

(UH, VAMC and HUMC)

Introduction

Critical care medicine encompasses the diagnosis and treatment of a wide range of clinical problems representing the extreme of human disease. Multidisciplinary in its approach, the specialty requires a high level of expertise in the use of sophisticated monitoring systems and techniques of intervention to stabilize and treat such crises as respiratory failure, cardiac failure, shock, sepsis, trauma, and major metabolic derangement.

The group of disorders seen in the medical intensive care unit include cardiac and pulmonary failure, gastrointestinal bleeding, neurologic disorders, arrhythmias, electrolyte disturbances, overdose and intoxication, and sepsis in both immunocompetent and immunocompromised patients. These patients are admitted from the emergency department, from regular floors of the hospitals, or from referring institutions. Residents will have direct contact with patients. During this rotation, the resident will develop general competencies in patient care, medical knowledge, interpersonal skills and communication skills, professionalism, practice based learning and improvement, and system based practice in the critical care areas of each hospital.

Goals

The medical intensive care unit averages two to five patients admitted per day, therefore the residents will have this number of patient encounters daily. The team is developed in such a way that residents are not overwhelmed with service goals. This is accomplished by distributing the patient load among residents.

The resident will be exposed to a broad range of conditions common among critically ill patients and will become familiar with the technologic procedures and devices used in the intensive care settings. Residents will perform and interpret commonly performed diagnostic and therapeutic procedures used in the management of critically ill patients such as insertion of arterial line catheters, central venous catheters, pulmonary artery catheters, and transvenous pacemakers.

Residents are encouraged to acquire and practice the development of special skills regarding the use of multidisciplinary approaches to the critically ill patient, the ethical and moral issues related to death and dying situations, such as, end-of-life decisions, advance directives, estimating prognosis, and counseling, and the triage options in the managing of critically ill patients.

All residents will have a formal orientation to the ICU/CCU before beginning the rotation. The orientation will review topics that the resident may have to use under urgent circumstances soon after starting the rotation. Examples will include DNR orders, ventilator management (PowerPoint presentation) and ICU medications. The residents will be introduced to the personnel, administrative procedures, and the culture of the ICU/CCU health care team. The final goal of orientation will be to explain the

educational objectives of the rotation and how they will be achieved through rounds, lectures, educational materials, and other means. All residents in the ICU/CCU rotations will work less than eighty hours per week and will only have 24 hours of continuous patient care activities. Post-call, however, six hours of educational activities are allowed prior to the resident leaving the hospital. Residents must leave the hospital by 1:00 PM post-call days after noon conference. No resident is allowed more than six ICU/CCU months over the three years of residency training.

ICU Specific Objectives

The resident will acquire cognitive skills necessary to assess the information gathered by physical and laboratory examinations and invasive monitoring in the critical care setting. Competency in this area will be assessed through direct observation by the ICU attending and critical care fellow.

The resident will improve cognitive and procedural skills related to interventional therapy, including managing multisystem and multiorgan disease, monitoring therapeutic modalities and complications, and performing triage. Competency in this area will be assessed through direct observation by the ICU attending and critical care fellow.

The resident will adequately and appropriately perform basic and advanced life support. Competency in this area will be assessed by the ICU attending and critical care fellow. All residents are required to take a yearly mock review course on BLS and ACLS protocols.

The resident will know the incidence of both acute and chronic underlying organ dysfunction and the incidence and causes of multiorgan failure and their effect on outcome. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will become familiar with applicable living will statutes as well as the ethical issues surrounding termination of life support, do-not-resuscitate orders, and informed consent. Competency in this area will be assessed by the ICU attending and critical care fellow. Residents are required to present and discuss difficult cases in the monthly departmental ethics conference.

The resident will understand ethical principles and patients' rights issues in the management of critically ill patients and review the current criteria for the clinical diagnosis of brain death. Competency in this area will be assessed by the ICU attending and critical care fellow. Residents are required to present and discuss difficult cases in the monthly departmental ethics conference.

The resident will understand alterations in pharmacokinetics and pharmacodynamics that may alter therapeutic regimens in dealing with organ dysfunction or multiorgan failure. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will understand indications for intubation and basic airway management including mechanical ventilation and non-invasive ventilatory support. Competency in this area will be assessed by the ICU attending and critical care fellow. Furthermore, residents take 3 self-assessment quizzes in critical care medicine prior to graduation.

The resident will gain knowledge of clinical criteria for weaning from mechanical ventilation. Competency in this area will be assessed by the ICU attending and critical care fellow. Furthermore, residents take 3 self-assessment quizzes in critical care medicine prior to graduation.

