

Surgery ICU

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This is a 4-week introductory course in clinical critical care medicine. Up to four senior students at one time may be accommodated in the course (LLUMC only).

Students will have primary responsibility for the care of at least two critically ill patients throughout the rotation. The student will present their own patients on rounds each morning. This includes pertinent history, physical examination, diagnoses and management plan.

Overnight call will be assigned by the Surgery Education office prior to the first day of the rotation. Call responsibility is a *minimum* of four (4) nights per student per rotation. Any time off (personal or interview) must be requested in advance so that the call schedule is not affected.

The required textbook is The Washington Manual of Critical Care, edited by Marin H Kollef, Timothy J. Bedient, Warren Isakow and Chad A. Witt. Lippincott Williams & Wilkins, 2nd edition, 2011, which will be available for check-out at the beginning of the rotation.

A list of specific learning objectives for the course is provided to each student with a correlated reading resource list.

Requirements:

Students will be evaluated on clinical performance using a pass/fail grading system

1. A completed Patient Log (6 entries *minimum*)
2. A Surgery ICU Clinical Performance Evaluation of Student (in One45)
3. A complete required skills checklist with each item signed off by a licensed physician
4. Completion of the "Critical Care Simulation" at the SIM Center
5. Completion of the ACLS/BLS Training Course at the SIM Center
6. A final written examination consisting of questions pertinent to critical care provided by the Dean's Office (pass/fail per the Dean's Office).

Rotation information is available on Canvas at <http://llu.instructure.com> – contact Kristian Braun for access.

SICU Rotation Director – Ihab Dorotta, MD
Chairman, Department of Anesthesiology – Robert Martin, MD

EDUCATIONAL OBJECTIVES IN SURGICAL INTENSIVE CARE UNIT

I List criteria for admission or transfer of patients to the Intensive Care Unit.

* Obtain relevant history in a setting where patients are poorly communicative or unable to communicate; perform focused physical examination directed to the day-to-day progress of multi-system problems in the critically ill, and concurrently record adequate progress notes in the patients' medical record.

* Write comprehensive admission notes for patients entering the ICU, delineating a basic problem list and initial therapeutic plan for each.

* Give adequate, well-prioritized summative oral presentation regarding patients with multi-system illness.

Describe basic procedures to initiate transplant organ procurement; identify prospective donors and describe applicable 'brain-death' criteria.

II Using data from the history and physical examination and a treatment algorithm; evaluate factors precipitating cardiac and/or pulmonary failure in SICU patients.

Describe normal adult values for hemodynamic measurements including: CVP, PWP, CO/CI, and SVR; suggest appropriate therapeutic intervention for combinations of abnormal values.

Describe basic indications for invasive hemodynamic monitoring.

Describe a 'differential diagnosis' for shock and how different types of shock states vary; activate management for shock based on a treatment algorithm.

Recognize respiratory failure values for indices such as tidal volume, forced vital capacity, peak negative pressure; write appropriate ventilator set-up orders for an adult and make appropriate changes in ventilator orders in response to ABG data.

Interpret ABG data and derive indications for support of ventilation /oxygenation; recognize and categorize acid base disturbance.

* Interpret EKG and evaluate rhythm strips; demonstrate recognition of common cardiac arrhythmias including: atrial fibrillation / flutter, junctional tachycardia, second and third degree heart block, ventricular ectopy, ventricular tachycardia and ventricular fibrillation.

Describe potential complications of intubation, positive pressure ventilation; and barotrauma.

* Interpret plain chest x-rays; especially for recognition of: ET tube or tracheostomy placement, line placement, pulmonary edema, pneumothorax, hydrothorax, hemothorax, widened mediastinum, pneumomediastinum, atelectasis (diffuse and lobar), ARDS, and pulmonary consolidation.

III Given the patient's body weight and habitus, estimate fluid and electrolyte requirements in otherwise healthy adult individuals.

Given data from a history and physical examination and serum electrolyte values, write IV fluid orders for patients with complex requirements or electrolyte disturbances requiring repair. Establish peripheral or central venous access in SICU patients.

- IV** Given laboratory values for hematocrit, red cell indices, platelet count, and tests of coagulation; select and write orders for appropriate transfusion therapy to increase red cell mass; select and write orders for appropriate component therapy for coagulopathy.

Recognize and initiate therapy for transfusion reactions; recognize signs and symptoms of severe (e.g. hemolytic) transfusion reaction in unresponsive or anesthetized patients.

- V** Describe basic indications and timing for nutritional support in postoperative patients; select route and access for nutritional support.

Given information from the history and physical examination, basic laboratory values and patient body weight, estimate daily energy requirements for nutritionally depleted or stressed patients; estimate requirements for carbohydrates, proteins and lipids.

- VI** Describe (and recognize) early signs of sepsis in critically ill patients; write orders to initiate a septic workup.

Classify surgical wounds per the American College of Surgeons criteria; write orders for appropriate prophylactic or empiric antibiotic therapy in selected cases.

- VII** *Perform adequate bedside neurological assessment; apply the Glasgow Coma Scale to clinical patients.

Describe signs and symptoms of increased intracranial pressure in the critically ill.

- VIII** List common etiologies of acute renal failure occurring in the SICU patients.

Describe commonly required adjustments in fluid/electrolyte management and medication dosage required in acute oliguric renal failure.

List indications and options for dialysis in oliguric acute renal failure.

- IV** Participate in patient assessment for psychosocial, ethical and spiritual considerations and in decision-making regarding limitation or withdrawal of therapeutic interventions in critically ill patients.

