

## **THIRD YEAR ROTATION**

### **Introduction**

The third year medical student rotation is designed as an introduction to anesthesia. It is a two week rotation, and occurs in November at the time of the scheduled elective for the MS3 class. No fourth year students will rotate in the department at the same time to allow for focused, level-specific teaching.

During this rotation, the medical student will learn the role and function of the consultant anesthesiologist as well as experience and learn from the clinical environment. The student will have the opportunity to acquire an introductory appreciation of the anesthesiologist's considerations in pre-anesthetic evaluation and medication, general and regional anesthesia, knowledge of local anesthetics pharmacology appropriate to the practice of general medicine, different types of pain management, and clinical communication and professionalism.

### **Medical Knowledge**

1. Understand how common medical problems may affect a patient's passage through the perioperative period.
2. Recognize common preoperative medications and their side effects.
3. Understand basic anatomy of the airway.
4. Recognize medications commonly used in anesthesia and understand their mechanism of action.
5. Understand the ASA standard for intraoperative monitoring, and be able to interpret the meaning.
6. Understand the composition of various intravenous fluids and the advantages and disadvantages to each.
7. Become familiar with local anesthetic dosage and toxicity.
8. Recognize common intraoperative complications.
9. Understand what the options for postoperative pain control are and describe the benefits and drawbacks to each.

### **Patient Care**

1. Understand what is required for a targeted preanesthetic history and physical
2. Obtain the psychomotor skills necessary for basic airway management, including mask-ventilation, oral airway placement and intubation
3. Obtain the psychomotor skills necessary for intravenous cannulation.
4. Understand the requirements for volume maintenance and resuscitation during a procedure.

### **Interpersonal Skills and Communication and Professionalism**

1. Understand the importance of communication between anesthesia, surgical and nursing teams
2. Communicate effectively with the other anesthesia team members (faculty, residents, techs)
3. Demonstrate care in developing an appropriate patient-physician relationship, and good bedside manner

## **THIRD YEAR ROTATION OBJECTIVES**

### **I. Preanesthetic Evaluation**

- PCI* A. Conduction of several preanesthetic assessments, including
1. Taking and recording a pertinent history
  2. Performing an appropriate physical examination, including assessment of:
    - i. Airway
    - ii. cardiovascular system
    - iii. respiratory system
    - iv. other systems as indicated
  3. Reviewing pertinent laboratory data
  4. Assigning appropriate ASA physical status
- MKI* B. Discussing how the following factors may influence the patient's course during the perioperative period:
1. Age

2. Nature of surgery, including minor versus major, peripheral versus central, and elective versus emergent, outpatient versus inpatient
3. Cardiovascular disorders, including but not limited to:
  - coronary insufficiency
  - hypertension
  - myocardial failure
  - dysrhythmias
4. Respiratory disorders
  - known or suspected difficult intubation
  - upper and/or lower respiratory infection
  - asthma
  - chronic obstructive pulmonary disease
  - lab work-up
5. Central nervous system disorders
  - increased intracranial pressure
6. Gastrointestinal disorders
  - full stomach, including ASA guidelines on NPO status
  - GERD, and bowel obstruction
7. Hematologic disorders
  - anemias
8. Personal or family history of unusual response to anesthesia
  - malignant hyperthermia susceptibility
  - abnormal succinylcholine metabolism
9. Lifestyle factors
  - obesity
  - substance abuse - tobacco, alcohol, chemicals

C. Discussing medication histories and the influence of chronic and current medications on the perioperative period, including:

- MK1*
1. Which drugs should be discontinued and why
  2. The rebound phenomena resulting from abrupt discontinuation of some classes of drugs, notably beta blockers and clonidine

## II. Preoperative Medication

- MK2* Name and discuss drugs used for:
- A. Relief of anxiety
  - B. Sedation
  - C. Reducing gastric acidity and volume

## III. The Operating Room

- MK4* A. Identify several agents used on induction of general anesthesia and give their advantages and disadvantages:
1. Intravenous agents
  2. Inhalation agents
  3. Neuromuscular blocking agents
  4. Vasopressors and Antihypertensives
  5. Observe and practice airway management during several uncomplicated intravenous inductions
- PC2*
- MK3* B. Describe the indications, risks and benefits of airway management by mask, laryngeal mask airway (LMA), or intubation
- C. Describe and identify basic oropharyngeal and laryngotracheal anatomy
- D. Identify and overcome upper airway obstruction with mask ventilation, using
- PC2*
1. Appropriate mask holding technique
  2. Jaw thrust
  3. Nasopharyngeal airway
  4. Oropharyngeal airway
- E. Explain and demonstrate ECG lead placement and selection to optimize detection of dysrhythmias and ischemia