The resident will acquire competence in arterial line placement, central line insertion and Swan-Ganz catheter interpretation. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will understand the indications for hemodynamic monitoring. Competency in this area will be assessed by the ICU attending and critical care fellow. Furthermore, residents take 3 self-assessment quizzes in critical care medicine prior to graduation.

The resident will learn to appropriately utilize the various inotropic agents in the ICU setting. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will gain competence in the interpretation of ABGS and acid base disorders. Competency in this area will be assessed by the ICU attending and critical care fellow. Residents take 3 self-assessment quizzes in critical care medicine prior to graduation. Understanding of acid-base disorders is also tested on the yearly ACP-in training examination.

The resident will understand the characteristics and management of different types of hypotension and shock, including septic, cardiogenic, hypovolemic, and obstructive shock. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will understand the management of hypertensive emergencies and aortic dissection. Competency in this area will be assessed by the ICU attending and critical care fellow. Furthermore, residents take 3 self-assessment quizzes in critical care medicine and three ACP in-training examinations prior to graduation.

The resident will understand the pathophysiology, differential diagnosis, and management of altered mental status, coma/delirium, drug overdose, GI bleeding, acute intoxication, acute liver failure, respiratory failure, renal failure, status epilepticus, and metabolic acidosis. The ICU attending will insure that the resident is exposed to at least three of each of these patients and competency in this area will be assessed by the ICU attending and critical care fellow, who will observe the resident's ability to synthesize an accurate assessment and treatment plan through written notes and oral presentations. Furthermore, residents take 3 self-assessment quizzes in critical care medicine and three ACP in-training examinations prior to graduation.

The resident will gain understanding of the complications of sepsis including DIC, MOF, and hypothermia. Competency in this area will be assessed by the ICU attending and critical care fellow by hearing oral presentations and reviewing resident notes.

The resident will understand the management of acute renal failure in critically ill patients, including the different renal replacement modalities. Competency in this area will be assessed by the ICU attending and critical care fellow. Furthermore, residents

take 3 self-assessment quizzes in critical care medicine and three ACP in-training examinations prior to graduation.

The resident will identify the five causes of hypoxemia. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will gain understanding in the importance of nutrition in the ICU patient. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will recognize the indications for TPN and enteral feeding. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will understand the indications for GI prophylaxis in the ICU patient. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will understand the differential diagnosis for acute abdomen. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will acquire competence in the management of pain in the ICU patient. Competency in this area will be assessed by the ICU attending and critical care fellow.

The resident will describe commonly used scoring systems (APACHE) and its use in triage of critically ill patients. Competency in this area will be assessed by the ICU attending and critical care fellow. Residents are required to complete APACHE forms on all of their patients.

The resident will perform all the procedures commonly performed in the ICU setting including insertion of right heart catheters, central venous lines, arterial lines, thoracentesis, lumbar puncture, arthrocentesis, intubation, nasogastric tubes, feeding tube placement, paracentesis and management of mechanical ventilators. The ICU attending will assess the resident's understanding of the indications, contraindications and complications of procedures by direct observation. They will observe the resident acquiring consent for the procedures. Competency in this area will be assessed by the ICU attending and critical care fellow.

CCU Specific Objectives

The resident will learn basic management of a patient presenting with myocardial infarction. Competency in this area will be assessed through direct observation by the CCU attending and cardiology fellow.

The resident will understand rudimentary management of complications of myocardial infarction including arrhythmia, cardiogenic shock, mitral insufficiency, and ventricular septal defect. The resident will appreciate indications for cardiac catheterization, angioplasty, stent placement and CABG. Competency in this area will be assessed by the CCU attending and Cardiology fellow. Additionally, residents take three self-assessment quizzes in cardiology and three ACP in training examinations over the three years of training.

The resident will understand the indications and contraindications anti-platelet agents, intra-aortic balloon pump, ACE inhibitors, beta-blockers, pressors and vasodilators in the

setting of acute coronary ischemia. Competency in this area will be assessed by the CCU attending and Cardiology fellow.

The resident will understand the management of unstable angina, including indications for catheterization, PTCA, and anticoagulation. Competency in this area will be assessed by the CCU attending and cardiology fellow by hearing oral presentations and reviewing resident notes. Additionally, residents take three self-assessment quizzes in cardiology and three ACP in training examinations over the three years of training.

The resident will learn how to recognize and manage aortic dissection, including the use of various diagnostic modalities (CT, MRI and TEE), and the pharmacological management and indications for surgery. Competency in this area will be assessed by the CCU attending and cardiology fellow by hearing oral presentations and reviewing resident notes.

The resident will appreciate recognition and management of cardiac tamponade. Competency in this area will be assessed by the CCU attending and Cardiology fellow.

