Rotation Title: Perioperative Medicine (Preoperative Evaluation and PACU)

I. Definition: The PACU rotation is a 2-week rotation in the CA-1 year that will teach the elements of anesthesiology that occur outside the operating room, in particular, in the recovery room. The learning objectives include those of preoperative evaluation although the skills related to preoperative evaluation will be emphasized at Wednesday morning preoperative rounds, while those related to the patient recovering from anesthesia will be emphasized on the PACU rotation.

II. Curriculum: The service combines the clinical care and academic skills of patient care for preanesthesia testing, postanesthesia care unit (P ACU) and the anesthesia consultation service. All patient care is supervised by faculty with combined education and clinical supervision.

III. Performance Assessments:

A. Self Assessment
You (the resident) are to check off each criterion as the material is mastered. Self reflection on your own competencies is critical.

B. Faculty Assessment
Faculty will periodically review your self assessment and discuss their assessments of your competencies. The overall scores on the six competencies will be reported to you at least weekly.

C. Mentor Assessment
Your mentor should meet with you quarterly and review your entire portfolio. The mentor should report areas in which you have deficiencies (for your level of training). This report may be to you and/or to the program director as determined by your mentor.

IV. Competencies Assessed (Performance Criteria):

A. Patient Care: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. The correct identification of a patient
2. Extraction of all relevant information from the electronic and paper records for preoperative testing
3. Presention of an anesthetic plan with informal consent
4. The anesthesiology consult
5. Admission of a patient to PACU
6. Recognition and treatment of common PACU events
7. Management of the hemodynamically unstable PACU patient
8. Recognition and initiation of treatment of myocardial ischemia in PACU
9. Recognition and initiation of treatment of surgical hemorrhage in PACU
10. Respiratory care of the PACU patient including:
    a. Use of ventilators:
        i. Classifications
        ii. Principles of actions: Assistors, controllers, pressure limited, volume present, F_IO_2 control, periodic sigh, monitors, pressure, oxygen, apnea, insp/exp ratio, bacterial filters, IMV, CPAP, PEEP, pressure support, high-frequency ventilation, maintenance, microbiology, complications, pediatric adaptation
        iii. Ventilatory Management
            aa. Identification and and management of the PACU patient at-risk for reintubation

bb. Criteria for ventilator commitment, weaning and extubation
cc.. Planning and execution of extubation of the intubated P ACU patient with known difficult airway
dd. Choice of ventilator
ee. Mode of ventilation
ff. Complications of mechanical ventilation

b. Respiratory therapy and types
c. Management of respiratory failure
i. Supportive medical therapy
ii. Monitoring
iii. Nonventilatory respiratory management
aa. Oxygen therapy and toxicity
bb. Tracheobronchial toilet (chest PT, postural drainage, aerosol therapy, humidification)
cc. Positive airway pressure
dd. Respiratory drugs

11. Neurologic care of the PACU patient including
a. Anesthetic and ventilatory effects of CBF and metabolism
b. Fluid management
c. Recognition and initiation of treatment of acute neurological events in PACU

12. Pain management in PACU
a. Pharmacology: opioids, opioid agonist-antagonists, local anesthetics, α_2-agonists, NSAIDs
b. Risks and benefits; routes of adminstration (oral, SC, IM, IV[PCA], epidural, spinal, intrapleural)
c. Nontraditional modalities: TENS, cryotherapy

13. Management of the pediatric patient

14. Complications in the PACU including:
a. Pulmonary
i. Upper airway obstruction
ii. Hypoxemia
iii. Hypoventilation
iv. Postoperative apnea
v. Aspiration
b. Circulatory
i. Hypertension
aa. Etiology, pathophysiology, course of disease
bb. Drug treatment, interactions with anesthetics, risks of anesthesia
ii. Hypotension
iii. Dysrthythmias
iv. Excessive bleeding
c. Neurologic
i. Failure to awaken
ii. Emergence delirium
iii. Perioperative seizures
iv. Increased incracranial pressure
v. Air embolism
vi. Cerebral vasospasm
d. Renal
i. Abnormal urine output
ii. TURP syndrome
iii. Urinary retention
e. Hepatic
i. Postoperative jaundice
f. Other
i. Abnormal temperature
ii. Dental injuries
iii. Postanesthetic tremor
iv. Postoperative nausea and vomiting

B. Medical Knowledge: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Correct assignment of ASA physical status (PS) classification
2. The gathering of information to assess the appropriateness of a healthy (ASA-II) patient for elective anesthesia
3. Developing a reasonable anesthetic plan for most surgical procedures
4. Preanesthesia testing
5. Correct assessment and optimization of major patient co-morbidities
6. Risk/benefit analysis that must be presented to the patient
7. Informed consent
8. The concept of anesthesia consultation
9. The issues with refusal of life-saving treatment
10. Correct criteria for admission to the PACU
11. The most common complications in the PACU
12. PACU care of the intubated patient
13. Extubation of the difficult airway
14. Correct criteria for dischage from the PACU
15. Perioperative medicine
16. Ethics in anesthesiology
17. Medico-legal aspects of anesthesiology
18. Pharmacoeconomics

The CA-1 resident on their anesthesia for ambulatory surgery rotation shall be responsible for mastering all material listed in Appendix A. These will be assessed by written and oral examinations.

