

University of California, Irvine
Department of Medicine
Internal Medicine Residency Program Rotation Curriculum

I. Rotation Sites and Supervision

Rotation Name: Medical Intensive Care Unit Rotation

Site	Faculty Supervisor	Administrator	Phone
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II. Educational purpose / rationale:

The purpose of the MICU rotation is to teach residents the major aspects of understanding and managing patients with critical illnesses. Physiologic, psychosocial, diagnostic, and treatment aspects of critical illness will be addressed. The goal is to optimize the educational experience for all house staff and provide optimal patient care to critically ill patients in the MICU.

It is the desire of the University and Faculty that the resident gain and expand their cognitive knowledge, procedural skills, interpersonal skills, professional attitudes, humanistic qualities and practical experience appropriate for this rotation.

The resident will encounter a wide range of clinical problems in all stages of illness on this rotation. Please see a list of the most common encounters below. It is the desire of the University and Faculty that the resident gain and expand their understanding of integrative medical problems and health promotion, as well as cultural, socioeconomic, ethical, occupational, environmental and behavioral issues for their patients on this rotation.

III. Competency-based Objectives for the MICU Rotation

Competency-based Objectives for the General Medicine Ward Services

With regard to the following objectives, the resident at each level of training will demonstrate the following level of accomplishment, knowledge, skills, attitudes and attributes.

Patient Care	PGY1	PGY2	PGY3
Complete medical data base (H&P) relevant to ICU patients and good patient care overall, especially with respect to the conditions noted in section V of this document.	Reporter & Interpreter: Able to competently and comprehensively gather data on general medicine ward patients and put that data into a disease context	Manager & Educator: Able to process data at a sophisticated level with diagnostic paradigms which take into account the nuances of patient history. Able to advise junior residents and	Competent at the level of a well-trained internist

		supervise them in the process of data acquisition.	
Diagnostic decision making based upon the best evidence	Reporter & Interpreter: Understands the importance of a comprehensive differential diagnosis and lists the most important diagnostic possibilities or those which are life-threatening and must not be missed	Manager & Educator: Able to supervise PGY1 residents and coordinate data gathered by the PGY1 resident into a comprehensive decision and differential diagnostic strategy, under the supervision of a faculty attending.	Competent at the level of a well-trained internist
Involving patients in decisions about their care	Most of the time	All of the time, also guiding the PGY1 resident in the process, utilizing the feedback methods and teaching methods appropriate to the skills of the PGY1 resident	
Working with other health care professionals to ensure the best care	All of the time	All of the time, including advising the PGY1 resident and guiding them in this process	
Teaching patients and families	Most of the time	All of the time including utilization of the health literacy assessment and guiding junior residents in the process.	
Patient triage and evaluation of severity	Reporter & Interpreter	Manager & Educator: Able to use data gathered to make decisions about appropriate placement and consultation.	Competent at the level of a well-trained internist
Response to emergencies	Reporter & Interpreter: Able to identify the need for emergency response and competently seek appropriate assistance	Manager & Educator: Respond in a timely and effective manner including triage, ACLS, risk assessment, and consultation.	Competent at the level of a well-trained internist
Commitment to wellness, screening & prevention.	Most of the time	All of the time, including assuring the completion of protocols in care pathways for pneumonia, heart failure, ACS, smoking cessation. Monitors his or her team for stress, fatigue, depression, and anxiety. Observes for signs of substance abuse including suspicion roused by changes in behavior or commitment.	
Identification & intervention in psycho-social issues, including domestic violence & depression	Most of the time	All of the time and also points these out to junior residents in the process of care. Monitors for signs of stress and fatigue in team members. Knows resources and reports problems when necessary to attendings or program administration.	

Practice-based Learning	PGY1	PGY2	PGY3
Take advantage of patient care to read & learn	Consistently	Consistently demonstrates this commitment	

		and encourages this behavior in junior residents and peers through modeling and leadership
Use of medical information resources & search tools	Consistently accesses appropriate resources	Consistently accesses appropriate resources; able to teach others about resources and critical appraisal
Inspiring others to use Evidence-based resources and make EBM-based decisions	Basic understanding	Consistently inspires other to perform EBM and provides feedback on the critical appraisal process
Applying critical appraisal techniques consistently to patient resources I use for patient care	Basic understanding	Consistently applies a broad medical knowledge base and skills in the competency.