The resident will understand the management of bradyarrhythmias, including the indications for pacemaker placement. Competency in this area will be assessed by the CCU attending and Cardiology fellow.

The resident will understand the management of valvular heart disease including aortic stenosis, AI, MR and MS, including pharmacological therapy and indications for surgery. Competency in this area will be assessed by the CCU attending and cardiology fellow by hearing oral presentations and reviewing resident notes.

The resident will recognize the EKG patterns of MI, VT and bradyarrhythmias. Competency in this area will be assessed by the CCU attending and Cardiology fellow. Additionally, residents take three self-assessment quizzes in cardiology and three ACP in training examinations over the three years of training in which EKG abnormalities are heavily tested.

The resident will understand the management of severe CHF, including indications for mechanical assist devices, IABP, transplantation and pharmacological management. Competency in this area will be assessed by the CCU attending and Cardiology fellow.

The resident will understand the appropriate laboratory testing in patients presenting with acute ischemic syndromes. Competency in this area will be assessed by the CCU attending and cardiology fellow by hearing oral presentations and reviewing resident notes.

The resident will understand the indications for echocardiography in patients presenting with ischemic syndromes and CHF. Competency in this area will be assessed by the CCU attending and cardiology fellow by hearing oral presentations and reviewing resident notes.

The resident will appreciate the indications and methods for cardiac stress testing in patients presenting with ischemic syndromes. Competency in this area will be assessed by the CCU attending and cardiology fellow by hearing oral presentations and reviewing resident notes.

Other Objectives

The resident will appreciate the impact of critical care disorders on a patients' quality of life and their relationships with family and friends. The faculty and fellows will evaluate competency in this area. Nurses will evaluate resident interactions with families and patients.

The resident will assist patients in decision-making regarding treatment options and end-of-life care. The faculty and fellows will evaluate competency in this area. Residents are required to present and discuss difficult ethical issues at the monthly ethics conference.

The resident will demonstrate patient-centered interviewing techniques; a compassionate approach to history taking; the ability to modify interview techniques in response to the patient's or patient's family's demeanor, cultural and/or religious background, and level of competency. The faculty and fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident. Communication skills are also evaluated in the ABIM Mini-CEX given to all interns.

The resident will understand ethical principles and patients' rights issues in the management of critically ill patients. The faculty and fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident. Residents are required to present and discuss difficult ethical issues at the monthly ethics conference.

The resident will discuss the performance of procedures with particular emphasis on alleviating the patient's fears and apprehensions. The faculty and fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident.

The resident will effectively coordinate multidisciplinary involvement (primary in-patient service, physician consult services, social work, nursing, pharmacy, practice management, other allied health professionals) in patient care. The faculty and fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident.

The resident will communicate effectively with patients, family members, dieticians, social work, nursing, other physicians, and other providers in the care of patients. The faculty and fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident.

The resident will use effective listening, nonverbal, questioning, and narrative skills to communicate with patients and families. The faculty and fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident.

The resident will complete all dictations and consultation requests in a timely and legible manner. The faculty and fellows will evaluate competency in this area.

The resident will be able to negotiate appropriate management of patients (and/or their families) who are angry, belligerent or demonstrating antisocial behavior. The faculty and

fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident. Communication skills are also evaluated in the ABIM Mini-CEX given to all interns.

The resident will discuss some of the common ethical issues that face patients, their families and caregivers as it pertains to treatment options and disease/treatment outcome including end-of-life and resuscitation issues. The faculty and fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident. Communication skills are also evaluated in the ABIM Mini-CEX given to all interns.

The resident will understand the importance of managing ICU/CCU patients using the multi-disciplinary approach. The faculty and fellows will evaluate competency in this area. The ICU/CCU staff will complete 360-degree anonymous evaluations for each resident.

The resident will appreciate the effects of cultural and religious background on the patient's approach and attitudes toward decision making, their disease and treatment. The faculty and fellows will evaluate competency in this area. Cultural competency is also evaluated in the ABIM Mini-CEX given to all interns.

The resident will recognize the potential problems that may impact the treatment and outcome of critical care disorders, including possible personal economic factors and compliance with the recommended treatment. The faculty and fellows will evaluate competency in this area.

The resident will attend departmental Morbidity & Mortality, Medical Grand Rounds, Clinical Case conferences and autopsy conferences. The faculty and fellows will insure that residents attend and present at these conferences.

The resident will perform electronic searches of medical literature to identify articles relevant for the critical care problems of patients. The faculty and fellows will evaluate competency in this area. Residents must attend and present monthly at biweekly Journal Club.

