Rotation Title: : CA-2 Intensive Care Unit Rotation

I. Definition: The CA-2 ICU rotation is a one-month rotation for CA-2 or senior CA-1 anesthesiology residents.

II. Curriculum: This rotation provides anesthesiology residents with the basic hands-on skills and intellectual background in the care of critically ill patients. The educational program broadly covers the clinical and cognitive components essential to the multidisciplinary practice of Critical Care Medicine. The anesthesiology residents provide primary care for assigned ICU patients, attend didactic conferences, and participate in case-discussions and journal clubs.

A broad perspective of Critical Care Medicine will be provided so that an anesthesiology resident may achieve a basic understanding of:

A. The assessment and management of critically ill patients, including postoperative and severely injured patients.

B. The use of life support equipment.

C. The use of vasoactive drugs.

D. The role of teamwork in the critical care setting.

E. The socioeconomic, ethical, and legal issues related to critical care.

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: The resident should be able to:

1. Complete histories and physicals on critically ill patients
2. Describe the basic indications, contraindications, and/or interpretation of the following:

   a. Tracheal intubation
   b. Mechanical ventilation, including basic ventilator modes and weaning techniques.
   c. Pulmonary artery catheter placement
   d. Radiographic tests
   e. Renal replacement therapy, including techniques for dialysis
   f. Blood gases, electrolytes

g. Hemodynamic profiles
h. Bedside central pressure monitoring
i. Noninvasive techniques for assessing oxygenation and gas exchange
j. Enteral and parenteral nutrition
k. Techniques for pain management and sedation

B. Medical Knowledge. The resident should be able to:

1. Describe basic differential diagnoses, physiology, and management for common problems of the following organ systems or disease states.

   a. Respiratory
   b. Cardiac
   c. Renal
   d. Gastrointestinal and hepatic
   e. Neurological
   f. Metabolic
   g. Shock

2. Describe the basic pharmacology and use of the following classes of drugs:

   a. Antiarrhythmics
   b. Antihypertensives
   c. Inotropes
   d. Vasoactive pressors
   e. Antimicrobials
   f. Antithrobotics/anticoagulants
   g. Sedatives, anesthetics, and neuromuscular blocking drugs

The resident on their SICU rotations 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. Performance of the following procedures:

   a. Arterial line placement (radial, brachial, femoral)
   b. Insertion of a pulmonary artery catheter
   c. Endotracheal intubation
   d. Insertion of subclavian or jugular venous catheters

2. The evaluation and management of complications from.

   a. Arterial line placement (radial, brachial, femoral)
   b. Insertion of a pulmonary artery catheter
   c. Endotracheal intubation
   d. Insertion of subclavian or jugular venous catheters

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. Develop basic communication skills with patients and family members, colleagues, nursing staff, respiratory therapists, administrative staff, and other support personnel.

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

1. Adherence to procedures designed to maintain patient privacy and security
2. Demonstrate the ability to achieve adequate pain control without excess sedation
3. Work with all levels of professionals working to provide patient care.
4. Provide consultation services for complicated patients.

F. Systems-Based Practice: The resident will demonstrate competency in …

1. Coordination of the care of patients including admission, evaluation, and management of all patients for whom he is responsible.
2. Working with an interdisciplinary team

V. Conference and Literature Assignments

A. The Intensive Care Unit Manual (Lanken) 2001.

B. Journal club articles, conferences, and assignments

Revised: June 7, 2007

Appendix A: Medical Knowledge expected to be mastered during the SICU Rotations

Lecture 46

Anesthetic Complications: Chronic Exposure and Temperature Considerations

1) Effects on Fertility
2) Teratogenicity
3) Carcinogenicity
4) Scavenging systems and requirements
5) Temperature Changes during Anesthesia
   a) hypothermia: etiology, prevention, treatment, complications (shivering, O_2 consumption), prognosis
   b) nonmalignant hyperthermia; complications, treatment

Lecture 85

Peripheral Circulatory Failure

1) etiology, classification, pathophysiology
2) anesthetic management of patient in shock
3) sepsis, Systemic Inflammatory Response Syndrome (SIRS), multiple organ failure (MOF)

Lecture 101

Coma States

1) traumatic, infectious, toxic-metabolic, cerebrovascular accident (CVA), cerebral hypoxia
   a) Glasgow Coma Scale, management of traumatic brain injury
   b) therapeutic barbiturate coma
2) drug intoxication (CNS drugs, carbon monoxide, insecticides, nerve gases)

Lecture 107

Hepatic Physiology

1) dual blood supply and its regulation
2) metabolic and synthetic functions
3) excretory functions
4) mechanisms of drug metabolism and excretion; cytochrome P450

Lecture 108

Nutrition

1) parenteral: peripheral or central vein, hyperalimentation, solutions used and complications, anesthetic implications
2) enteral: GI elemental diets, routes of delivery, complications, anesthetic implications

Lecture 111

Intestinal Obstruction

1) causes: paralytic ileus; mechanical, vascular
2) physiological changes: fluid and electrolyte; respiratory
3) anesthetic management: full stomach; fluid therapy; nitrous oxide

Lecture 112

Renal Physiology

1) Blood Flow, Glomerular Filtration, Tubular Reabsorption and Secretion
2) Renal Function Tests
3) Hormonal Regulation of Extracellular Fluid
4) Hormonal Regulation of Osmolality
5) Regulation of Acid-Base Balance
6) Drug Excretion
7) Water and Electrolytes: Distribution and Balance; Compartments

Lecture 113

Diuretics

1) mechanism of action
2) comparison of drugs
3) effect on electrolyte and acid-base balance
4) adverse effects

Lecture 114

Renal Disease

1) pathophysiology of renal disease; risk factors for acute renal failure
2) anesthetic choice in reduced renal function
3) anesthetic management in renal failure, arteriovenous (A-V) shunts
4) anesthetic management in renal transplantation
5) perioperative oliguria and anuria
6) pharmacologic prevention and treatment of renal failure; osmotic and loop-acting diuretics, low-dose dopamine, fenoldopam

Lecture 115

Dialysis and Hemofiltration

1) hemodialysis
2) peritoneal dialysis
3) continuous hemofiltration (arteriovenous, venovenous)

Lecture 123

Diabetes Mellitus

1) pathophysiology
2) control of blood glucose
3) elective anesthesia - perioperative management
4) emergency anesthesia - hypoglycernia; hyperglycernia and ketoacidosis
5) hyperosmolar coma
6) pancreas transplantation

Lecture 125

Immunosuppressive and Anti-Rejection Drugs

1) Immunosuppressants
2) immunosuppression related to blood transfusion

Lecture 163

Professionalism and Credentialing, Licensure

Lecture 165

Malpractice

1) Definition
2) Legal Actions and Consequences
3) National Practitioner Database
4) Closed Claims Findings
5) Anesthetic Accidents
6) Professional Liability Insurance