Interpersonal & Communication Skills	PGY1	PGY2	PGY3
Create personal relationships with each patient by appropriately engaging them at each encounter by appropriate physical techniques, addressing each patient as an individual, tending to the patient's agenda, and tending to the patient's comfort and person-hood	Most of the time by taking time and committing to knowing their patients	All of the time and capable of teaching junior residents in this area. Recognizes when junior residents are failing in this competence and brings resources to bear to correct shortcomings	
Use of verbal & non-verbal facilitation	Most of the time	All of the time, recognizes when junior residents are not paying attention to this parameter and guides them in doing so.	
Consistently demonstrate appropriate empathy & good listening skills	All of the time	Recognizes when junior residents miss empathy cues. Consistently and compassionately and explicitly serves as a role model for this behavior	
Respectful communication with colleagues & other professionals	All of the time	Notes when junior residents are not interacting collegially with colleagues. Observes for unprofessional behavior such as arrogance or blocking and corrects behavior. Seeks help from others when appropriate.	
Involve patients & families in discussions about care. Patient education.	Most of the time and demonstrates independently raising family issues and the importance of patient and family education	All of the time. Understands the teach-back method. Demonstrates the importance of assessing health literacy levels of patients. Supervises junior residents in information gathering and strategizing about appropriate information techniques. Uses ancillary services and educators to ensure the broadest possible	
Can say: I go out of my way to ensure the best possible care.	All of the time	Encourages others in this behavior and takes responsibility for the behavior of junior members of the team. Sets an explicit example for others by addressing this concern	
Enlist patients & families in health care decisions, including their feedback	Most of the time identifies the need for family participation. Gathers information and understands family dynamics.	Conducts family meetings according to the protocols defined for competence. Assesses health literacy. Engages all stakeholders in the discussions	
Demonstrates the ability to accept & integrate feedback from faculty & peers	All of the time	Observes junior residents for their ability to integrate feedback. Provides them with feedback on their receptiveness. Mentors junior residents on interactions with faculty attendings and other teachers.	

I always sit down at the bedside to speak with my patients.	All of the time		
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Professionalism	PGY1	PGY3	PGY3
Altruism: patients needs above their own	Most of the time is able to distinguish and prioritize patient needs	Most of the time	Most of the time
Confidentiality (including HIPAA)	All of the time maintains confidentiality in all communication and in all media	Teaches the importance of confidentiality. Makes this a priority with junior residents and medical students. Maintains a workroom environment conducive to ensuring confidentiality.	
Ethical behavior	All of the time		
Commitment to excellence	All of the time	Inspires excellence in others and rewards team members for excellence, especially with respect to professional behavior and commitment to patients	
Sensitivity to age, gender, gender-preference, ethnicity, culture & disability	Most of the time	All of the time	
Awareness of duty hours, fatigue in myself & others, & other outside stresses, including substance abuse & finances	All of the time		
Commitment to education & to learning	All of the time	Takes it upon himself or herself to teach. Inspires other to teach.	Accelerated
Personal insight & self-reflection	Most of the time	All of the time when prompted	Perhaps as a matter of course
Completion of assignments	All of the time	Holds others to a high standard and helps them organize to complete tasks while being cognizant of working conditions	
Timely response to pages	All of the time		
Timely completion of medical records	All of the time	Ensures that others comply	
Conference attendance	Meets requirements		
Hand-offs and sign-outs	Consistently well presented	Consistently of the highest quality	
Leadership skills	Developing	Consistent	Consistent

Systems-based Practice	PGY1	PGY2	PGY3
Cost-effectiveness	Generally aware	Integrates into all plans. Anticipates cost issues. Sensitive to indications for tests and procedures. Questions and assesses the requirements for testing.	Initiates programs and identifies issues.
Use of outside resources	Generally aware	Integrates into all plans. Knowledgeable of resources and systems for	Clearly able to marshal multiple resources and coordinate care from many providers and teams.

		discharge, DME, home health care	
Use of case-management	Generally aware	Integrates into all plans. Manages the team and assigns tasks appropriately	
Attention to quality, safety, and process improvement	Generally aware	Integrates into all plans	Makes these a top priority in all areas. Identifies areas for improvement and communicates these to team members and authorities. Implements plans to solve problems
Identification of systems issues that affect patient care	Developing	Consistently	Consistently
Use of the incident reporting systems to identify systems issues	Developing	Consistently	Consistently
Understanding of the business of medicine, health care systems, & public policy	Developing	Generally aware	Sophisticated understanding