The resident will maintain an attitude of healthy skepticism and curiosity, as evidenced by thoughtful questioning, independent study, and critical analysis of published materials. The faculty and fellows will evaluate competency in this area.

The resident will identify areas for improvement and implement strategies to enhance knowledge, skills, attitudes and processes of care. The faculty and fellows will evaluate competency in this area.

The resident will develop a willingness and ability to learn from errors and use them to improve individual practice and the health care delivery system. The faculty and fellows will evaluate competency in this area. Residents participate in M&M Conference to discuss their cases and systems-based problems (root cause analysis).

Teaching Methods

The teaching of the management of critically ill patients in the ICU/CCU involves day in-depth case-oriented discussions by the attending physicians at the bedside. The interns and residents round with the attending/fellow on each of the services (MICU and CCU) for a period of one to two hours each morning. In addition, the attendings and fellows give didactic lectures covering many of the problems encountered in the management of critical care cases. In many cases, this educational input is augmented by the consultative input of other services such as general surgery, one of the surgery subspecialties, neurology or one of the medical subspecialties.

Morbidity and Mortality and Ethics Conferences (once a month) also supplement teaching by the attending. Many reference textbooks are available in the Dr. Buzz Johanson Educational Center (UH-I-121) to help in the management of cases. In addition, the attendings and fellows provide the residents with the most recent medical literature on pertinent topics encountered during the rotations. A pharmacy specialist is available each weekday during morning rounds to aid in pharmacological issues arising with patients. Ethics consults are requested as needed. In addition the ICU and CCU residents are still required to attend noon conferences, Journal Club, Medical Grand Rounds and Clinical Case Conference.

In the ICU, the principal method of teaching is in depth bedside discussions by the medical intensive care unit attending of the evaluation, diagnosis, monitoring, and management of critically ill patients admitted to the medical intensive care unit. This bedside teaching is supplemented by frequent classroom conferences provided by multiple specialties including radiology, respiratory therapy, clinical pharmacology, nutrition, and other pertinent subspecialties and also by members of the Pulmonary and Critical Care Division.

In the CCU, all decisions concerning management of the cases are made by residents with fellows in consultation with the attending physician. There is daily bedside discussion of the cases being treated in the CCU, but also didactic lectures centering on the more common problems seen in the CCU setting (i.e., right heart catheterization, unstable angina, valvular heart disease, arrhythmia, etc.).

The residents and fellows are involved, in consultation with the attending, in triage decisions concerning admission of all patients to the MICU/CCU. If a patient is admitted to the ICU or CCU and no bed is available, it is the responsibility of the Cardiology or Critical Care Fellow to see those patients in the Emergency Department and write a note and orders within 30 minutes. The ICU/CCU resident must notify the fellow within 30 minutes of seeing a new ICU or CCU admission or for any new patient problem

- Daily teaching rounds
- Small group discussions
- Didactic lectures (24 over 3 years)
- Assigned readings
- Required presentations
- Family meetings for advance patient care planning
- Supervised direct patient care activities
- Self-directed learning
- Radiology conference

Journal Club
 Medical Grand Rounds
 Noon Conferences
 Clinical Case Conference
 Work Rounds

Evaluation

Housestaff evaluations are based upon close observation of history-taking, physical examinations and the ability to synthesize an accurate assessment and treatment plan during oral presentations. Ongoing feedback by the attending physicians is required on a daily basis during rounds. Residents are formally evaluated in a face-to-face manner mid-month and end of the month. The end of the month evaluation will be part of the resident's permanent evaluation file.

360-degree evaluation by staff, medical students, standardized and ICU/CCU patients

Residents take 3 self-assessment quizzes in critical care medicine prior to graduation.

Residents are given their ACP in-training examination score in the various subspecialties in Internal Medicine annually.

ABIM Mini-CEX

Schedule - University Hospital

	Monday	Tuesday	Wednesday	Thursday	Friday
AM	7:00 Work Rounds 8:30-9:00 Radiology Rounds 9:00-12:00 ICU/CCU Rounds	7:00 Work Rounds 8:00. Medical Grand Rounds (MSB-B610) 9:00-12:00 ICU/CCU Rounds	7:00 Work Rounds 8:30-9:00 Radiology Rounds 9:00-12:00 ICU/CCU Rounds	7:00 Work Rounds 8:30-9:00 Radiology Rounds 9:00-12:00 ICU/CCU Rounds	7:00 Work Rounds 8:30-9:00 Radiology Rounds 9:00-12:00 ICU/CCU Rounds
PM	12:00 Noon Conference	12:00 Noon Conference	12:00 Noon Conference	12:00 Clinical Case Conference (MSB-B610)	12:00 Noon Conference