Develop/display empathy with critically ill patients and their immediate families; treat all patients with unconditional positive regard.

Participate daily in a responsible manner and consistently demonstrate satisfactory professional behavior.

* Note: Also see required Skills List. Licensed M.D. signature sign-off is required.

Assessment of Learning Objectives:

At the completion of the rotation, students will be evaluated with a multiple-choice written examination covering the stated knowledge objectives. To pass the rotation, students must pass the written examination with a total score of 65.6% or higher (passing score range is from 200 – 305pts).

Skills will be evaluated by licensed physicians who supervise the students, and by satisfactory participation in a three hour simulation exercise during the final week of the rotation. To pass the rotation, students must be judged satisfactory in their duties and responsibilities, and must have demonstrated competency in the stated objectives for skills and values. The student's medical school log book may also be reviewed to document satisfactory completion of the skills listed above.

SUPPLEMENTAL READING LIST FOR SICU

Updated February 2013

I. General / Orientation

LLUMC Guidelines for Reporting Potential Organ/Tissue Donors (2pgs)
Catastrophic Brain Injury Guidelines (2pgs)

II. Shock / Hemodynamic Monitoring & Respiratory Care

SICU Infusion Concentrations (2pgs)
ARDS Clinical Network Mechanical Ventilation Protocol (2pgs)
Samples: Complete Respiratory Care Medication Orders (2pgs)
SICU Respiratory Care Flow Sheet & Guidelines for Weaning of Mechanical Ventilation (4pgs)

III. Fluid and Electrolyte Management

"A Practical Approach to Acid-Base Disorders" in "Conferences & Reviews," Haber, Boushey, et. al.,
Western Journal of Medicine, August 1991; volume 155: pps 146-151

V. GI; Endocrine; Hepatic Failure & Nutrition in the ICU

POST-Liver Resection Guidelines

VI. Infectious Disease in the ICU

Antibiotics: Mechanism of Action (2pgs)
LLUMC Antibigram 2011

"Clinical Pulmonary Infection Score" (CPIS)

"Surviving Sepsis Campaign: Interventional Guidelines for Management of Severe Sepsis and Septic Shock: 2012," Dellinger, et. al., *Critical Care Medicine Journal*, February 2013, Vol 41, No 2: pps 580-637

VII. Neuro

Traumatic Brain Injury – Clinical Pathway
Richmond Agitation / Sedation Scale and Delirium Assessment (2pgs)
"Stroke Team" – Core Measures (2pgs)
Empiric Guidelines for Tracheostomy in Spinal Cord Injury
Braden Risk Assessment Scale

IX. Ethics & "End of Life Management" in SICU

Exam Criteria for Brain Death Determination in Adults (2pgs)
SICU Family Contact / Conference Note Template (2pgs)

"Practical Guidance for Evidence-Based ICU Family Conferences,"
Curtis & White, *Chest* 2008, Vol 134, pps 835-843

ICU Evaluation of Clinical Performance

Student Name: _____

Dates of Rotation: _____

	<i>Proficient</i>	<i>Area of concern</i>	<i>Unable to evaluate</i>
History taking/physical examination process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fund of knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Application of knowledge / clinical problem solving ability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professionalism / responsibility:			
Appropriate appearance & demeanor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knows assigned patients in detail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respects each/every patient as unique individual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effective communication with patient / family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effective communication with other physicians / staff in coordination of patient care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time efficient / equitably shares workload	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technical / procedural skills appropriate for level of training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment on an area of strength - Specifically explain any area of concern:

See required skills checklist on reverse.

Required Patient Encounters

Intake/Admission Evaluation (Focused H&P and review of medical records on 2 patients with critical illness including comprehensive chart notes (which incorporate: indications for SICU transfer or admission, a problem list of diagnoses or manifestations of multi-system failure / illness and treatment / management plan for each)

Patient 1	
Patient 2	

Student participated in management of:

A patient with respiratory failure

☐

A patient with hemodynamic instability or hypotension

☐

A patient with significant neurologic injury or impairment

☐

A patient requiring sedation or pain management

☐

Student participated in any conference/or decision making process regarding ethical issues concerning their assigned SICU patient(s)

☐

To be completed by the student

Please offer any suggestions you have to improve the SICU course experience:

Did you feel that a 2 week experience in ICU, was adequate to meet your goals and expectations for learning?

Yes ☐ No ☐

How long should a senior course in Critical Care be? _____

Required Skills Checklist

ABG Interpretation/write ventilator orders

Establish venous access (peripheral or central)

EKG/Rhythm Strip Interpretation

CXR Interpretation

SICU/Bedside neurologic assessment application GCS

Adequate summative oral presentation of assigned patients

Adequate daily participation/attendance on rotation

3 overnight in-house call opportunities met

Licensed Physician Signature	Date

Patient Log submitted? ☐ (minimum 5 patient encounters)

PASS ☐

Faculty Signature: _____

Date: _____

Student Signature: _____

Date: _____

SICU PATIENT CARE LOG

NAME: _____

ROTATION DATES: _____

PATIENT AGE RANGE: ☐ 0-18mos. ☐ 18mos - 18yrs ☐ 18 - 64yrs ☐ 64 + yrs.

Reason for SICU Admit: _____

All Patient Diagnoses: _____

Surgical Procedure/Management: _____

Student role/Responsibility: (Please check all that apply)

☐ SICU Intake Eval/Note ☐ Daily inpatient follow-up/Care ☐ Full H & P ☐ Procedure Performed
(Must check at least one box)

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SICU PATIENT CARE LOG

Page 2

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