

Department of Anesthesiology

**Clinical Base Year
Critical Care Medicine Curriculum (MICU)**

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I. Educational Purpose and Goals

The critical care rotation exposes residents to patients with a broad variety of unstable, life-threatening medical illnesses. Residents will learn the basic tenets of stabilization of critically ill patients, and understand the differential diagnoses and appropriate diagnostic work ups of such patients. They will function within multidisciplinary teams to provide care that is timely, appropriate, and takes into account patient or family preferences.

II. Principle Teaching Methods

- A. Supervised direct patient care activities: Resident teams participate in daily management and teaching attending rounds with their supervising attendings. Residents assume primary care for the management and coordination of care for their patients, including performance of any necessary procedures.
- B. Didactics:
- i. Weekly core Critical Care Medicine didactic lecture series 1:15 – 2:15 p.m
 - ii. Pulmonary Case Conference – every Thursday, 4 – 5 pm
 - iii. Pulmonary Journal Club – every Monday, 12 – 1 pm
 - iv. Pulmonary Path Conference – 3rd Friday of month, 12- 1 pm
 - v. Every Tuesday, 11:30 – 1:00 p.m., rotating conferences of Basic Science, CCM journal club, CCM Grand Rounds, Pulmonary ID conference.
 - vi. Radiology Conference – 1st Friday of month, 12 – 1 pm
 - vii. CORE Conference – every Thursday, 12 – 1 pm and every 2nd and 4th Friday 12 – 1 pm
- C. Assigned readings: Residents are expected to complete directed reading based upon their patient census. In addition, there are assigned readings from standard texts to serve as preparation for lectures.
- E. Morbidity and Mortality Conferences. These occur monthly to review cases and are part of the Morning Report of the residency program, many of which are drawn from the critical care units. Presentations are made by residents, with faculty commentary.

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III. Educational Content

- A. Mix of diseases: Patients on the Critical Care Service may have a variety of critical illnesses. Among these are: respiratory failure; ARDS ; medical neurologic emergencies; infectious diseases; and metabolic processes such as diabetic ketoacidosis, hypertensive emergencies, circulatory shock, drug overdose, septic shock, and acute renal failure.
- B. Patient Characteristics: Patients admitted to Ruby Memorial Hospital medical intensive care units are drawn from the general population of Morgantown area, as well as transfers from across the state of WV, Southwestern PA, Western MD and Southeastern OH. Patients requiring transfer to the MICU from the General Medical teams, Hem/Onc team and BMT services will also make up some of the patient population. In addition patients may be drawn from on-call responsibilities of residents; continuity clinics of residents or attending physicians; consults from other hospital physicians; or transfers from Healthsouth Rehabilitation hospital.
- C. Learning Venues:
- a. Facility: The critical care rotation occurs at Ruby Memorial Hospital. Residents care for patients admitted to their service in the Medical Intensive Care Unit (MICU). The Health Sciences Center contains a full service medical library and computer facilities with Internet access for resident use. Each unit has on-line access to digitized imagery (PACS) of CT scans, MRI, MRA, PET/CT and plain films.
 - b. Procedures: Residents have the opportunity to perform a variety of procedures on patients under their care, including: central venous lines, Swan Ganz catheterization, temporary transvenous pacemaker placement, arterial lines, nasogastric tube insertion, intubation of the respiratory tract, paracentesis, thoracentesis, lumbar puncture, and arthrocentesis. Residents also have the opportunity to interpret all imaging studies and laboratory tests ordered on their patients. Radiology images are easily accessible from the MICU through PACS. Residents will also utilize standard ACLS protocols in the management of patients as needed.
 - c. Ancillary Services: During this rotation, residents interact with subspecialists from a variety of disciplines; fellows in hematology/oncology, pulmonary and critical care medicine, nephrology; respiratory therapists; clinical pharmacists; residents from other disciplines who serve either as consultants (eg, surgery) or as junior residents (e.g. emergency medicine, family medicine, anesthesia.); case managers; and nursing personnel.
 - d. Structure of the Rotation
 - i. Teams: One team functions within the medical intensive care unit. Each team consists of a managing attending, a senior resident, three junior residents, and medical students (primarily 4th year sub-interns). In addition, there is one designated senior resident per

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month who is the ICU float resident who helps with admissions to both the MICU and the CCU.