C. Practice Based Learning and Improvement: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Assessing PACU patients
2. Acquire the information needed from the OR anesthesiology and surgical teams to care for the complex PACU patient
3. Accessing current literature to delineate specific PACU advances, including monitoring techniques

D. Interpersonal and Communication Skills: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Learn the administrative procedures for preoperative testing
2. Demonstrate skill in dealing with patient issues prior to surgery
3. Be able to solve scheduling problems
4. Demonstrate skill in communicating patient issues with the surgical team
5. Demonstrate skill in anesthesiology consultation by communication with appropriate services and anesthesiology staff
6. Communicate acute events and complications to the appropriate staff anesthesiology and surgical service
7. Identify all relevant information about PACU patients to the on-call team
8. Consult PM staff about all required cases
9. Appropriately consult physicians in other health care systems
10. Understand the management of external medical records
11. Understand all elements of electronic medical records

E. Professionalism: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Conform to work rules in assigned units
2. Interface with nursing staff in an appropriate manner
3. Deal with conflict in a manner that reflects well on the perioperative medicine service
4. Obtain appropriate staff consultation
5. Demonstrate skill in dealing with the “angry surgeon”
6. Demonstrate teamwork in sharing clinical work with other residents
7. Appropriately handle confidential patient information
8. Demonstrate ethical skills in handling serious illness
9. Understand the economics of preoperative testing

F. Systems-Based Practice: During the course of this rotation, the resident is expected to show increasing competency in each of the following …

1. Understanding triage of arriving and departing PACU patients

IV. Resident Responsibilities on PACU Rotation: The resident will:

1. Arrive at the PACU by 7:30 daily Monday-Friday
2. Share on-call duties with fellow residents as defined by department policies including next day off.
3. Receive a report on each patient arriving in the PACU from the anesthesiologist, resident or CRNA
4. Provide care for each patient in the PACU. When the PACU is very busy, the resident will provide care for the more critically ill.
5. Be available to answer PACU nurse question, and to diagnose and treat problems
6. Perform necessary invasive anesthetic procedures
7. Be relieved of duters daily at 1545 to attend resident conference. The resident will give report to the assigned attending anesthesiologist before leaving the PACU.
8. Assist fellow residents in the preoperative assessment of "to follow" cases so that the OR may function efficiently
9. Write a post operative note on each recovery room patient
10. Not be allowed vacation during the PACU rotation due to ACGME requirements

The resident may arrive early (e.g., by 0630) to have the opportunity to do elective fiberoptic intubations, arterial lines, central venous access and catheter placements.

Revised: **June 4, 2007**

Appendix A: Medical Knowledge expected to be mastered during CA-1 Anesthesia for PACU and Perioperative Medicine Rotation

Lecture 8

Cardiovascular Monitoring Methods

1) Vascular Pressures: Arterial (Invasive/Noninvasive Differences), Central Venous (CVP), Pulmonary Arterial (PAP), Pulmonary Arterial Occlusion (PAOP), Left Atrial (LAP), Left-Ventricular End-Diastolic (LVEDP)
2) Heart Function: Heart Tones, Electrocardiogram (ECG), Echocardiography, Cardiac output, Doppler
3) Cardiac Output: Fick, Dye Dilution, Thermodilution, Doppler, Impedance
4) Pressure Transducers: Resonance, Damping
5) Non-Invasive Blood Pressure (BP) Measurement: Doppler, Oscillometry, Korotkoff Sounds, Palpation
6) Ultrasound-Guided Placement of Invasive Catheters (Arterial, Central Venous)

Lecture 9

CNS Monitoring Methods

1) Brain and Spinal Cord Function: Electroencephalogram (EEG) (Raw and Processed), Depth of Anesthesia Monitors (Bispectral, other), Evoked Potentials, Wake-up Test, Intracranial Pressure (ICP), Jugular Venous Oxygen Saturation, Near Infrared Spectroscopy (Cerebral Oximetry), Transcranial Doppler

Lecture 11

Respiratory Monitoring Methods

1) Ventilation: Respirometers, Inspiratory Force, Spirometry, Flow-Volume Loops
2) Gas Concentrations: O_2 CO_2, Nitrogen, Anesthetic Gases and Vapors

Lecture 13

ABGs and Gas Concentrations

1) Blood Gases: Electrodes for pH, PO_2, PCO_2, Calibration, Temperature Corrections, Errors
2) Gas Concentrations: Infrared Absorption, Mass Spectrometry, Raman Scatter Analysis

Lecture 22

Termination of Drug Action

1) elimination, biotransformation; Context-sensitive half-time
2) impact of renal disease
3) impact of hepatic disease

Lecture 164

Ethics and Advanced Directives

1) Ethics
2) Advanced Directives/Do Not Resuscitate (DNR) Orders
3) Patient Privacy Issues, e.g., Health Insurance Portability and Accountability Act (HIPAA)

Lecture 167

Costs of Medical/Anesthesia Care

1) Anesthesia coding
2) Payors
3) Reimbursement

Lecture 168

Operating Room Management