SEA

Society for Education in Anesthesia

Anesthesia Curriculum

For Medical Student

Learning and Evaluation
I. Preanesthetic Evaluation

A. The student shall acquire an appreciation of the Anesthesiologist's considerations in preoperative evaluation of the patient. This is demonstrated by:

1. Conducting several preanesthetic assessments, including,
   a. Taking and recording a pertinent history
   b. Performing an appropriate physical examination, including assessment of:
      1. Airway
      2. Cardiovascular system
      3. Respiratory system
      4. Other systems as indicated
   c. Reviewing pertinent laboratory data
   d. Assigning appropriate ASA physical status

2. Discussing how the following factors may influence the patient's course during the preoperative period:
   a. Age
   b. Nature of surgery, including minor versus major, peripheral versus central, and elective versus emergent
   c. Cardiovascular disorders, including but not limited to:
      1. Coronary insufficiency
      2. Hypertension
      3. Myocardial failure
      4. Dysrhythmias
   d. Respiratory disorders
      1. Known or suspected difficult intubation
      2. Upper and/or lower respiratory infection
      3. Asthma
      4. Chronic obstructive pulmonary disease
      5. Lab work-up
e. Central nervous system disorders
   1. Increased intracranial pressure
   2. Convulsive disorders
   3. Cerebrovascular insufficiency
   4. Quadriplegia or paraplegia

f. Gastrointestinal disorders
   1. Pulmonary aspiration risk:
      - hiatal hernia/gastro-esophageal reflux/full stomach
      - functional or mechanical bowel obstruction
   2. Hepatitis, hepatic insufficiency, portal hypertension

g. Renal insufficiency

h. Hematologic disorders
   1. Anemias
   2. Coagulopathies
   3. Hemoglobinopathies

i. Personal or family history of unusual response anesthesia
   1. Malignant hyperthermia susceptibility
   2. Abnormal succinylcholine metabolism

j. Lifestyle factors
   1. Obesity
   2. Substance abuse – tobacco, alcohol, chemicals

k. Pregnancy
   1. Concomitant surgery
   2. Pre-eclampsia and eclampsia

3. Discussing medication histories and the influence of chronic and current medications on the perianesthetics period, including:
   a. Which drugs should be discontinued and why
      1. Do monoamine oxidase inhibitors pose a potential danger?
2. The rebound phenomena resulting from abrupt discontinuation of some classes of drugs, notably beta blockers and clonidine

4. Approaches to perioperative management of patients taking insulin or anticoagulants

II. Preoperative Medication

A. The student shall demonstrate knowledge of the objectives of effective preanesthesia medication by naming and discussing drugs used for:
   1. Relief of anxiety
   2. Sedation
   3. Amnesia
   4. Analgesia
   5. Drying secretions
   6. Reducing gastric acidity and volume

B. The student shall demonstrate knowledge of the basic pharmacology and pharmacokinetics of the following premedication agents, including dosage schedules and relative and absolute contraindications:
   1. Narcotics
      a. Morphine
      b. Meperidine
      c. Others
   2. Sedatives
      a. Benzodiazepines
         1. Diazepam
         2. Midazolam
         3. Lorazepam
      b. Antihistamines
         1. Benadryl
      c. Barbiturates
         1. Secobarbital

3. Anticholinergics
   a. Atropine

4. Drug used to reduce the incidence or consequences of pulmonary aspiration:
   a. H2 antagonists
   b. Antacids

C. NPO guidelines
   1. Fasting periods (assuming no risk for increased gastric emptying
time)

a. Adults
   1. 2-4 hours clear liquids
   2. 6-8 hour for solids
b. Pediatrics
   1. 2 hours clear liquids
   2. 4 hours breast milk
   3. 6 hours formula, non human milk, solids

2. Definition of clear liquids

   Water, fruit juices without pulp, carbonated beverages,
   clear tea and black coffee

III. The Operating Room

A. The student will demonstrate knowledge of procedures and observe

   induction of anesthesia:

   1. Identify several agents used on induction of general anesthesia and give their
      advantages and disadvantages,
      a. Intravenous agents
      b. Inhalation agents
      c. Neuromuscular blocking agents
   2. Discuss emergency intubations, indications, techniques, and complications;
      concentrate on aspiration prophylaxis
   3. Observe and practice airway management during several uncomplicated intravenous
      inductions