Teaching Skills	PGY1	PGY2	PGY3
Commitment to teaching	Generally aware; expresses importance	Strong commitment	Highly skilled and makes this a priority in all patient care settings.
Use of the microskills of teaching	Developing	Skilled	Skilled
Understanding of the teachable moment	Developing	Skilled	Skilled
Patience with learners	Developing	Skilled	Skilled
Conference presentation	Developing	Basic	Skilled
Patient education & adherence	Basic	Clearly competent	

Organization Skills	PGY1	PGY2	PGY3
Patient care organization systems & practice	Uses systems	Fully integrated; multi-tasks easily. Teaches these skills to junior residents and students.	
Ability to prioritize personal issues in accord with personal values & priorities (Get my life in order)	Basic understanding	Consistent focus	
Ability to help others get organized		Advisor	Educator
Organizing for study, reading, & life-long learning	Conscious of necessity	Competent & committed	
Organizing teams to include & prioritize learning & teaching		Competent & committed	
Organizing to obtain & prepare for careers or fellowships	Aware	Competent	

IV. Principal teaching methods

This consists of daily teaching rounds with attending physician, radiology rounds, bedside ultrasound instruction, direct patient care supervised by attending physician and Pulmonary/Critical care fellows, didactic lectures by faculty, nursing, ancillary services, conferences, and supervised procedure performance.

Other educational or evaluation experiences include a monthly conference on assessment of

nutritional status, a monthly seminar on management of DKA, simulation with phantom mannequins in arterial and central line sterile technique, and mock code scenarios.

V. Mix of Diseases

The diseases and disorders that the housestaff will encounter in this rotation are quite diverse and include, but are not limited to the following:

- AIDS
- COPD and Asthma
- DKA
- Drug Overdoses
- GI Bleeding
- Hepatic Failure
- Hyponatremia and Electrolyte Disturbances
- Hypoxemia
- Meningitis
- Multiple Organ Dysfunction Syndromes
- Oncologic Emergencies
- OB/Gyn Critical Care
- Renal Failure
- Respiratory Failure and ARDS
- Shock
- SIRS and Sepsis with Early Sepsis Intervention
- Stroke and CVA Management

For training specifically related to pulmonary disease in the ICU, the medicine resident is expected to acquire knowledge of and have clinical experience in the ICU with a broad spectrum of pulmonary disease, including but not limited to the following:

1. Obstructive lung diseases, including asthma, bronchitis, emphysema, bronchiectasis, and cystic fibrosis
2. Pulmonary malignancy--primary and metastatic
3. Pulmonary infections, including tuberculous, fungal, and those in the immunocompromised host
4. Diffuse interstitial lung disease
5. Pulmonary vascular disease, including primary and secondary pulmonary hypertension and the vasculitis and pulmonary hemorrhage syndromes
6. Occupational and environmental lung diseases
7. Iatrogenic respiratory diseases, including drug-induced disease
8. Acute lung injury, including radiation, inhalation, and trauma
9. Pulmonary manifestations of systemic diseases, including collagen vascular diseases that are primary in other organs
10. Respiratory failure, including the adult respiratory distress syndrome, acute and chronic respiratory failure in obstructive lung diseases, and neuromuscular respiratory drive disorders
11. Disorders of the pleura and the mediastinum

VI. Patient characteristics

The patient mix will be varied on this rotation. It will include both male and female patients, adults of all ages, and an ethnic, racial, socioeconomic, cultural and religious diversity reflective of Orange County, CA.

VII. Clinical content areas

On this rotation, the medicine resident is expected to acquire knowledge of and additional experience to develop clinical competence in the following content areas:

1. Physiology, pathophysiology, molecular biology, diagnosis, and therapy of disorders of the cardiovascular, respiratory, renal, gastrointestinal, genitourinary, neurologic, endocrine, hematologic, musculoskeletal, and immune systems as well as of infectious diseases
2. Electrolyte and acid-base physiology, pathophysiology, diagnosis, and therapy
3. Metabolic, nutritional, and endocrine effects of critical illnesses
4. Hematologic and coagulation disorders secondary to critical illnesses
5. Critical obstetric and gynecologic disorders
6. Management of the immunosuppressed patient
7. Management of anaphylaxis and acute allergic reactions
8. Pharmacokinetics, pharmacodynamics, and drug metabolism and excretion in critical illness
9. Use of paralytic agents
10. Ethical, economic, and legal aspects of critical illness
11. Principles and techniques of administration and management
12. Psychosocial and emotional effects of critical illnesses
13. Iatrogenic and nosocomial problems in critical care medicine