*MK5*

- F. Identify ASA standard monitors for anesthesia
- G. Identify the common sites for venous access and the contraindications and indications for each
- PC3 H. Demonstrate skill at establishing venous access by:
  1. Using sterile technique and universal precautions
  2. Successfully inserting several peripheral catheters of various calibers
  3. Protecting the venipuncture site and immobilizing the catheter
- I. Prescribing maintenance fluid and electrolytes
  1. Predicting how the following preoperative conditions will alter requirements for perioperative maintenance therapy:
    - MK6 a. NPO
    - b. Bowel prep
    - c. NG suction
    - d. Fever
  2. Discussing intraoperative considerations which alter maintenance fluid and electrolyte therapy including:
    - MK5 a. Blood loss
    - b. "Third space" loss
  3. Correctly interpreting data from the following monitors of volume status:
    - MK5 a. Examination of the patient
    - b. Pulse and blood pressure
    - c. Urine output
    - d. CVP
  4. Discussing indications, risks and benefits of crystalloid, colloid and blood product replacement therapies:
    - PC4 a. Regarding the functions of blood volume, oxygen carrying capacity, coagulation
    - b. Regarding complications of each type of therapy
- J. Identify several position-related injuries that patients may sustain while unconscious
- MK8 K. Identify which patients are at increased risk for post-operative nausea and vomiting and several prophylactic interventions for PONV

#### IV. Regional Anesthesia

- MK7 A. Classify commonly used agents according to amide or ester linkage
- B. List commonly used local anesthetics for:
  - a. Topical use
  - b. Local infiltration
  - c. Peripheral nerve blocks
- C. List acceptable doses of at least two agents used for topical and local infiltration anesthesia
- D. Describe and identify signs of impending local anesthetic and/or vasopressor toxicity vs. "allergic reaction"
- E. Describe therapeutic steps necessary to prevent or treat local anesthetic toxicity in the event of an accidental intravascular injection

#### V. Post operative pain management

- MK9 A. Identify the advantages and disadvantages of the following methods of postop pain management:
  1. PCA
  2. Epidural catheters
  3. Prn vs round-the clock dosing
  4. PO medications
    - a. Narcotics
    - b. Acetaminophen with and without codeine
    - c. Ketorolac and other NSAIDs
    - d. COX-2 inhibitors
- B. Assess post-op pain by using
  1. Pain scales

2. Visual analog scales

**VI. Communication and Professionalism**

- ISC3*
- a. Introduce self to patient and as appropriate, patient family.
  - b. Attend to patient concerns and questions
  - c. Listen attentively
  - d. Elicit basic patient information
  - e. Establish rapport with patient
  - f. Check for patient understanding
  - g. Maintain patient confidentiality in verbal and written communications
  - h. Attend to team activities, concerns, and issues respectfully
- ISC1 & 2*
- i. Exhibit polite inclusive language and behaviors.
  - j. Direct questions and concerns to appropriate team members and/or education faculty
  - k. Clarify questions and responsibilities in a timely manner
  - l. Know professional limitation and acting accordingly
  - m. Maintain ethical and professional boundaries with patients and team members
- ISC 3*
- n. The student will be prompt and dressed appropriately as becoming of a medical professional—as per OHSU clinical staff policy, available in the education office

**INSTRUCTIONAL METHODS & RESOURCES**

The third year rotation is designed as an introduction to anesthesia. It is a two week rotation, and will occur in November and June at the time of the scheduled elective for the MS3 class. No fourth year students will be rotating in the department at the same time to allow for focused, level-specific teaching.

The students will also have a two-week lecture series covering basic concepts of anesthesia. They will also be expected to attend departmental grand rounds. The textbook Basics of Anesthesia, by Stoelting and Miller, will be checked out to them as a reference.

The students will participate daily as assigned members of an anesthesia team. They will be expected to actively participate in the anesthetic, including preoperative evaluation, induction and maintenance of anesthesia, and emergence. They will be evaluated on a daily basis by the faculty they work with. The compilation of the evaluations will determine 75% of the grade, with the remaining 25% based on a written examination based on the objectives described above.