient safety by providing the patient and health care team with information regarding difficult airway management. (post-op visit, formal letter)				
SCHOLAR	Use all learning aids available (textbooks, web-based resources, mannequins, simulator, anatomy lab)				
PROFESSIONAL	Demonstrate a sense of responsibility, integrity, honesty and compassion when caring for patients				
	 Demonstrate respect for patients and colleagues 				
	Maintain ethical standards while caring for patients and family and during interaction with health care providers				
	 Follow the department and the hospital policies, procedures and code of conduct 				
REFERENCES:	Benumof, JL. Airway Management,				
	Principles and Practice, Mosby 1996.				
	<u>Management</u> , Mosby, 1996.				
	The difficult airway with recommendations for management – part 1 – difficult tracheal				
	1118				
	The difficult airway with recommendations for management–part 2—the anticipated difficult airway. Can J Anaesth 2013;60:1119–38				

Dr. Gopakumar Sudhakaran Nair Block Coordinator Reviewed: February 2018

Community Anesthesia Peterborough Rotation

The objectives for this rotation will fall under the appropriate subspecialty objectives for the list that is assigned. In addition to those objectives, the following are specific for the practice of anesthesia in a community setting

MEDICAL EXPERT

- The resident will be able to perform thorough preoperative evaluations of the patient, and be able to make decisions in the absence of tertiary technological resources in some cases.
- The resident will be able to outline the necessary considerations in order to formulate a suitable plan for the anesthetic.
- The resident will demonstrate competency in delivering anesthetics for various subspecialties as practiced at that site.
- The resident will demonstrate the technical proficiencies required to deliver a safe anesthetic for the subspecialties as practiced at that site.
- The resident will be able to provide suitable postoperative management in the recovery room and will provide postoperative analgesia within the confines of the policies and procedures in place at that site.
- The resident will practice autonomy with independent decision making in the absence of other medical specialty resource personnel.

COMMUNICATOR

- The resident will be able to effectively communicate with the surgical team regarding:
 - The preoperative status of the patient and further investigations or optimization required
 - The extent of the planned procedure and implications on the anesthetic
 - Any problems encountered intraoperatively, either anesthetic or surgical
 - The postoperative care including DVT prophylaxis and the implications of the anesthetic on such care
 - The postoperative pain management planned for the patient
- The resident will be able to:
 - o Communicate effectively with patients to elicit all necessary information
 - Communicate and empathize with patients in order to relieve their anxiety, answer all questions and agree upon a course of action that is acceptable to all involved
 - Chart appropriately, legibly and clearly
 - The resident will demonstrate compassion and respect when communicating with patients, families and colleagues.
- The resident will be able to recognize when further involvement of the family is necessary either for consent purposes or for help in decision-making.

COLLABORATOR

- The resident will:
 - o collaborate with other health care disciplines outside the OR when necessary.
 - utilize the abilities of other health care team members such as nursing, respiratory therapy, perioperative assistants and surgeons when in the operating room.
 - Collaborate with other services, particularly ICU and PACU regarding pre- and post-operative care of patients.
 - o Review management plans and courses of action with the surgeons at all times.
 - o Consider advice from allied health professionals.
 - Work with the operating room team in a positive manner.

MANAGER

- Residents will manage their operating room ie: ensure necessary equipment and medications are available and have their room set up in the fashion so that they will be ready to deal with the unexpected
- The resident must be aware of how the operating rooms are managed in that hospital
- The resident must be aware of the interactions of the various OR personnel in a typical day.
- The resident must be able to coordinate surgeons, anesthesiologists and nurses to run an efficient operating room
- The resident will experience different departmental procedures, practices and policies

HEALTH ADVOCATE

- Residents will acknowledge the difficulties and decision-making involved in utilization and allocation of finite health care resources.
- The resident will act as the patient's health advocate in ensuring all guidelines and standards of care are met.
- The patient will organize all pre-operative tests and optimization necessary for patients in order to ensure the safest possible perioperative course.

SCHOLAR

- The resident will be able to critically evaluate the literature.
- The resident will practice evidence-based medicine.
- Residents will be able to effectively self-evaluate in order to practice ongoing self-directed learning.
- The resident will be supportive of any research protocols under way at the site and will follow such protocols appropriately.

PROFESSIONAL

- The resident should be able to critically evaluate his/her own practice.
- The resident will seek and accept constructive feedback and endeavour to incorporate it into their practice.
- The resident should be able to manage anesthetics in a professional manner, including discussing options with patients, families and other consulting services.
- The resident should be able to work with the surgical services, recognizing differences in person opinion, methods of practice, and communication styles, all the while maintaining the highest standards of care.
- The resident will be punctual, efficient, respectful and professional at all times.

Evaluation:

- Daily formative feedback and evaluation form.
- End of rotation summative ITER and exit interview.

Dr. Melinda Fleming/Dr. Janet Hurst Block Coordinator Reviewed: November 2017

Oshawa Anesthesia Rotation

The main objective for this rotation is to gain experience in Thoracic Anesthesia and Regional Anesthesia techniques in a busy community practice. Other subspecialty lists may be assigned, as per the practice profile of Lakeridge Health Oshawa.

The objectives for both Thoracic Anesthesia and Regional Anesthesia can be found under the subspecialty objectives for these topics. In addition to those objectives, the following are specific for the practice of anesthesia in the Oshawa setting:

MEDICAL EXPERT

- The resident will be able to perform thorough preoperative evaluations of the patient in a timely fashion.
- The resident will be able to identify the necessary considerations in order to formulate a suitable plan for the anesthetic.
- The resident will demonstrate competency in delivering anesthetics, as practiced at Lakeridge Health Oshawa.
- The resident will demonstrate the technical proficiencies required to deliver a safe anesthetic for thoracic anesthesia, regional anesthesia, and the other subspecialties practiced at Lakeridge Health Oshawa.
- The resident will be able to provide suitable postoperative management in the recovery room and will provide postoperative analgesia within the confines of the policies and procedures in place at Lakeridge Health Oshawa.
- The resident will practice autonomy, with independent decision making in the absence of other medical specialty resource personnel.

COMMUNICATOR

- The resident will be able to efficiently present the pertinent details of the patient's case history and physical to the attending anesthesiologist, in order to consultatively formulate a plan for the anesthetic.
- The resident will be able to effectively communicate with the surgical team regarding:
 - The preoperative status of the patient and further investigations or optimization required;
 - The extent of the planned procedure and implications on the anesthetic;
 - Any problems encountered intraoperatively, either anesthetic or surgical;
 - The postoperative care, including DVT prophylaxis and the implications of the anesthetic on such care
 - The postoperative pain management planned for the patient.

(The above goals may be demonstrated, in part, by leading the Surgical Safety Checklist, as practiced in Lakeridge Health Oshawa).

- The resident will be able to:
 - Communicate effectively with patients to elicit all necessary information;
 - Communicate and empathize with patients in order to relieve their anxiety, answer all questions and agree upon a course of action that is acceptable to all involved;
 - Chart appropriately, legibly and clearly.
- The resident will demonstrate compassion and respect when communicating with patients, families and colleagues.
- The resident will be able to recognize when further involvement of the family is necessary either for consent purposes or for help in decision-making.