- ii. Duty Hours: All resident schedules are structured to limit duty hours to no greater than 80 hours per week when averaged over four weeks. On average a resident is scheduled for 72 hours per week during this rotation. All post-call residents are relieved from their continuity clinic and must leave the hospital by noon.
- iii. Call: Call occurs usually every 4th day but never more often than every 3rd day. The junior residents are on-call with the Senior ICU Float resident to ensure close supervision. Pulmonary Fellows are assigned out-of-house call daily and will come in when called to help with any procedure for new admissions, esp. Swan-Ganz catheter placement. Compliance with 80 hour duty hour restrictions is monitored through e*value along with the 30 hour rule restriction. No new patients are assigned to any post-call resident.
- iv. Rounds: Management and teaching attending rounds occur daily with all members of the team present. Start times are pre-arranged between attendings and residents. Discussion and care is provided at the bedside. Radiographic images may also be viewed electronically during management rounds.
- v. Clinics: Senior residents continue to participate in continuity clinics one half day per week, unless such participation would conflict with post call duty hour restrictions. Junior residents have their continuity clinic cancelled while on this rotation.
- vi. Lectures: All residents continue to participate in residency-wide conferences as noted previously, including the Core Noon conference series.

IV. Principle Ancillary Educational Materials

- a. Residents are assigned targeted reading in primary literature sources by Teaching Attending physicians throughout the rotation.
- b. Full service 24-hour libraries are present at the Health Sciences Center of the Robert C. Byrd Health Sciences Center with onsite medical librarians. Web-based searchable medical databases are available through those libraries, and standard medical journals are available in both print and electronic formats. In addition, all residents have 24-hour accessibility to the extensive online West Virginia University electronic library, including databases and electronic journals.
- c. Computer-based resources are available at the hospitals to facilitate patient care, education and communication. The following are made available:
 1. UpToDate Online
 2. CHIP – physician ordering system

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3. Drug information resources including side effect and drug-drug interactions
 4. Electronic Medical Record (Medsite)- internet accessible
 5. Electronic textbooks of medicine
 6. E-mail services via the internet (Groupwise)
 7. Internet access to medical sites on the World Wide Web
 8. Laboratory (Medsite) and radiology results retrieval (PACS)
 9. Patient education materials
- d. In the residency office and hospital libraries, a number of videotapes and audiotapes are available including:
1. Assorted procedures videotapes
 2. MedStudy materials
- e. The primary textbook is *Intensive Care Medicine*, Richard S. Irwin, M.D. (Editor) and James M. Rippe, M.D. (Editor)

V. Methods of Evaluation

- a. Resident Performance
 - i. Faculty complete web-based (E*Value) electronic resident evaluation forms provided by the Internal Medicine Residency office. The evaluation is competency-based. The evaluation is shared with the resident, is available for on-line review by the resident at their convenience, and is internally reviewed by the residency office. The evaluation is part of the resident file and is incorporated into the semiannual performance review for directed resident feedback.
 - ii. Residents electronically record completed procedures on the E*Value system. The supervising physician verifies the resident understands the procedure's indications, contraindications, complications and interpretation.
 - iii. Chart audits are conducted on at least one resident-generated document each rotation, with specific feedback given to the resident on data-gathering and documentation skills.
- b. Program and Faculty Performance
 - i. Using the E*value system upon completion of the rotation, residents complete a service evaluation commenting on the faculty, facilities and service experience. Evaluations are reviewed by the program and attending faculty physicians receive anonymous annual copies of aggregate completed evaluations. Collective evaluations serve as a tool to assess faculty development needs.

VI. Institutional Resources

- A. Strengths: Ruby Memorial Hospital serves as a tertiary care and Level One trauma center for outlying communities. This provides a breadth and depth of patient care, particularly in the intensive care units, which is not seen in

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smaller systems. Critical care attendings perform dedicated rounds with a multidisciplinary team

- B. Weaknesses: There is no active renal or cardiac transplant program, and we do not have a liver transplant program. Adolescents, including young adults (ie early 20s) with chronic diseases, are frequently admitted to the Pediatric Intensive Care service. This service is separately staffed and located, and does not interact with the adult ICU program.

