

Critical Care Medicine Curriculum

Educational Purpose

Critical care medicine encompasses the diagnosis and treatment of a wide range of clinical problems requiring intensive care by a coordinated team, including a general internist, subspecialists, and other health professional staff. Most often, the general internist provides care in coordination with other physicians, especially those trained in critical care. However, in some settings, the general internist may be the primary provider of care and may also serve as a consultant for critically ill patients. Therefore, the general internist must have command of a broad range of conditions common among critically ill patients and must be familiar with the technologic procedures and devices used in the intensive care setting. The care of critically ill patients raises many complicated ethical and social issues, and the general internist must be competent in such areas as end-of-life decisions, advance directives, estimating prognosis, and counseling of patients and their families.

Learning Venue

- A. Rotation Description: The critical care rotation at Upstate is one of the busiest and educationally rewarding services. It is a senior resident (R2/R3) dominated rotation. The team structure usually consists of 3 senior residents (R2/R3, one of which may be an Anesthesia resident), an R1 on elective, a Pulm/CC fellow, and attending. Occasionally a 4th year medical student may be on the team as part of an elective.

The day usually starts around 7am with the resident/intern pre-rounding on the sickest patients. Call is 24 hours and is every 3rd day. An electronic signout is maintained by the ICU residents and is usually updated by the on call resident. The resident who is post call will sign-out to the oncoming team. The fellow will usually arrive between 7:30am-8:00am and will begin rounds until the attending arrives and formal walk rounds start. The post call resident will leave after rounds and sign-out. The rest of the day involves attending the noon conference lecture and completing patient care issues. Admissions and transfers in the unit will continue throughout the day. Around 3-4pm, the team will round in the afternoon to re-check on the patients after which the non-call resident will leave. Interns do not take overnight call and generally work from 7am-7pm 5 days a week.

- I. **PGY-1**: Evaluates new ICU consults and transfers and presents to the fellow or attending. The intern is responsible to know the details about all the patients in the unit. The intern must actively read about common ICU issues.
 - II. **PGY2/3**: The resident is the focal point of the ICU team. He/she will do admissions and consults in the ICU and is expected to take an active role in the treatment and management of patients. Active reading around current ICU topics is required. The resident is expected to teach and supervise junior residents and students. The senior resident should actively seek out and supervise procedures.
- B. Teaching Methods:
- I. The primary method of learning during this rotation is being actively involved during bedside rounds with the attending and fellow and direct patient care. There are also conferences twice a week (Tues and Friday, 7am)

II. *Unique learning opportunities:*

- Biweekly pulmonary conferences (See above)
- Basic Ventilator Management
- Primary Interpretation of Tests
 - 1) Hemodynamic monitoring
 - 2) Pulse oximetry
 - 3) Telemetry monitoring
- Ordering and Understanding Tests
 - 1) Bronchoscopy
 - 2) Computed tomography, magnetic resonance imaging of chest, abdomen, brain
 - 3) Echocardiography
 - 4) Electroencephalography
- End of life issues

III. *Patient characteristics:* Expect to see patients of any Age 18 years and up usually with medical related issues and occasionally post surgical patients.

IV. *Mix of disease/Core topics*

- Acute abdominal pain
- Acute chest pain
- Acute intoxication
- Acute liver failure
- Acute renal failure
- Altered mental status, coma
- Antibiotic management
- Delerium Tremens
- Hypotension, shock
- Life-threatening arrhythmia
- Massive gastrointestinal bleeding
- Massive hemoptysis
- Pulmonary Hypertension
- Respiratory distress or failure – mechanical ventilation/non-invasive positive pressure ventilation
- Severe hypertension
- Status epilepticus
- DKA
- Overdoses
- Rational use of fluids and vasopressors

VI. *Procedure Skills*

- Advanced cardiac life support
- Arterial puncture for arterial blood gas
- Mechanical ventilation (basic)
- Placement of arterial and central venous lines
- Placement of nasogastric tube
- Lumbar puncture
- External cardiac pacing
- Thoracentesis
- Paracentesis
- Insertion of temporary pacemaker (optional)
- Placement of endotracheal tube (optional)
- Placement of pulmonary artery catheter and its utility(optional)

Recommended Reading

- Marino, P. L. (1998) *The ICU Book, 2nd edition*. This book is dated but contains useful principles and physiology about ICU related issues.
- Medical progress: Pathophysiology and treatment of Sepsis Hotchkiss R.S., Karl I.E. NEJM 2003; 348:138-150, Jan 9, 2003
- Online at www.upstate.edu log into online book STAT!Ref and use the following two online resources
 - o Current Critical Care Diagnosis and Treatment – 2nd Edition
 - o Griffiths 5 minute clinical consult
- www.thoracic.org/criticalcare/ is an excellent online resource for practice guidelines, treatment algorithms, hemodynamic monitoring and the unique ethics of the ICU.

Evaluations

Evaluations are based on the six core competencies. The intern/resident is evaluated by the Attending based on these attributes using an online evaluation system, *E-Value*. All residents should seek clear guidelines and expectations for reporting and learning at the beginning of their rotation. Residents should also seek verbal feedback after their first week.

Rotation-Specific Competencies

- 1) Patient care: At the end of the rotation the resident should be able to appropriately manage and triage sick patients. They should be able to distinguish patients that require an intensive setting vs. one that can be managed on a floor.
- 2) Medical Knowledge: Be familiar with and able to interpret hemodynamic monitoring devices and the initial workup and management of the core topics listed above.
- 3) Professionalism - link
- 4) Interpersonal and communication skills: Be able to communicate and interact with other health care personnel. Fundamental in the ICU is an understanding of end of life care and the legal/ethical implications of care or withdrawal of care. Residents need to be effective and empathetic communicators with patients and their families.
- 5) Practice-based learning: Be able to use the necessary tools to find the most effective and proven management plans for their patients.
- 6) Systems based practice: Be able to utilize high tech services in a cost effective manner. Additionally residents will need to work closely with extended care providers, knowledgeable nursing staff, respiratory therapy and hospital administration.

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