COLLABORATOR

- The resident will:
 - o Collaborate with other health care disciplines, both inside and outside of the OR, when necessary;
 - Utilize the abilities of other health care team members such as nursing, respiratory therapy, perioperative assistants, and surgeons when in the operating room;
 - Collaborate with other services, particularly ICU and PACU, regarding pre- and post-operative care of patients;
 - Review management plans and courses of action with the surgeons at all times;
 - Consider advice from allied health professionals;

• Work with the operating room team in a positive manner.

MANAGER

- Residents will manage their operating room, including ensuring necessary equipment and medications are available, and have their room set up in a safe and efficient fashion.
- The resident must be aware of how the operating rooms are managed at Lakeridge Health Oshawa.
- The resident must be aware of the interactions of the various OR personnel in a typical day.
- The resident must be able to coordinate between surgeons, anesthesiologists and nurses to run an efficient operating room.
- The resident will experience different departmental procedures, practices and policies.

HEALTH ADVOCATE

- Residents will acknowledge the difficulties and decision-making involved in utilization and allocation of finite health care resources.
- The resident will act as the patient's health advocate to ensure that all guidelines and standards of care are met.
- The patient will help to organize all pre-operative tests and optimization necessary for patients, in order to ensure the safest possible perioperative course.

SCHOLAR

- The resident will be able to critically evaluate the literature as it applies to the practice profile of Lakeridge Health Oshawa.
- The resident will practice evidence-based medicine.
- Residents will be able to effectively self-evaluate in order to practice ongoing self-directed learning.
- The resident will be supportive of any research protocols under way at the site and will follow such protocols appropriately.

PROFESSIONAL

- The resident should be able to critically evaluate his/her own practice.
- The resident will seek and accept constructive feedback and endeavour to incorporate it into their practice.
- The resident should be able to manage anesthetics in a professional manner, including discussing options with patients, families and other consulting services.
- The resident should be able to work with the surgical services, recognizing differences in person opinion, methods of practice, and communication styles, all the while maintaining the highest standards of care.
- The resident will be punctual, efficient, respectful and professional at all times.

Evaluation:

- Daily formative feedback and evaluation form.
- End of rotation summative ITER and exit interview.

Dr. Melinda Fleming/Dr. Fadi Hannouche Block Coordinator November 2017

OBJECTIVES FOR CRITICAL CARE AND MEDICINE ROTATIONS OF THE POSTGRADUATE PROGRAM IN ANESTHESIOLOGY

The RCPSC requires Anesthesiology residents to have 6 blocks of Intensive Care/Critical Care (ICU) exposure during the PGY 2 to PGY 5 years of training. At Queen's University, these 6 months have been assigned as follows:

PGY2 1 block Neonatal ICU
PGY3 2 block Adult ICU
PGY4 1 block Adult ICU & 1 block Cardiovascular ICU
PGY5 1 block Adult ICU

The requirement for 6 blocks of Internal Medicine has been met through a variety of options. Generally, in this program, it is recommended that the resident do the following rotations during the PGY 3 through PGY 5 years:

Cardiology	2 blocks
Respirology	2 blocks
Selectives	2 blocks

The Selective can include, but are not limited to:

Transfusion Medicine1 blockNephrology1 blockGeneral Internal Med.1-2 block(s)Other (with program director approval)

Evaluation

Evaluation of senior Medicine and Critical Care rotations is by ITER.

Adult Intensive Care Unit

Coordinator: Dr. Jason Erb (Junior Rotation) Dr. Suzanne Bridge (Senior Rotation)

The resident will rotate through the ICU three times during the Anesthesiology program for a total of 4 months of adult ICU training during their residency, as well as an additional month in the Cardiovascular Intensive Care Unit (CVRI). In the PGY 2 or 3 year there is a 2 month rotation, in the PGY 4 year there is a one month rotation in ICU and one month in CVRI, while in the PGY5 year the senior resident will spend the final month in the ICU. During each of these rotations the resident will be expected to accept progressively more responsibility for patient care culminating in the final rotation where the resident will function as a "fellow" working in a resource and consultative role for the other residents.

The Pediatric level 3 ICU is currently physically in the same area as the Adult ICU. Residents are not responsible for the care of these patients. The residents are encouraged to follow the progress of the Pediatric patients who are admitted to the unit.

Goal:

Given a patient who requires admission to an ICU, the resident will perform an appropriate history and physical examination, enact a plan of investigation, and establish appropriate monitoring. The resident will formulate a plan of treatment and ensure it is followed though in a timely manner.

Objectives:

Medical Expert

1. Cardiovascular

- The resident will provide the differential diagnosis of chest pain, will be able to distinguish the etiology of chest pain using laboratory and clinical means, will be able to outline a therapeutic treatment for acute myocardial infarction and myocardial ischemia.
- The resident will discuss the current theories of pathogenesis of ischemic heart disease. The resident will diagnose and manage the various complications of acute myocardial infarction.
- The resident will diagnose and outline treatment for all cardiac arrhythmias.
- The resident will outline the pathogenesis of hypertensive crisis, its current treatment and complications.
- The resident will discuss the various pathogenic mechanisms of shock. The resident will understand and outline appropriate treatment for each type of shock.

2. Pulmonary

- The resident will outline the causes of respiratory failure in the critically ill patient. The resident will also outline current therapeutic techniques for respiratory support.
- The resident will describe the functional and physiologic basis of mechanical supportive ventilation.
- The resident will be able to explain differences between various types of ventilation in current practice including SIMV, APRV, Pressure Support, Pressure Control, Volume Control.
- The resident will understand high frequency positive pressure ventilation.
- The resident will understand the role, contraindications and benefits of non invasive positive pressure ventilation.
- The resident will be familiar with the basic principles of chest x-ray interpretation.
- The resident will understand the diagnosis and treatment of airway emergencies.
- The resident will recognize the causes, pathogenesis and treatment of pulmonary edema.
- The resident will discuss the pathogenesis, diagnosis and treatment of acute pulmonary infections.
- The resident will discuss the current therapy of asthma and chronic obstructive pulmonary disease.
- The resident will discuss the pathogenesis of adult respiratory distress syndrome. The resident will discuss the current management of adult respiratory distress syndrome.

3. Renal fluids and electrolytes

- The resident will discuss the causes of acute renal failure and methods for assessing which cause is most likely.
- The resident will be able to outline a plan of management for patients with this condition.
- The resident will adjust drug dosages for patients in renal failure.
- The resident will outline the pathogenesis, diagnosis and treatment of all common electrolyte disturbances.

• The resident will discuss the pathogenesis, diagnosis and treatment of all common acid base disorders.

4. Neurology

- The resident will discuss the causes of acute changes in level of consciousness. The resident will outline a diagnostic and therapeutic approach to patients with altered states of consciousness.
- The resident will outline a plan of management for patients with CNS trauma.
- The resident will recognize the signs of increased intracranial pressure and have an appropriate management strategy for patients with this condition.