B. The student will demonstrate proper airway and ventilatory management by:

   1. Describing the indications risks and benefits of airway management by mask
      versus intubation versus laryngeal mask airway (LMA)
   2. Describing and identifying basic or opharyngeal and laryngotracheal anatomy
   3. Identifying and overcoming upper airway obstruction with mask ventilation ,
      using
      a. Various masks
      b. Jaw thrust
      c. Nasopharyngeal airway
      d. Oropharyngeal airway
   4. Naming several techniques of intubation and practicing direct laryngoscopy

C. In order to demonstrate understanding of the principles and practice of routine
   intraoperative monitoring, the student will:
1. Explain and demonstrate ECG lead placement and selection to optimize detection of dysrhythmias and ischemia
2. Indications and risks for invasive methods for monitoring blood pressure
3. Demonstrate results of arterial blood gas analysis in terms of
   a. Oxyhemoglobin dissociation curve
   b. Acid-base status
D. Student will prescribe and conduct appropriate intraoperative fluid and electrolyte therapy with the guidance of his instructor by:
   1. Explaining the rationale for establishing both central and peripheral access
   2. Identifying the common sites for venous access and the contraindications and indications for each
   3. Demonstrating skill at establishing venous access by:
      a. Using sterile technique and universal precautions
      b. Successfully inserting several peripheral catheters of various calibers
      c. Protecting the venipuncture site and immobilizing the catheter
   4. Prescribing maintenance fluid and electrolytes
      a. Predicting how the following preoperative conditions will alter requirements for perioperative maintenance therapy:
         1. NPO
         2. Bowel prep
         3. NG suction
         4. Fever
      b. Discussing intraoperative considerations which after maintenance fluid and electrolyte therapy including:
         1. Blood loss
         2. “Third space” loss
         3. Temperature
      c. Correctly interpreting data from the following monitors of volume status:
         1. Examination of the patient
         2. Pulse and blood pressure
         3. Urine output
         4. CVP
         5. PCWP
      d. Discussing indications, risks and benefits of crystalloid, colloid and blood product replacement therapies
         1. Regarding the functions of
            a. Blood volume
            b. Oxygen carrying capacity
            c. Coagulation
         2. Regarding complications of each type of therapy
E. The student shall identify several position-related injuries that patients may sustain while unconscious.
F. The student will discuss methods of recognizing and treating various preoperative problems, including:
   1. Dysrhythmias
   2. Ventricular dysfunction
   3. Hypertension
   4. Myocardial ischemia
   5. Low oxygen saturation
   6. Hypercarbia
   7. Endobronchial intubation
   8. Esophageal intubation

IV. Regional Anesthesia
   A. The student will demonstrate knowledge of local anesthetic pharmacology appropriate to the practice of general medicine by:
      1. Classifying commonly used agents according to amide or ester linkage
      2. Listing commonly used local anesthetics for:
         a. Topical use
         b. Local infiltration
         c. Peripheral nerve blocks
      3. Listing acceptable doses of at least two agents used for topical and local infiltration anesthesia
      4. Describing identifying signs of impending local anesthetic and/or vasopressor toxicity vs. “allergic reaction.”
      5. Describing therapeutic steps necessary to prevent or treat local anesthetic toxicity in the event of an accidental intravascular injection.
      6. Discussing allergic reactions to local anesthetics.
      7. Contrasting allergic reactions to local anesthetics.

V. Ambulatory Anesthesia
   A. The student will demonstrate knowledge of the types of procedures and patient appropriate for ambulatory surgery.

   B. The student will demonstrate knowledge of assessment of the ambulatory patient with respect to:
      1. ASA classification
      2. NPO status
      3. Appropriate lab work
      4. Nausea/vomiting prophylaxis
         a. Droperidol
         b. 5HT3 receptor antagonists
      5. Discharge criteria
      6. Pain management

VI. Post-Operative Pain Management
   A. The student will demonstrate knowledge of the different types of pain management, including:
1. PCA
2. Epidural catheters
3. Prn vs. round-the-clock dosing
4. PO medications
   a. Narcotics
   b. Acetaminophen w/without codeine
   c. Ketorolac
   d. N-SAIDS
B. The student will demonstrate knowledge of assessing post-op pain:
   1. Pain scales
   2. Visual analog scales
C. The student will demonstrate knowledge of how to convert patient from parenteral drugs to p.o. drugs.

VII. The Student Should Successfully Complete Basic CPR and ACLS training during Medical School