GOALS AND OBJECTIVES OF MEDICAL STUDENT ROTATION
RUHS - DEPARTMENT OF ANESTHESIOLOGY

Having a fundamental knowledge of anesthesia prior to your rotation will greatly facilitate your experience here. Review the rotation curriculum to help guide your preparation.

OVERALL GOALS AND OBJECTIVES OF THE ANESTHESIOLOGY ROTATION

1. To develop an awareness of the breadth and depth of the practice of anesthesiology
2. To participate in all aspects of anesthesiology including preoperative assessment, intraoperative care and PACU management
3. To understand the basic principles of airway management, management of surgical patients with coexisting diseases, contraindications for anesthetic techniques and common complications of anesthesia and management
4. As skills advance and time allows; observe and participate in regional and neuraxial anesthesia and other procedural aspects of anesthesia

Pre-Op

1. Conduct the basic pre-anesthetic patient evaluation:
    a. Patient co-morbidities which can affect the anesthetic plan
    b. Medications
    c. Social History
    d. Integrate pre-op H&Ps, labs, imaging, additional studies, etc.
    e. NPO status
    f. Airway exam
    g. Physical Exam
    h. Risk stratification
2. Understanding of potential anesthetic options for a given surgical procedure
3. Formulate an anesthetic plan for a basic surgical procedures
4. Demonstrate knowledge of the objectives for effective preoperative medication administration including:
    a. Relief of anxiety/sedation/amnesia
    b. Analgesia
    c. Drying secretions
    d. Reducing gastric acidity and volume
5. Demonstrate knowledge of the basic pharmacology, pharmacokinetics and contraindications of the following premedication agents:
    a. Opioids/narcotics
    b. Sedatives

   c. Anticholinergics
   d. Drugs used to reduce the incidence or consequences of pulmonary aspiration
6. Present the patient to the designated anesthesia provider (resident/sRNA/dental anesthesia/OMFS resident/etc.) assigned to that case
7. Eventually be able to present patient and cases to anesthesia attendings

Main Operating Room

1. Students will most commonly be assigned to an anesthesia provider in one of the 10 main operating rooms
2. Most anesthesia providers arrive between 6:00 and 6:15 to setup the room. Room setup is a key part to success in patient care and where you can help your resident prepare for the day. In addition, you will be able to show knowledge about the day's cases and how you have prepared for the upcoming day
3. Students should arrive in pre-op holding following morning lecture to pre-op their scheduled patient. At that point, the student can discuss the patient with his or her anesthesia provider and formulate an anesthetic plan. The student/anesthesia provider team can present to the attending physician for final approval. Generally, patients should be in the OR by 7:30am (8:30 on Wednesdays)
4. When in the OR, the student can assist the anesthesia provider in hooking up the patient to the pulse ox probe, BP cuff and ECG leads (in that order) and then placing on oxygen, as wells as helping remove the stretcher from the OR room
5. Students should be able to demonstrate understanding of basic patient monitoring techniques
   a. Basics of pulse oximetry
      1. Which finger does it go on and why?
   b. Basics of non-invasive and invasive blood pressure monitoring
      1. NIBP vs. arterial BP; indications for both
      2. Utility of ABGs obtained from an arterial line – be able to interpret an ABG and evaluate acid/base status
   c. ECG placement
      1. Ischemia detected by Leads I, II, III
      2. definition and purpose of modified V5 lead
   d. What order are these monitors placed onto the patient in? why?
6. Masking, laryngoscopy and intubation will be at the discretion of the attending and anesthesia provider, but students should be able to explain how to perform steps pertaining to each skill.
   a. Student should be able to master appropriate masking technique, jaw thrust, etc.
   b. Student should be knowledgeable of proper tube sizes (7.0-8.0), laryngoscopy blades (Mac vs. Miller, etc.), proper masking technique, etc.
7. Students should be able to demonstrate knowledge of basic airway management
   a. Discuss differences between different airway management techniques
   b. Discuss basic oropharyngeal and laryngeal anatomy

c. Laryngeal Mask Airway (LMA) vs. Endotracheal tube (ETT)
    1. Risks and benefits of each, contraindications, etc.
d. Indication for Rapid sequence induction (RSI)
    1. Why do we perform this and what medications do we use?