5. Trauma

- The resident will outline a plan of management for the patient who has multisystem organ injuries.
- The resident will assess and manage patients with the following forms of trauma:
 - abdominal trauma
 - chest trauma lungs and bony structure
 - Mediasteinal trauma heart and great vessels
 - orthopaedic trauma
 - genitourinary trauma
 - upper airway trauma
 - the burned patient

6. The resident will be capable of discussing/managing the following:

- Pain and Sedation in the ICU
- Respiratory Failure, Methods of Mechanical Ventilation, Modes of weaning
- nutritional support of the critically ill
- host defence mechanisms in the critically ill patient
- Transport of critically ill patients
- Declaration of brain death

7. Specific Syndromes

The resident will describe the clinical features, discuss the pathophysiology, and be able to manage the following:

- acute gastrointestinal hemorrhage
- other hemorrhage and/or hemostatic failure
- intestinal ischemia
- fulminant hepatic failure
- acute poisoning/intoxication
- Shock
- Sepsis/septicemia
- MODS/SIRS
- Coma, Status Epilepticus
- Burn patients
- disorders of body temperature

8. The resident will outline the indications, complications and inadequacies of the following forms of

- electrocardiographic
- arterial blood pressure
- CVP and Swan-Ganz catheter
- end-tidal C0₂
- arterial blood gases
- electroencephalogram diagnosis of brain death
- 9. The resident will have a wide knowledge of the drugs used to treat the critically ill. The resident will describe the pharmacology of commonly used drugs in the following categories:
 - anti-arrhythmics
 - beta blockers
 - Bronchodilators
 - Diuretics
 - vasodilators

- vasopressors
- steroids
- drugs used to relieve myocardial ischemia
- drugs used to decrease stomach acidity
- anticoagulants

Communicator

The resident will:

- effectively communicate with all members of the ICU team (nurses, residents, attending staff) about patient issues
- be able to communicate with patients, their family and admitting service about daily patient progress
- keep clear, concise, legible documentation of daily patient progress in the patients' hospital chart
- be expected to participate in end-of-life discussions with ICU team and family members

Collaborator

The resident will:

- enlist the help and advice of consultants when indicated
- work with members of the ICU team to provide optimal patient care (nurses, physicians, dieticians, physiotherapists, pharmacologists, ...)

<u>Manager</u>

Residents should be able to:

- efficiently manage the daily care of several patients
- appropriately prioritize tasks as well as triage patients
- effectively and safely supervise junior residents both for daily patient management as well as during technical procedures
- be aware of the organization and delivery of Critical Care Services including the design and staffing of an ICU

Health Advocate

Residents should be expected to:

- Demonstrate attention to patient safety
- always honour patient confidentiality
- obtain consent when required
- act as a patient advocate in all circumstances
- be able to allocate health care resources appropriately

Scholar

Residents will be expected to:

- Demonstrate on going self-directed learning
- Actively participate in rounds
- Teach junior residents and medical students
- Demonstrate evidence based practice
- Demonstrate commitment to ongoing personal education

Professional

Residents must display compassion, empathy, caring, honesty and ethical behaviour at all times

Dr. Jason Erb/Dr. Melinda Fleming Reviewed: September 2011
KHSC Cardiovascular Intensive Care Unit (CVRI)/ Cardiac Sciences Unit (CSU) Rotation Objectives

Residents completing a one-month rotation in the Cardiovascular Intensive Care Unit (CVRI) Cardiac Sciences Unit (CSU) will achieve competence in the postoperative management of patients undergoing coronary bypass grafting, valve replacement and/or repair, ascending aortic surgery ,TAVIs & Hybrid Atrial Ablation procedures. The resident will also gain exposure to – and an understanding of the role of – perioperative echocardiography in the management of cardiac surgical patients in the operating room and in the postoperative care setting.

MEDICAL EXPERT

The trainee will endeavour to develop knowledge of the basic sciences as applied to the critical postoperative period for coronary artery bypass grafting (on- and off-pump), valve replacement and/or repair, ascending aortic surgery and other major cardiac procedures

A. Physiology and Anatomy

The resident is expected to be able to describe:

- Anatomy of major cardiovascular structures (cardiac valves, left/right ventricles, aorta, and pulmonary artery)
- 4 phases of the cardiac cycle
- Determinants of systolic and diastolic function
- Determinants of cardiac output
- Physiologic differences between the normally functioning left and right ventricular systems
- Natural history and pathophysiology of the following valvular heart disease:
 - o Aortic stenosis
 - o Aortic insufficiency
 - o Mitral stenosis
 - Mitral regurgitation
 - o Mitral valve prolapse
 - o Tricuspid regurgitation.
- Normal coronary anatomy and be aware of common variants
- Physiologic determinants of myocardial oxygen supply and demand
- Pathophysiology of atherosclerotic heart disease
- Electrophysiologic basis of myocardial contraction
- Normal conduction pathways and regulation of cardiac rate and rhythm
- Common abnormalities in cardiac conduction pathways and their clinical significance
- Pathophysiology of ascending aortic aneurysms and aortic dissections
- Alterations in respiratory physiology during the immediately postoperative period, as a result of mechanical ventilation, significant surgical incisions, recent general anesthetic and acute pain

B. Pharmacology

The resident should know the pharmacology (mechanism of action, indications, dose and

administration, elimination, and complications/contraindications) of agents commonly used around the time of cardiac surgery, and their relevance to the postoperative period:

• Heparin

- Protamine
- Antiplatelet agents
- Antifibrinolytic agents
- NOACS
- Procoagulant agents
- Blood products (pRBC, FFP, platelets, cryoprecipitate) and blood alternatives (albumin, starches), including transfusion reactions and complications, review latest literature on transfusions guidelines for cardiac surgery
- Intravenous anesthetics
- Benzodiazepines
- Opioids
- Neuromuscular blockers and reversal agents
- Sympathomimetic agents
- Parasympathomimetic agents
- Other common systemic inotropes, vasopressors, and vasodilators
- Pulmonary vasodilators (as used for pulmonary hypertension)
- Anti-arrhythmic agents, for both prophylaxis and treatment of perioperative dysrhythmias
- Commonly used medications in patients presenting for cardiac surgery (Beta-Blockers, ACE inhibitors, Calcium Channel Blockers, Hypolipidemic agents, Hypoglycemic agents (oral and insulin))

C. Monitoring

The resident will be able to:

- Interpret an EKG for:
 - o ischemia
 - o acute infarction
 - o dysrhythmia
 - o paced rhythms
- Explain the principals of non-invasive BP monitoring
- Manage (including indications, contraindications, placement and ongoing care):
 - o arterial cannulae
 - o central venous cannulae
 - o PA catheters
- Understand the role of transesophageal echocardiography in cardiac surgery both in the OR and postoperatively in the cardiac ICU (see below for more detailed objectives)
- Assess the adequacy of mechanical ventilation using both clinical and laboratory parameters
- Assess the adequacy of circulatory function using clinical and laboratory parameters
- Interpret laboratory monitoring of the coagulation system including use of the ACT
- Assess postoperative blood loss
- Perform temperature monitoring
- Assess postoperative organ function (brain, liver, kidney)

D. Clinical Assessment & Management

By the end of the rotation, the resident will have achieved the following clinical competencies:

- Ability to perform a complete cardiac ICU admission, including obtaining a detailed history, performing an appropriate physical examination, ordering relevant laboratory and ancillary investigations, and providing an initial management plan
- Understanding of 'fast-track' anesthesia: its role in cardiac surgery, appropriate patient selection
- Knowledge of current indications and recommendations for SBE prophylaxis
- Medical management of postoperative bleeding, and knowledge of the indications for surgical consultation
- Ability to appropriately transfuse blood products, while understanding the risks and benefits Ability to provide ventilatory care to a postoperative patient, including:
 - Weaning of ventilator settings towards a goal of extubation
 - Assessment of the criteria for extubation

