Critical Care Medicine
Medical Intensive Care Unit
Howard University Hospital

Overview and Rationale

Critical care medicine encompasses the diagnosis and treatment of a wide range of clinical problems representing the extreme of human disease. Critically ill patients require intensive care by a coordinated team, including a general internist, sub specialists, and allied 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 on surgical services. Therefore, the general internist must have command of a broad range o 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.

Goals:

1. Acquire the knowledge, skills and attitude to assess and mange the critically ill patient

Objectives:

At the end of the rotation the should be able to;

1 detect and interpret abnormal clinical, laboratory and radiological data in the critically ill patient
2 demonstrate competence in the performance of common procedures done in the critical care area
3 demonstrate knowledge of the indications, complications and limitations of oxygen replacement therapy
4 Demonstrate knowledge of the varied modes of invasive and non-invasive mechanical ventilation.
5 Effectively communicate with patients and their families regarding issues of end of life decisions
6 Effectively coordinate the care of the critically ill patient with subspecialist and non-internal medicine specialist

Rotation Description

This is a four week rotation done at Howard University Hospital. It is an in-patient rotation where residents are mentored in the management of critically ill patients admitted to the Medical Intensive Care Unit.

The attending physician is responsible for all clinical, educational and administrative activity on the service. The attending physician is available 24 hours a day and makes daily teaching and management rounds.

Most months of the year there will be a fellow from pulmonary diseases rotating in the Medical Intensive Care Unit. The fellow is responsible for the supervision of all residents and students assigned to this rotation. The fellow is also responsible for directing the plan of care initiated by the attending physician. The fellow reports directly to the attending physician.

The senior residents on the rotation may be a R2 or R3. The senior resident is responsible for the immediate supervision of the interns and students. The senior resident must have a detailed knowledge of all patients on the service. The senior resident must ensure that the plan of care established by the attending physician is effectively and accurately carried out. The senior resident is responsible for the initial assessment and evaluation of all consults to the Medical Intensive Care Unit. The senior resident, after completion of the consult database, will present these findings to the fellow and/or the attending physician, who will make a plan of care decision. The senior resident is responsible for the directing of the daily activities of the interns and students. They are also responsible for the supervision of residents during procedures in which the senior resident is certified. If the senior resident is not certified by the department of internal medicine, the senior resident cannot supervise the interns during a procedure. The fellow or the attending must supervise the intern. The senior resident is responsible for the supervision of all orders written by the interns and students. The senior resident is required to assess and evaluate all admissions to the service and write an admission note and admission orders. The senior resident must make an entry in the chart regarding the progress of the patient or any significant change of status. These entries must be entered in the chart at least twice weekly.

The intern is responsible for the day to day care of the patients on the service such as, the daily assessment of assigned patients and order writing. The intern is responsible for completion of the admission database and is supervised by the senior resident, the fellow and the attending physician of record.

Teaching Methods:
Core Lectures: A series of lectures on critical care medicine throughout the academic. These are given at the pathophysiology conference and also at Grand Rounds.

Teaching Rounds: Teaching rounds take place every day and are patient-base discussions and demonstrations led by the attending physician of record. The discussions are evidence-based and occur at least one hour daily.

Didactics:
These sessions occur during teachings and are precepted by the attending physicians. The residents or fellow will present topics that cover the core elements of critical care medicine. These core topics include the following;

- Altitude illness
- Burns, smoke inhalation
- Cardiac
    - Acute myocardial infarction

    - Acute pericarditis
    - Acute valvular disruption
    - Aortic dissection
    - Cardiopulmonary arrest
    - Congestive heart failure
    - Dysrhythmias
    - Hypertensive crisis
    - Myocardial contusion
- Shock
- Decompression illness, air embolism
- Drug or alcohol overdose
- Drug or alcohol withdrawal
- Endocrine
    - Adrenal insufficiency
    - Diabetic ketoacidosis, hyperosmolar nonketotic diabetic
    - Coma
    - Thyroid storm, myxedema coma
- Gastrointestinal
    - Acute pancreatitis
    - Gastrointestinal bleeding
    - Hepatic failure
- Hematologic
    - Bleeding disorder
    - Disseminated intravascular coagulation
    - Thrombotic thrombocytopenic purpura
- Hypothermia, hyperthermia
- Infectious
    - Nosocomial infection
    - Septic shock
- Management of critical illness
    - Multi-organ failure
    - Prognosis/outcomes
    - Withdrawal of support
    - Multi-organ failure
    - Near drowning
- Neurologic
    - Acute spinal cord injury
    - Coma
    - Delirium
    - Head trauma
    - Meningitis
    - Neuroleptic malignant syndrome
    - Neuromuscular disease with respiratory failure

    - Status epilepticus
    - Stroke
- Nutrition
- Pulmonary
    - Airway management (intubation, tracheostomy)
    - Status asthmaticus
    - Upper airway obstruction
    - Ventilator management
- Renal
    - Acid-base disturbances
    - Acute renal failure
    - Electrolyte imbalance
    - Indications for dialysis
- Respiratory
    - Adult respiratory distress syndrome
    - Chest trauma
    - Chronic obstructive pulmonary disease (exacerbated)
    - Hemoptysis
    - Hypercapnia
    - Hypoxia
    - Pneumonia
    - Pneumothorax
    - Pulmonary embolism
    - Tuberculosis

Procedure Skills

- Advanced cardiac life support
- Arterial puncture for arterial blood gas
- Bedside pulmonary function
- Mechanical ventilation (basic)
- Placement of arterial and central venous lines
- Placement of nasogastric tube
- Insertion of temporary pacemaker (optional)
- Placement of endotracheal tube (optional)
- Placement of pulmonary artery catheter (optional)

Primary Interpretation of Tests

- Hemodynamic monitoring
- Pulse oximetry
- Telemetry monitoring

Ordering and Understanding Tests

- Bronchoscopy
- Computed tomography, magnetic resonance imaging of chest, abdomen

- Coronary angiography
- Echocardiography
- Electroencephalography

Evaluation methodology

Resident*: Residents will be evaluated by faculty throughout the rotation. Mid-rotation there will be formative evaluation and feedback designed to identify areas of strength and deficiency in an attempt to improve the overall growth and development of the resident. At the end of the rotation there will be a face to face summative evaluation process using a global rating form. The resident will be evaluated on the six ACGME competencies.*

Faculty: *Faculty will be evaluated using a global rating form at the end of the rotation. These evaluations will be done in an anonymous manner, and the form returned to the program director's office. Faculty will be given feedback quarterly.*

Rotation: *The rotation will be evaluated by residents using a global rating form completed by the resident at the end of the rotation. The rotation will also be assessed using the results of the in-training examination.*

Reading List