Anesthesia Clerkship Objectives

Knowledge-based Competencies

Principles of Airway and Respiratory Management

- Describe airway anatomy relevant to bag-mask ventilation and endotracheal intubation.
- List indications for endotracheal intubation, use of LMA, and indications for mechanical ventilation.
- Describe criteria for extubation.
- Describe at least 3 systems (i.e., circuits) for delivering oxygen to patients.
- Explain common mechanical ventilation parameters (volume control and pressure control ventilation, respiratory rate, tidal volume, pressure and PEEP).
- Describe how we measure patient ventilation and oxygenation and how to determine if they are adequate.
- List the causes of hypoxemia. Describe appropriate treatment of hypoxemia in the perioperative setting.
- List the types of patients who are at highest risk of aspiration. Explain how we prevent aspiration and describe how aspiration is treated.

Principles of Circulatory Management

- Describe how you would assess a patient’s volume status.
- List potential sites for vascular access and describe complications associated with each site.
- Explain how euvolemia can be disturbed/altered in the perioperative period and how these alterations are managed.
- Describe appropriate uses for the following crystalloid solutions: normal saline, Ringer’s lactate, D5W, D5W/NS. Describe appropriate uses of the colloid solutions albumin and Voluven. Explain the complications of using these fluids.
- Describe the rational use of blood product therapy. Explain the complications of massive transfusions.
- Describe the determinants of cardiac output. Explain the relationship between myocardial oxygen supply and demand and how we can alter each aspect of the relationship perioperatively.
- Define shock and explain how shock can be classified (types and degree). Describe potential treatments for the patient in shock, including the rational use of vasoactive and inotropic medications.

Principles of Anesthetic Practice

- Describe the role of the preoperative anesthetic assessment with regards to optimizing patient risk.
- Explain the goals and phases of general anesthesia.
- Explain the following concepts as they relate to drugs administered via intravenous: half-life, therapeutic range, metabolism, redistribution, elimination and target organ.
- Identify intravenous drugs used in the induction, maintenance and emergence of general anesthesia, including indications for use, mechanism of action, and common side effects.
- Identify inhalational anesthetic agents used in the induction and maintenance of general anesthesia, including mode of delivery, indications of use, mechanism of action, concept of minimum alveolar concentration and common side effects.
- Explain the concept of balanced anesthesia and its role in modern general anesthetics.
- Describe systematic mechanisms of increasing safety in the delivery of inhalational and intravenous drugs including labeling of syringes, needle recapping, use of needleless systems, preventing hypoxic anesthetic mixtures, etc.
- Describe the anatomy relevant to epidural or spinal anesthetic techniques. Explain the role of regional anesthesia in modern anesthetic practice.
- Explain the presentation and management of malignant hyperthermia as an example of the hypermetabolic state.
- Explain the presentation and management of pseudocholinesterase (plasma cholinesterase) deficiency as an example of a pharmacogenetic disease.

Pain Control in Anesthetic Practice

- Describe modalities used to control pain in the perioperative period: opioids, NSAIDs (including Acetaminophen), steroids, regional techniques and local anesthesia. Explain how analgesics are used in a multimodal fashion.
- Describe common side effects of the commonly-used analgesic techniques.
- Explain how epidurals and patient controlled analgesia is used in perioperative analgesia.
Obstetrical Patient
- Describe the physiologic changes associated with pregnancy and explain their implication on anesthetic management.
- Describe modalities of analgesia used in labour and delivery.
- Describe the anesthetic management of the patient undergoing Caesarean section.

Pediatric Patient
- Describe the main physiologic differences between pediatric and adult patients and explain their implication on anesthetic management.
- Calculate appropriate endotracheal tube size for pediatric patients.
- Explain the fluid management issues of the pediatric patient.

Practical Competencies

Perianesthetic History and Physical Exam
- Assess a patient who has an ASA class 1 or 2 classification with regards to their readiness for anesthesia by taking an appropriate history and performing a relevant physical examination.
- Assess the patient’s airway for ease of mask ventilation, LMA insertion or endotracheal intubation.

Airway Management
- Provide a patent airway in an unconscious, adult patient, with or without the use of an airway device (oral or nasal airway), with minimal or no assistance.
- Demonstrate adequate ventilation using the bag-mask-valve technique with minimal assistance in the unconscious, adult patient.
- Prepare airway management equipment: laryngoscope, suction, styletted endotracheal tube, laryngeal mask airway.
- Position the unconscious, adult patient or appropriate simulation device for insertion of an LMA or for performance of laryngoscopy with minimal assistance.
- Insert an LMA with minimal assistance in an unconscious, adult patient or appropriate simulation device. Demonstrate attention to patient care and safety during insertion. Assess appropriate positioning of the device.
- Perform laryngoscopy and endotracheal intubation with minimal assistance in an unconscious, adult patient or appropriate simulation device. Demonstrate attention to patient care and safety. Assess appropriate positioning of endotracheal tube.
- Demonstrate appropriate use of the anesthetic circuit and ventilator with minimal assistance.

Vascular Access and Fluid Management
- Prepare the equipment and supplies needed to insert an intravenous in an adult patient.
- Insert an intravenous in a conscious or unconscious adult patient or appropriate simulation device with minimal assistance. Demonstrate ability to determine the proper function of the intravenous line.
- Replace crystalloid solutions demonstrating sterile techniques and ability to maintain line without air.
- Assess a patient’s fluid/volume status (using history, physical exam, available monitors and laboratory investigations).
- Place appropriate monitoring devices prior to induction of anesthesia (EKG, NIBP, SpO2).

Professional Competencies
- Provide compassionate and reassuring care to patients in the perioperative setting.
- Demonstrate appropriate care of unconscious patients (i.e. protecting patient limbs).
- Demonstrate ability to work in the perioperative environment including appropriate communication and teamwork.