- Recognition of respiratory failure and its appropriate management (e.g. supplemental O₂, non-invasive ventilatory support, reintubation)
- Ability to identify and correct common derangements of metabolic and electrolyte balance post-cardiac surgery
- Knowledge of the pathophysiology and management of post-cardiac surgery patients with the following clinical conditions:
 - Coronary artery disease, acute myocardial ischemia, infarction (both pre-surgical events and postoperative events) and coronary revascularization
 - o Complications of myocardial infarction, thrombolytic therapy, PCI
 - o Valvular heart disease and valve replacement or repair
 - o Cardiogenic shock
 - o Pulmonary edema
 - o SIRS and vasoplegic syndrome
 - o Emergencies requiring ACLS
 - o Non-emergent dysrhythmias
 - o Cardiac tamponade, pericardial window surgery, reopening post cardiac surgery Constrictive pericarditis
 - o Dilated, restrictive and obstructive cardiomyopathies
 - Pacemakers (both permanent and temporary), and the indications for and applications of the various modes of temporary pacing, understand how to troubleshoot problems with pacing
 - o Ascending aortic dissection, ascending aortic aneurysm, ascending aortic surgery
 - o Cardiac tumours
 - o Pneumo/hemothorax
 - o COPD and reactive airways disease
 - Sleep apnea
 - o Heparin induced thrombocytopenia and heparin resistance
 - Neurologic complications of cardiac surgery or CPB
 - Gastrointestinal complications of cardiac surgery or CPB
 - Acute renal failure and chronic renal failure
 - o Diabetes and postoperative glycemic control
 - o Acute postoperative pain and management

E. Perioperative Echocardiography

Daily exposure to perioperative transesophageal echocardiography (TEE) will be provided in the cardiac surgery operating theatres, and as it occurs in the cardiac ICU. The aim is to demonstrate the utility of this modality in guiding anesthetic and surgical care of cardiac surgery patients both in the operating room and in the immediate postoperative period.

The trainee is invited to observe TEE in the cardiac operating room and; if a resident is interested beyond the introductory level, there are elective opportunities in perioperative TEE by arrangement with the Program Director.

By the end of the rotation, the trainee will be able to demonstrate:

- Knowledge of the indications for perioperative TEE in cardiac surgery
- Knowledge of the absolute and relative contraindications to and potential complications of perioperative TEE
- Knowledge of the appropriate alternative diagnostic techniques
- Recognition of major cardiac structures in standard TEE views
- Recognition of the echocardiographic presentations of myocardial ischemia and infarction
- Recognition of the echocardiographic appearance of normal/abnormal ventricular function
- Ability to understand an echocardiography report and apply the results to the clinical situation

COMMUNICATOR

At the senior level resident will be encouraged to develop their unique style as a communicator. Effective communication skills will be taught and encouraged at several levels:

- Between Resident and Patient and his/her family:
 - o Obtain accurate and relevant history and perform detailed physical examination using effective listening skills

- o Explain the status of the patient and expected progress of the critical care patient to his/her family
- Effectively communicate to a ventilated patient or a sedated patient
- Between Resident and CVRI Attending/TEE Attending:
 - Communicate patient information and outline management plan to attending staff in a professional and efficient manner
- Between Resident and Critical Care Team (ICU nurse, respiratory therapist, ward clerk)
 - o Communicate management plan effectively in a routine and emergency situation
 - Between Resident and Surgeon, Pain Specialist, other Specialist:
 - o Discuss the clinical parameters of possible surgical re-exploration in an efficient manner
 - o Demonstrate flexibility and respect for differing opinions regarding management decisions

COLLABORATOR

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The resident will be encouraged to recognize the need to utilize other medical and surgical specialists, and allied health professionals, for the care and management of the critical postoperative patient:

- Differentiate the critical differences between medical and surgical postoperative bleeding and collaborate with the surgical specialist
- Consult appropriately with medical specialties regarding common complications in post-cardiac surgery patients (e.g. stroke, acute renal failure, infection)
- Learn how to advise other physicians in an oral and a written format regarding critical care issues
- Foster healthy team relationships, including with allied health professionals such as nursing, respiratory therapy, and clinical perfusion

PHYSICIAN MANAGER

Residents are taught:

- Collaborative care plans and 'fast-track' cardiac anesthesiology and surgery as they relate to resource optimization
- The utility of point-of-care testing and transfusion protocols to reduce unnecessary transfusion
- Time management in coordinating discharge with scheduled surgical admissions
- The impact of limited resources (e.g. cancellations and delays) on the patient, the family, wait lists, and human resource allocations
- To anticipate post-CVRI disposition of the patient and arranging for appropriate resources (step-down, telemetry, ICU)

HEALTH ADVOCATE

Health Advocacy requires clinical experience at an advanced level. Senior residents will learn from staff in action in this area. Resident will learn:

- To respond to the individual patient health needs and issues as part of patient care (e.g. the importance of blood conservation strategies, arrhythmia prevention, patient safety measures, and postoperative monitoring in improving patient outcomes)
- To identify the determinants of health in a cardiac surgery patient population
- To promote the health of individual patients coming for cardiac surgery

SCHOLAR

Residents will be encouraged to develop scholarship in several areas:

- Identify important determinants in the postoperative period that impact the health and success of the cardiac surgery patient
- Identify areas of controversy in the postoperative management of cardiac surgery patients using clinical observations
- Teaching sessions and literature reviews

- Seek to practice evidence based medicine
- Contribute to the medical education of other health professionals (medical clerks, nurses in training, respiratory therapists in training, etc.)
- Develop an educational pattern of self-study and critical appraisal of their own performance and knowledge

PROFESSIONAL

Residents must always:

- Demonstrate respectful, compassionate behavior toward patients, their families and other health care providers
- Demonstrate an appropriate sense of responsibility and commitment for their patients
- Strive to maintain insight and perspective regarding their own behaviour
- Remain calm and organized in stressful, emergency situations
- Utilize personal resources effectively in order to maintain personal health and sustainable practice

Evaluation:

The attending staff will complete a feedback form, detailing the performance of the resident in each sphere, every day. Attending staff are encouraged to discuss this feedback with the trainee each day. The Block Coordinator then collates these forms. A summary ITER will be completed and reviewed with the resident at an exit interview at the end of the rotation. The residents will complete daily evaluations of the attending staff and their learning experience. They will also have the opportunity to complete an end-of-rotation summary evaluation form, and to provide verbal feedback to the Block Coordinator at their exit interview. Resident feedback will be used to improve teaching techniques.

References:

This reference list is by no means intended to be definitive or exhaustive. However, it provides good starting points to the exploration of the knowledge content required for this rotation, as detailed in the above objectives.

Denault, AY et al. (2011). Transesophageal Echocardiography Multimedia Manual. New York: Informa Healthcare.

Gravlee, GP et al. (2007). Cardiopulmonary Bypass: Principles and Practice. Philadelphia: Lippincott Williams & Wilkins.

Hensley, FA et al. (2007). A Practical Approach to Cardiac Anesthesia. Philadelphia: Lippincott Williams & Wilkins.

Kaplan, J et al. (2011). Kaplan's Cardiac Anesthesia: The Echo Era. St. Louis: Elsevier Saunders.

Perrino, AC et al. (2008). A Practical Approach to Transesophageal Echocardiography. Philadelphia: Lippincott Williams & Wilkins.

Dr. Tarit Saha Block Coordinator Revised: February 2018

NEONATAL INTENSIVE CARE UNIT

Coordinator: Dr. Kirk Leifso

The resident will spend one month in the NICU, usually at the end of the PGY 2 year. This month of NICU training is considered to part of the six months of ICU training required by the RCPSC.