8. Students should be able to identify several agents used at induction of general anesthesia (advantages/disadvantages)
    a. IV agents
    b. Inhalational agents
        a. What is MAC? You MUST know this definition and the individual MACs of each inhalational agent
    c. Neuromuscular blocking agents
        a. What is the difference between a depolarizing neuromuscular blocking agent and a nondepolarizing neuromuscular blocking agent?
    d. Vasoactive medications
9. Students may have the opportunity to place IV catheters, gastric tubes, esophageal probes and other monitor on a case by case basis
10. Students should understand perioperative fluid and electrolyte therapy: what each solution contains and indications for administration
    a. Demonstrate knowledgeable about how is volume status evaluated using the patients and monitors?
    b. Discuss indications, risks and benefits of each type of fluid replacement therapies (including relation to blood volume/volume losses, oxygen carrying capacity, trauma, coronary artery disease, etc.)
        1. Crystalloids: Normal saline vs. lactated ringers
            a. Which electrolytes do each contain?
            b. Are they isotonic/hypotonic/hypertonic solutions?
            c. Be able to formulate a chart for fluid replacement strategies (Deficit, maintenance, intraop/EBL losses, insensible losses)
            d. How long do these solutions stay intravascularly? Describe the concept of “third spacing”.
        2. Colloids: Albumin vs. starches
            a. Advantages and disadvantages of both
        3. Blood products: pBRCs, FFP, platelets, etc.
            a. How are these products administered? What solutions are they administered with? Are they warm? Cold?
11. Students should be able to identify several position-related injuries that patients may sustain during general anesthesia
12. Students should be able to discuss methods of recognizing and treating various preoperative problems
    a. HTN, hypotension, Low O2sat, hyper/hypocarbia, endobronchial intubation, esophageal intubation, dysrrhythmias, pulmonary embolism, etc.

   b. Student should be able to understand basic ventilator settings and how they affect the patient
      i. Volume control, pressure control, SIMV (synchronized intermittent mandatory ventilation), PSVPro (pressure support mode)
13. Students may assist in documentation as delegated by the anesthesia provider in the room
14. Remember that during the case there is valuable time to learn from the anesthesia providers, but try to time your questions and discussion appropriately, as patient care always comes first. The residents will do their absolute best to teach and assist you in developing your fund of knowledge and skill base as the case allows.
15. If there is a case pending, the anesthesia provider will likely dismiss you from the OR to go pre-op the next patient. Remember to be thorough, but efficient with your time. When you are done, report back to your anesthesia provider with your findings and discuss the plan for the next case
16. Upon emergence and extubation of the patient, the anesthesia provider will be in charge of the airway and you can help assist by gathering paperwork, bringing the bed into the OR at the end of the case, as disconnecting the monitors when the resident deems appropriate

Obstetrics

1. Develop a basic knowledge in regional and general anesthesia as it relates to the pregnant patient and better understand the pharmacology and physiology involved.
2. Collaborate with their assigned anesthesia provider to complete preoperative H&Ps and to assist in formulating an anesthetic plan
3. Obstetric anesthesia is markedly different than anesthesia provided in the main operating room and students should have read and demonstrate an understanding of maternal/fetal physiology and anesthesia for obstetrics before their obstetric day.

PACU/Regional

1. Students may have an opportunity to follow the senior resident assigned to PACU/Regional (PR) and become familiarity with PACU care of post-op patients and regional anesthesia. On these days students may also assist with resident-performed blocks.
2. Students should be able to demonstrate knowledge of local anesthetic pharmacology appropriate to the practice of anesthesia
   a. Classifying commonly used agents according to amide or ester linkage
   b. Listing commonly used local anesthetics for: topical use, local infiltration, peripheral nerve blocks, spinal and epidural use
      i. Including pharmacodynamics of each agent
   c. Describing and identifying signs of impending local anesthetic toxicity (particularly the difference between bupivacaine and other local anesthetics)
   d. Discussing the specifics of allergic reactions to local anesthetics
3. Students should be able to demonstrate knowledge of spinal and epidural regional anesthesia

   a. Describe the indications for spinal and epidural anesthesia
      i. What can we use for c-sections? For pain control for laboring patients?
   b. Describe the motor/sensory/autonomic effects of spinal and epidural anesthesia
   c. Describe the hemodynamic effects of spinal and epidural anesthesia
4. Students should be able to demonstrate knowledge of the different types of pain management, including:
   a. Peripheral nerve blocks
      i. Ultrasound vs. peripheral nerve stimulation identification of structures
   b. Pain management medications
      i. Toradol, acetaminophen, caldolor, narcotics and timing of dosage of these medications
   c. Identification of post-op complications and treatment
      i. Airway obstruction, respiratory depression, hypoxia, pulmonary edema, inadequate reversal from neuromuscular blocking agents, nausea/vomiting, shivering, malignant hyperthermia, etc

WEEKENDS/HOLIDAYS

1. Students should utilize weekends for down time and studying anesthesia related material. Please don't feel obligated to come in on a weekend or night shift. We would much rather you come to main OR time knowledgeable, refreshed, confident, and ready to learn.

MORNING LECTURES

1. The lecture schedule is posted on the resident schedule board outside the Medical Student Rotation Coordinator office. It behooves you to read in advance about the lecture topic, as it helps you follow along in lecture.

IMPORTANT DON'TS

1. Students are NEVER to prepare or administer medications, including volatile gases.
2. It is unacceptable to be late for morning lecture.
3. Do NOT sign any forms that are to be placed in the patient's chart.

GOOD LUCK AND ENJOY YOUR ROTATION!!