VII. Rotation Specific Competency Objectives

a. Patient Care

- i. History taking. Residents at all levels of training will collect a thorough history, by soliciting patient information, and consulting other sources of primary data in a logical and organized fashion. History taking will be hypothesis driven. Interviewing will adapt to the time available and instability of the patient, use appropriate nonverbal techniques, and demonstrate consideration for the patient and family. The resident will inquire about the emotional aspects of the patient's or family's experience while demonstrating flexibility based on patient need. Residents will recognize verbal and nonverbal cues from the patient. Cues will be followed in an organized directed logical fashion with a complete exploration of symptoms.
- ii. Physical Exam. Residents at all levels of training will perform a comprehensive physical examination describing the physiological and anatomical basis for normal and abnormal findings.
- iii. Charting. Residents at all levels of training will record data in a legible, thorough, systematic manner.
- iv. Procedures.
 1. Residents will demonstrate knowledge of: procedural indications, contraindications, necessary equipment, specimen handling, patient after-care, and risk and discomfort minimization. They will participate in informed consent and assist patients with decision making. They will correctly identify the meaning of test results. Residents will initially observe and then perform procedures prior to the completion of the first training year.
- v. Medical Decision Making, Clinical Judgment, and Management Plans. All residents will demonstrate improving skills in assimilating information that they have gathered from the history and physical exam.

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1. Residents will be able to identify patients' problems and develop a prioritized differential diagnosis. Abnormal findings will be interrelated with altered physiology. They will understand their limitation of knowledge and seek the advice of more advanced clinicians. Residents will begin to develop therapeutic plans that are evidence or consensus based. Residents will establish an orderly succession of testing based on their history and exam findings. Specific organ dysfunction will be anticipated based on known side effects of therapy. Additionally, residents will understand the correct administration of drugs, describe drug-drug interactions, and be familiar with expected outcomes.

vi. Patient counseling

1. Residents will be able to describe the rationale for a chosen therapy and will be able to describe medication side effects in lay terms. They will assess patient/family understanding and provide more information when necessary. Residents will demonstrate the ability to be a patient advocate.

b. Medical Knowledge.

1. The resident will acquire knowledge, problem solving ability, practical skills and an attitude applicable the care of critically ill patients.
2. The resident will become familiar with appropriate diagnostic, therapeutic, and hemodynamic monitoring techniques.
3. The resident will develop the ability to respond rapidly and appropriately to life-threatening problems and grow to become an effective judge of the priorities of resuscitation.
4. The resident will learn to act appropriately as a member or leader of a therapeutic team which includes nurses, pharmacists, and ethicists.
5. The resident will learn to appreciate and hopefully modify the stresses which the Intensive Care environment places upon the patient, their relatives, members of the ICU staff, and themselves.
6. The resident will begin to understand how to use health care financial resources effectively and prevent the Critical Care Unit from simply becoming an "Expensive Care Unit".
7. The resident will continue to develop the habit of self assessment and realize the limitations in the practice of this specialty.

- a. Residents will consistently apply current concepts in the basic sciences to clinical problem solving. They will use information from the literature and other sources including electronic databases. Residents will demonstrate

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satisfactory knowledge of common medical conditions, sufficient to manage urgent complaints with supervision.

c. Interpersonal and Communication Skills.

1. Residents will develop and refine their individual style when communicating with patients. They will strive to create ethically sound relationships with patients, the physician team and supporting hospital personnel. They will create effective written communications through accurate, complete, and legible notes. They will exhibit listening skills appropriate to patient-centered interviewing and communication. Residents will recognize verbal and nonverbal cues from patients.

d. Professionalism.

All residents will demonstrate integrity, accountability, respect, compassion, patient advocacy, and dedication to patient care that supercedes self-interest. Residents will demonstrate a commitment to excellence and continuous professional development. They will be punctual and prepared for teaching sessions. Residents will demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, and informed consent. Residents are expected to show sensitivity and responsiveness to patients' culture, age, gender and disabilities.

e. Practice Based Learning and Improvement

1. Residents will use hospital and West Virginia University library resources to critically appraise medical literature and apply evidence to patient care. They will use hand-held computers, desktop PC's and Internet electronic references to support patient care and self-education. They will model these behaviors to assist medical students in their own acquisition of knowledge through technology.

f. Systems Based Practice.

1. Residents will be sensitive to health care costs while striving to provide quality care. They will begin to effectively coordinate care with other health care professionals as required for patient needs.

Curriculum Timeline

Approved by Education Committee September 19, 2007