The neonatal intesive care unit rotation is intended to allow residents to function effectively as members of the neonatal team, to feel comfortable in the recognition and management of neonatal problems, to become competent in the performance of procedures and to become able to communicate fully with families. Responsibility is gradually increased as appropriate to the resident's capability and seniority.

Medical Expert

- 1. Be able to describe the normal physiologic changes which occur at birth
- 2. Recognize the limited thermoregulatory mechanisms in the neonate and list the adverse effects of hypothermia in this age group
- 3. Be able to elicit a concise and relevant history, appropriate to the infant's clinical condition/problem(s), and identfy the prenatal and intrauterine conditions which put the neonate at risk
- This should include areas unique to the neonate such as such as social, environmental and antenatal history.
- 4. Describe and provide the usual delivery room care of the healthy newborn as well as assign and indicate the importance of the APGAR score
- 5. Be aware of and practice the principles of resuscitation of the newborn
 - This should include being able to describe the equipment (sizes) and drugs (doses) necessary for resuscitation of the newborn as well as being able to perform technical skills of oro- and naso-tracheal intubation and venous cannulation
 - Outline the currently recommended management for meconium aspriation
 - Provide a differential diagnosis for neonatal distress
 - Discuss and list a differential diagnosis and management plan for neonatal cardiorespiratory depression
 - Be able to outline the ventilation techniques for the newborn
- 6. Perform a physical examination that is relevant, appropriate and sufficiently elaborate to the infant's condition.
 - Specific aspects include gestational age, assessment, measurements, blood pressure determination, fundoscopic examination and assessment of congenital anomalies.
- 7. Select relevant medical investigations that are relevant to the infant's condition, and understand the limited availability of certain investigations outside the tertiary care centre.
 - Specific investigations would include understanding the different normal values for neonates, and interpretation of the neonatal chest and abdominal x-ray.
- 8. While collecting data for history, examination and investigation, be able to formulate a problem list and management plan for the newborn infant. This includes the following neonatal conditions, as outlined below:
 - Airway obstruction in the newborn
 - Respriatory distress syndromes
 - Meconium aspiration
 - Persistent fetal circulation
 - Pneumothorax
 - Diaphragmatic hernia
 - Tracheo-esophageal fistula
 - Congenital heart disease
 - •

- Hypovolemia
- Hypothermia
- Hypoglycemia
- Periventricular hemmmorhage
- Bronchopulmonary dysplasia
- Retinopathy of prematurity
- Necrotizing enterocolitis
- 9. demonstrate the ability to evaluate treatment methods critically, and adopt new interventions in neonatology when appropriate.
- 10. demonstrate medical expertise in other areas other than direct patient care, including teaching, presentations, issues surrounding child apprehension
- 11. demonstrate insight into his/her limitations of expertise by self-assessment.

Communicator

- 1. establish a relationship with the infant's family, maintaining confidentiality
- 2. able to deliver information of the infant's condition, diagnosis and progress to the family in a sensitive way, that is appropriate to their level of understanding.

- 3. gather information regarding the parent's beliefs, concerns and expectations for their infant and his/her care
 - including appreciation for family beliefs/wishes for aggressiveness of resuscitation, objections to blood transfusion therapy, and feeding methods
- 4. demonstrate cooperation and communication of other members involved in the infant's care ensuring consistent information is subsequently delivered to the family.
 - including participation in social/discharge rounds with other consultants, nursing and social work
- 5. demonstrate the ability to give appropriate information to colleagues who are accepting care of the infant
 - including comprehensive on-call handover, off-service notes and transfer/discharge summaries

Collaborator

- 1. understand the role and limitations of other members of the health care team in the care of newborns and development of new therapies and research ideas
 - including an understanding of current research being conducted in neonatal medicine at this centre
- 2. develop an effective community plan for the infant prior to discharge, involving relevant community/allied health professionals.
 - involving ongoing Pediatric or subspecialty care, Special Infant follow-up, social work, Healthy Babies program, or Children's Aid Society as appropriate
- 3. participate in multidisciplinary team meetings
 - such as weekly social rounds and discharge planning meetings as required.

<u>Manager</u>

- 1. organize appropriate auxiliary investigations, and justify their use, while understanding the limitation of such tests.
- 2. formulate a treatment plan, justifiable on clinical evidence that considers the resources available.
- 3. organize his/her time to balance all the priorities involved: patient care, self-directed learning and administrative duties

Health Advocate

- 1. identify the factors that placed the infant at risk for subsequent medical issues
 - including risks for neurodevelopmental sequelae, recurrent infections and chronic lung disease
- 2. arrange follow-up surveillance for individual infants assessed to be at risk
- specifically including Special Infant follow-up, Child Developmental Centre or subspecialty referral as appropriate
 support families by advocating to government and/or community agencies to provide for infant's needs
 - including funnding applications for Assistive Devices Program, Community Care and Children with Special Disabilities programs

<u>Scholar</u>

- 1. critically appraise current treatment practices based on current literature
 - including involvement in Journal Club discussions, held regularly during Neonatal Conference
- 2. identify areas of weakness and develop a plan of ongoing education
 - including learning issues identified during work rounds, or patient problems.

Professional

- 1. demonstrate understanding of the ethical implications of newborn care
 - particularly in areas of resuscitation of the extremely premature infant, withdrawal of support and dealing with lethal conditions.
- 2. act in a manner that is sensitive to the needs of patient/family, maintaining confidentiality, and balancing personal and professional roles.
- 3. continuously self-evaluate knowledge and performance, and develop a self learning strategy to maintain and advance competence.

Dr. Kirk Leifso/Dr. Melinda Fleming Reviewed: February 2018

RESPIROLOGY

Coordinator: Dr. Paul Heffernan

To achieve the following goals and objectives, residents will complete a two-block rotation in Respiratory Medicine at Queen's University, or some equivalent program. In Kingston, anesthesia residents will function as senior medical residents during their 2-block rotation. They will be responsible for patients referred for consults, attend three respirology clinics per week, perform bronchoscopies, spend ½-day per week in the Pulmonary Function Lab, and attend 2 Neuromuscular clinics during the 2-block rotation.

Goal:

The resident will be able to assess patients with pulmonary disease preoperatively. Using clinical and laboratory techniques, the resident will be able to diagnose pulmonary disease, assess its severity, and also be able to outline a plan of management to optimize the patient's condition preoperatively. In achieving these objectives the resident will know the indications for, and methods of interpretation of: chest x-ray, chest CT, electrocardiogram, pulmonary function tests, and arterial blood gas analysis. It is also anticipated that the resident will demonstrate skill with the use of the fibreoptic bronchoscope.

Medical Expert

The resident will:

- 1. be familiar with the basic science objectives for the pulmonary system outlined elsewhere.
- 2. diagnose, treat and investigate a patient with obstruction to air flow at any point in the pulmonary tree.
- 3. diagnose, investigate and treat the patient with restrictive pulmonary disease.
- 4. investigate and treat the patient with pulmonary vascular disease.
- 5. differentiate the various causes of pulmonary hypertension.
- 6. discuss the common abnormalities of control of breathing and the current treatment.
- 7. be able to discuss, diagnose and treat diseases of the pleural space.
- 8. be familiar with the current theories of immunologic lung disease and asthma. The resident will outline a plan of management for patients with asthma and status asthmaticus.
- 9. discuss the pathogenesis, pathology, and pathophysiology of the patient with lung cancer. The resident will be able to recognize the frequent concurrence of other lung disease with lung cancer and will be able to evaluate the response of the patient with lung cancer to surgery. The resident will also be able to discuss the paraneoplastic syndromes.
- 10. diagnose and treat common respiratory infections. The resident will be able to recognize the different susceptibility of the immunocompromised host. The resident will be familiar with the pharmacology of the commonly used antibiotic drugs.
- 11. develop skill in handling the fibreoptic bronchoscope. The resident will be able to identify the first three divisions of the major bronchi.
- 12. assess and quantitate the risk associated with a variety of respiratory disorders in patients who are going to have a surgical procedure.

Communicator

- 1. The resident must be able to effectively communicate with the patient and their family regarding all aspects of their care. This includes being able to put the patient at ease as well as eliciting all necessary information from the patient.
- 2. The resident will be able to communicate effectively with other specialty services regarding respirology patients.
- 3. The resident will be able to perform complete consultations and communicate their concerns and issues in writing as well as verbally.
- 4. The resident will know when consultation with other services is required and in the best interest of the patient.
- 5. The resident will document clearly, concisely and legibly all aspects of their involvement with the patient.

Collaborator

- 1. The resident will strive to involve other medical subspecialties when necessary, as well as other allied health professionals in order to better care for their patients.
- 2. The resident will interact with other physicians and health professionals in a mature, respectful and professional manner.

<u>Manager</u>

- 1. The resident will manage their time appropriately in order that all patients requiring attention can be seen.
- 2. The resident will triage and prioritize those patients requiring the most urgent care.
- 3. The resident will supervise junior residents and medical students appropriately, as well as seek supervision from the attending staff when needed.

4. The resident will delegate certain responsibilities to other team members when necessary and appropriate.

Health Advocate

- 1. The resident must always be an advocate for the patient, especially when the patient is unable to do so for his/herself.
- 2. The resident must always ensure that the highest standards of care are practiced, and that all guidelines and policies are adhered to.

<u>Scholar</u>

- 1. The resident must demonstrate continued self-directed learning in order to improve their patient care.
- 2. The resident must be able to critically appraise the literature in order to determine the optimal management plans for their patients, while ensuring that their practice is evidence based.
- 3. The resident will appropriately teach more junior members of the team, while ensuring a high standard of patient care.

Health Professional

- 1. The resident will demonstrate a mature sense of responsibility for his/her patients and ensure proper hand over of patients to colleagues when he/she is not available.
- 2. The resident will foster the physician/patient relationship and keep all information in confidence.
- 3. The resident will demonstrate appropriate ethical insight.
- 4. The resident will remain calm, confident and efficient when performing under stress.

CARDIOLOGY

Coordinator: Dr. Peggy DeJong

Goal:

The resident will assess the patient and outline a course of therapy and investigation for a patient with a cardiac problem. The resident will understand the implications of the patient's disease in relation to any anaesthetic or surgical intervention.

Medical Expert

- 1. The resident should know the following about the normal heart and blood vessels as they start the cardiology rotation:
 - the embryology of the heart.
 - the anatomy of the heart.
 - the normal physiology of the cardiovascular system.
 - the generation and conduction of the electrical activity in the heart.
 - the mechanism of metabolic regulation within the heart.
- 2. In examining the heart and the blood vessels, the resident will be able to:
 - take a complete cardiovascular history and physical examination of the heart, peripheral vasculature, precordium, and lungs.
 - interpret the resting electrocardiogram and chest x-ray.
 - assess patients with abnormal myocardial contractility, electrical or conduction abnormalities in the heart, and myocardial ischemia and infarction.
- 3. Disorders of the cardiovascular system:
 - The resident will diagnose, investigate and manage patients with chest pain.
 - The resident will describe the pathophysiology of heart failure. The resident will diagnose, investigate and treat heart failure.
 - The resident will discuss the pathophysiology of hypotension and shock. The resident will describe the physical findings, investigation and management of shock and acute pump failure.
 - The resident will describe the pathophysiology and investigation of high output states.
 - The resident will describe the disturbances of cardiac rhythm and conduction. The resident will describe and investigate mechanisms of arrhythmias and conduction abnormalities. The resident will be expected to manage all common arrhythmias and rhythm abnormalities.
 - The resident will have a clear differential diagnosis and plan of management of the patient with syncope.
 - The resident will describe the mechanisms of sudden death. The resident will discuss the predictors and prevention of sudden cardiac death.
 - The resident will discuss the current standards of cardiopulmonary resuscitation.
- 3. Disease of the heart and blood vessels:
 - The resident will describe the common forms of congenital heart disease. The resident will describe the physical findings, electrocardiograph, and x-ray appearances of the common congenital heart lesions. The resident will understand the anaesthetic implications of these lesions whether the patient is for surgical cure or incidental surgery.
 - The resident will describe the history, physical findings, investigation and current management of patients with:
 - rheumatic fever
 - aortic valve disease
 - mitral valve disease
 - tricuspid and pulmonary valve disease

The resident will also understand the anaesthetic implications of these disorders.

4. Coronary Artery Disease:

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- The resident will understand the factors influencing atherogenic heart disease, cholesterol metabolism, and prevention of coronary atherosclerosis.
- The resident will understand the pathophysiology and investigation of angina pectoris, myocardial infarction and other manifestations of myocardial ischemia.
- The resident will discuss the diagnosis and treatment of nonatherosclerotic coronary artery disease including coronary artery spasm.

- *Systemic arterial hypertension.* The resident will understand the pathophysiology of hypertension. The resident will describe a plan of investigation and management to the hypertensive patient. The resident will outline the anaesthetic implications of hypertension.
- *Pulmonary Hypertension*. The resident will discuss the investigation, diagnosis and treatment of primary pulmonary hypertension, pulmonary embolism, pulmonary infarction, acute cor pulmonale and chronic cor pulmonale.
- The resident will discuss the pathophysiology, investigation, treatment and complications of bacterial endocarditis. The resident will also be familiar with commonly used protocols for prophylaxis of bacterial endocarditis.
- The resident will be familiar with myocardial disease. The resident will diagnose, treat and investigate cardiomyopathies.
- The resident will diagnose, manage and treat the patient with acute and chronic pericardial disease.
- The resident will describe the effects of trauma on the heart.
- The resident will describe the diagnosis, investigation and treatment of patients who have peripheral vascular disease.
- The resident will describe the current management of aneurysms of the aorta. The resident will describe the physical findings, investigation and treatment of patients who have peripheral venous disease.
- 5. The heart and other medical problems:
 - The resident will describe the changes found in the cardiac system with:
 - Pregnancy
 - aging
 - obesity
 - chronic renal failure
 - electrolyte disturbances
 - stress
- 6. The resident will be familiar with the following techniques and therapeutic procedures. The resident will describe the indications for each intervention and be able to interpret at a basic level the data generated from these techniques. The resident will discuss the complications of these techniques:
 - electrocardiography
 - exercise test
 - Holter monitoring
 - His bundle electrocardiography
 - cardioversion
 - techniques for insertion of perivenous and epicardial pacemakers
 - echocardiography and Transesophageal echocardiography (TEE)
 - cardiac catheterization
 - Swan-Ganz catheterization
 - intra-aortic balloon augmentation of cardiac output
 - cardiopulmonary bypass
 - percutaneous transluminal coronary angioplasty
- 7. The resident will describe the indications for cardiac pacing. The resident will discuss the various forms of cardiac pacemakers. The resident will discuss the anaesthetic complications of pacemakers during surgery.
- 8. The resident will be able to assess cardiac patients pre-operatively for non-cardiac surgery and be able to order appropriate investigations as well as optimize patients for surgery.

Communicator

- 1. The resident must be able to effectively communicate with the patient and their family regarding all aspects of their care. This includes being able to put the patient at ease as well as eliciting all necessary information from the patient.
- 2. The resident will be able to communicate effectively with other specialty services regarding cardiology patients.
- 3. The resident will be able to perform complete consultations and communicate their concerns and issues in writing as well as verbally.
- 4. The resident will know when consultation with other services is required and in the best interest of the patient.
- 5. The resident will document clearly, concisely and legibly all aspects of their involvement with the patient.

Collaborator

1. The resident will strive to involve other medical subspecialties when necessary, as well as other allied health professionals in order to better care for their patients.

2. The resident will interact with other physicians and health professionals in a mature, respectful and professional manner.

<u>Manager</u>

- 1. The resident will manage their time appropriately in order that all patients requiring attention can be seen.
- 2. The resident will triage and prioritize those patients requiring the most urgent care.
- 3. The resident will supervise junior residents and medical students appropriately, as well as seek supervision from the attending staff when needed.
- 4. The resident will delegate certain responsibilities to other team members when necessary and appropriate.

Health Advocate

- 1. The resident must always be an advocate for the patient, especially when the patient is unable to do so for his/herself.
- 2. The resident must always ensure that the highest standards of care are practiced, and that all guidelines and policies are adhered to.

Scholar

- 1. The resident must demonstrate continued self-directed learning in order to improve their patient care.
- 2. The resident must be able to critically appraise the literature in order to determine the optimal management plans for their patients, while ensuring that their practice is evidence based.
- 3. The resident will appropriately teach more junior members of the team, while ensuring a high standard of patient care.

Health Professional

- 1. The resident will demonstrate a mature sense of responsibility for his/her patients and ensure proper hand over of patients to colleagues when he/she is not available.
- 2. The resident will foster the physician/patient relationship and keep all information in confidence.
- 3. The resident will demonstrate appropriate ethical insight.
- 4. The resident will remain calm, confident and efficient when performing under stress.

TRANSFUSION MEDICINE

Coordinator: Dr. Lois Shephard

Goal:

The 4-week rotation will provide exposure to both the theoretical and practical aspects of Transfusion Medicine. Residents will develop an understanding of the daily work involved in transfusion medicine, resource issues with respect to supply and demand, and will develop an appreciation of the appropriate utilization of the resources.

Objectives

2.

3.

Medical Expert

- 1. To become familiar with blood products and their appropriate use.
 - Understand the basis of blood compatibility, and the principles and methods of typing and cross matching blood
 - Understand the principles of component preparation, storage and handling
 - Understand the clinical indications for specific component therapy, including red cell concentrates, frozen plasma, platelets, cryoprecipitate, and specific factor products
 - Indications for blood products such as IVIg, Octaplex, rVIIa and others
 - Be familiar with current guidelines for transfusion practice
 - Be aware and understand the issues and requirements for informed consent and appropriate documentation of the use of blood components/products
 - Understand the principles and practice of safe transfusion practices.
 - To be aware of the risks and benefits of the use of blood components/products.
 - Be familiar with both the immediate and late adverse events of transfusion
 - Be familiar with the appropriate investigations and reporting of adverse events.
 - To consolidate the understanding of specific transfusion needs in settings related to anesthesia.
 - Massive transfusion
 - Neonatal and pediatric requirements
 - Cardiac surgery
 - Blood conservation: cell salvage, acute normovolemic hemodilution.
- 4. To understand relevant coagulation tests and their application to transfusion medicine.
- 5. To be familiar with a blood management/conservation program including autologous pre-donation programs, directed donors, the use of erythropoietin, management of presurgical anemia.

Communicator

- 1. Be a resource for transfusion issues, with appropriate backup for surgical and medical transfusion issues.
- 2. Act as a facilitator between Anesthesiology, Surgery and the Blood Transfusion Service.

Collaborator

1. Act as a liaison between the blood transfusion service and anesthesiology/surgery to ensure a mutual understanding and respect of issues around transfusion practice and patient safety.

<u>Manager</u>

- 1. To understand the relationship of a blood transfusion service and the Canadian Blood Services who are the supplier for the Blood System.
- 2. To offer assistance to the BTS in resolving problems related to specific patient needs in an appropriate time frame.
- 3. To be familiar with BTS SOP's, OLA requirements, the Transfusion Committee (ACTM) and the evolving contingency planning for blood shortages.

Health Advocate

- 1. Become familiar with the Standards that govern transfusion medicine in Canada (Z902-04 and CSTM).
- 2. Become a credible transfusion medicine resource for others.
- 3. Become familiar with, and promote, alternatives to transfusion.

<u>Scholar</u>

- 1. Contribute to the education of other members of the transfusion medicine team by:
 - Reading and discussing issues around daily cases

- Presenting a literature review on a relevant topic to BTS staff
- Participation in a transfusion medicine clinical research or chart audit study.

Professional

- 1. Deliver the highest quality of care with integrity, honesty and compassion.
- 2. Demonstrate appropriate respect for the opinion of patients, attending teams and BTS team members in the provision of transfusion medicine and blood conservation assessments.

Resource Materials

Provided

- 1. Bloody Easy 3 Blood Transfusions, Blood Alternatives and Transfusion Reactions (Ontario, Health Canada, CBS)
- 2. Circular of Information (CBS)
- 3. Clinical Guide to Transfusion Canadian Blood Services
- 4. Blood Transfusion A Patient's Perspective ORBCoN
- 5. Important Articles in TM CD.
- 6. Pocket Card Consent for Transfusion ORBCoN

Websites

http://vhnet/programs_services/transfusion_medicine/page_29666.htm (VCH TM website) http://www.pbco.ca (PBCO website) **and** www.traqprogram.ca www.transfusionmedicine.ca (CBS website) http://sunnybrook.nextmovelearning.com/register.asp (Blood Easy Online Learning) www.transfusionontario.org www.blood.ca www.cstm.ca

Suggested/Valuable

AABB Technical Manual, 14th ed – see BTS Transfusion Therapy: Clinical Principles and Practice, 2nd ed. (AABB press) Mintz 2005 Practical Guide to Transfusion Medicine, 2nd ed. (AABB press 2007) Transfusion Medicine Self Assessment and Review (AABB press 2002) CSA Standards for Blood and Blood Components (March 2004) BTS Transfusion Medicine in Clinical Practice, Mollison, 11th ed – BTS

NEPHROLOGY

Coordinator: Dr Khaled Shamseddin

Goals:

2

Residents should be able to relate how their increased knowledge of renal pathology and pathophysiology impacts on anaesthetic management and patient care.

Objectives:

Medical Expert

- 1. Residents will be able to discuss the pathophysiology and diagnosis, and demonstrate skill in the management of the following disorders:
 - Acute and chronic renal failure
 - Proteinuria
 - Haematuria
 - Primary and secondary hypertension
 - Fluid, electrolyte and acid-base disturbances
 - Poisoning
 - Residents will be familiar with the indications for and the management of:
 - Haemodialysis
 - Peritoneal dialysis
 - Ultrafiltration
 - Haemoperfusion
 - Renal transplantation
- 3. Resident will be able to discuss:
 - The pharmacology of diuretics
 - The change in pharmacokinetics of anaesthetic, cardiac, respiratory medications with impaired renal function
 - Continuous renal replacement therapy
- 4. The resident should be able to evaluate renal patients pre-operatively and be able to optimize them for surgery as well as order appropriate investigations.
- 5. The Resident should be able to perform and interpret a urinalysis.
- 6. The Resident should exhibit expertise in placement of double lumen central dialysis lines.

Communicator

- 1. The resident must be able to effectively communicate with the patient and their family regarding all aspects of their care. This includes being able to put the patient at ease as well as eliciting all necessary information from the patient.
- 2. The resident will be able to communicate effectively with other specialty services regarding nephrology patients.
- 3. The resident will be able to perform complete consultations and communicate their concerns and issues in writing as well as verbally.
- 4. The resident will know when consultation with other services is required and in the best interest of the patient.
- 5. The resident will document clearly, concisely and legibly all aspects of their involvement with the patient.

Collaborator

- 1. The resident will strive to involve other medical subspecialties when necessary, as well as other allied health professionals in order to better care for their patients.
- 2. The resident will interact with other physicians and health professionals in a mature, respectful and professional manner.

<u>Manager</u>

- 1. The resident will manage their time appropriately in order that all patients requiring attention can be seen.
- 2. The resident will triage and prioritize those patients requiring the most urgent care.
- 3. The resident will supervise junior residents and medical students appropriately, as well as seek supervision from the attending staff when needed.
- 4. The resident will delegate certain responsibilities to other team members when necessary and appropriate.

Health Advocate

- 1. The resident must always be an advocate for the patient, especially when the patient is unable to do so for his/herself.
- 2. The resident must always ensure that the highest standards of care are practiced, and that all guidelines and policies are adhered to.

<u>Scholar</u>

- 1. The resident must demonstrate continued self-directed learning in order to improve their patient care.
- 2. The resident must be able to critically appraise the literature in order to determine the optimal management plans for their patients, while ensuring that their practice is evidence based.
- 3. The resident will appropriately teach more junior members of the team, while ensuring a high standard of patient care.

Professional

- 1. The resident will demonstrate a mature sense of responsibility for his/her patients and ensure proper hand over of patients to colleagues when he/she is not available.
- 2. The resident will foster the physician/patient relationship and keep all information in confidence.
- 3. The resident will demonstrate appropriate ethical insight.
- 4. The resident will remain calm, confident and efficient when performing under stress.

PALLIATIVE CARE

Coordinator: Dr. Ingrid Harle

Anesthesia residents may take the opportunity to perform a rotation(s) in palliative medicine during their residency which will allow for a broad exposure to the care of terminally ill patients along with their numerous and often times challenging problems. Due to the nature of the work in palliative care, the resident will find that many of the skills required to perform effectively during this rotation are very well representative of the goals and objectives associated with the Canmeds roles as established by the Royal College of Physicians and Surgeons of Canada.

Objectives

The specialist trainee must be able to ...

<u>Medical Expert</u>

- demonstrate diagnostic and therapeutic skills for ethical and effective patient care
- access and apply relevant information to clinical practice
- demonstrate effective consultation services with respect to patient care, education and legal opinions

Symptom management

Pain how to assess and treat different types of pain and pain syndromes associated with cancer.

the current theories on how cancerous growth excites a pain response.

the pharmacology of NSAIDs, opioids and adjuvant drugs used in the treatment of pain.

about tolerance, physical dependence, addiction and routes of administration of opioids, especially morphine, hydromorphone and methadone.

about non-pharmacologic approaches to pain management including anesthetic and surgical options.

demonstrate a clear understanding of the various interventional pain treatment options which includes indications, contraindications and complications.

Dyspnea, Delirium, Nausea and Vomiting, Constipation, Bowel Obstruction, Decubitus ulcers, Anxiety, Depression, etc.

what is currently known about the pathophysiology and treatment of these different symptoms.

the common syndromes associated with cancer.

Emergencies

the management of hypercalcemia, severe dyspnea, severe pain, spinal cord compression, SVC syndrome, pathologic fractures, seizures and hemorrhage in the palliative setting.

Communicator

- Establish therapeutic relationships with patients/families
- Obtain and synthesize relevant history from patients/families/ communities
- Listen effectively
- Discuss appropriate information with patients/families and the health care team

Psychosocial issues

Communication

different techniques and approaches for communicating distressing information to patients/families.

to work in an interdisciplinary team with participation in rounds, team and family conferences and death reviews.

to work with patients and families to determine appropriate goals of treatment for stage of disease.

Patient and Family Care

issues related to outpatient management and management of symptoms in a home setting.

cultural/spiritual issues and alternative/unorthodox therapies as they relate to the palliative care situation.

issues related to bereavement of families and caregivers, including management of grief.

Collaborator

- consult effectively with other physicians and health care professionals
- contribute effectively to other interdisciplinary team activities

Consultation

 demonstrate timely and appropriate consultation skills directed towards various medical specialties including oncology, interventional radiology, orthopedics as well as others.
 Multidisciplinary rounds

participate effectively in the numerous multidisciplinary rounds that are organized on a regular basis.
 recognize the importance of the contributions from various paramedical, psychosocial and spiritual experts.

Manager

- utilize resources effectively to balance patient care, learning needs, and outside activities
- allocate finite health care resources wisely
- work effectively in a health care organization
- utilize information technology to optimize patient care, life-long learning and other activities

Resource allocation

- demonstrate an understanding of the organization of a well established tertiary care palliative care service which includes home care, outpatient clinics and hospital in patient care.
- collaborate effectively with the various care coordinators in order to ensure that resources are used as efficiently as possible.

Health Advocate

- identify the important determinants of health affecting patients
- contribute effectively to improved health of patients and communities
- recognize and respond to those issues where advocacy is appropriate

Health advocacy

• understand through observation the important role the physician plays at various levels of hospital administration and governments in the role of health advocacy for patients.

<u>Scholar</u>

- develop, implement, and monitor a personal continuing education strategy
- critically appraise sources of medical information
- facilitate learning of patients, house staff/students and other health care professionals
- contribute to development of new knowledge

Medical information

- demonstrate effective skills and techniques necessary to acquire information related to patient care from various sources including the library and internet based searches.
- will have the opportunity to present in an informal setting a topic of interest that is relevent to the delivery of palliative care.

Professional

- deliver the highest quality of care with integrity, honesty, and compassion
- exhibit appropriate personal and interpersonal professional behaviours
- practise medicine ethically consistent with obligations of a physician

Ethics

• will be exposed to numerous ethical issues that will require careful attention and skill in order to manage these issues effectively.

Compassion

• recognize as with all areas of medicine the delivery of compassionate care is tantamount however during the terminal phase of illness, these skills are of particular importance.

The above list of goals and objectives is not meant to be exhaustive. The resident will truly find a rotation in palliative medicine

to be challenging and professionally stimulating. The professional attitudes skills and behaviours acquired and improved upon

will assist in developing a well rounded and appropriately trained anesthesiologist.

Expectations

Residents/Fellows will be evaluated on their assessment and care of the patients (both in- and outpatients), relationships with patients, families and interdisciplinary team members. Attendance at twice weekly Journal Club sessions and Pain and Symptom Clinics is compulsory. The trainee will be required to review at least one article for Journal Club. Attendance at weekly Palliative Care Rounds is encouraged.