VIII. Critical Care Service and Procedures

General: On this rotation, the medicine resident is expected to acquire knowledge (indications, contraindications, complications, and limitations) of the following, and for those marked with (*), experience to help achieve competence:

1. Establishment and maintenance of open airway in non-intubated, unconscious, paralyzed patients
2. Pressure-cycled, volume-cycled, time-cycle and flow-cycled mechanical ventilation*
3. Use of reservoir masks and continuous positive airway pressure masks for delivery of supplemental oxygen, humidifiers, nebulizers, and incentive spirometry *
4. Weaning and respiratory care techniques *
5. Management of pneumothorax (needle insertion and drainage systems) *
6. Bedside point of care ultrasound in the care and management of critically ill patients*
7. Maintenance of circulation
 - a. Arterial puncture and blood sampling *
 - b. Insertion of central venous, arterial, and pulmonary artery balloon flotation catheters*
 - c. Basic and advanced cardiopulmonary resuscitation*
 - d. Cardioversion*
8. Pulmonary function tests to assess respiratory mechanics, gas exchange, and respiratory drive, including spirometry, flow volume studies, and arterial blood gas analysis
9. Diagnostic and therapeutic procedures, including thoracentesis*, flexible fiber-optic bronchoscopy, and related procedures.
10. Calibration and operation of hemodynamic recording systems
11. Ventilatory support, weaning, and respiratory care techniques*
12. Examination and interpretation of sputum, bronchopulmonary secretions, pleural fluid/tissue, and lung tissue for infectious agents; cytology; and histopathology

13. Thoracostomy tube insertion and drainage.

The medicine resident is also expected to learn the indications, contraindications, limitations, and complications of the following procedures. Opportunities for practical experience with these may be available on this rotation.

1. Pericardiocentesis
2. Transvenous pacemaker insertion
3. Peritoneal dialysis
4. Peritoneal lavage
5. Percutaneous needle aspiration and/or cutting lung biopsy
6. Intracranial pressure monitoring
7. IJ and Subclavian Central Line Insertion

IX. Interpretation Skills

On this rotation, the medicine resident is expected to acquire knowledge of and additional experience for the ability to interpret the following:

1. Imaging procedures as pertaining to Critical Care:
 - a. chest roentgenograms
 - b. computed axial tomograms
 - c. point of care bedside ultrasound imaging
 - d. radionuclide scans
 - e. pulmonary angiograms
 - f. other radiologic and nuclear medicine procedures
2. Data pertaining to the following:
 - a. Cardiac output determinations by thermodilution, ultrasound and other techniques
 - b. Evaluation of oliguria
 - c. Management of massive transfusions
 - d. Management of hemostatic defects
 - e. Interpretation of antibiotic levels and sensitivities
 - f. Monitoring and assessment of metabolism and nutrition
 - g. Calculation of oxygen content, intrapulmonary shunt, and alveolar arterial gradients
 - h. Pharmacokinetics

Special Service Monitoring and Supervision Skills: On this rotation, the medicine resident is expected to acquire knowledge of and additional experience in utilizing special services, including:

1. critical and respiratory care units
2. respiratory care techniques and services

X. Core Suggested Reading for this rotation.

Basic Recommended Readings for this rotation come from **Current Medical Diagnosis and Treatment**, 2009. Access these readings at:

<http://www.accessmedicine.com/resourceTOC.aspx?resourceID=1>

In addition, you should be familiar with basic practice guidelines in this discipline. Access these at:

<http://www.accessmedicine.com/guidelines.aspx?type=1>

Select the appropriate chapters for review. These chapters can be accessed through the Grunigen Medical Library website.

<http://www.accessmedicine.com/resourceTOC.aspx?resourceID=1>

Chapters of specific relevance for this rotation are:

Chapter 9 [Pulmonary Disorders](#) [Revised April 2009]

Chapter 21 [Fluid & Electrolyte Disorders](#)

Chapter 22 [Kidney Disease](#)

Chapter 29 [Nutritional Disorders](#) [Revised April 2009]

Chapter 33 [Bacterial & Chlamydial Infections](#) [Revised April 2009]

XI. Additional Venues for Core Educational Topics in this Discipline

These include attendance or participation in the faculty lecture series, fellow lecture series, noon conference, grand rounds, and journal club.

In addition, the medicine resident will be expected to review and interpret patient laboratory results. They are also expected to discuss their patients with appropriate consulting physicians, and review pathologic specimen and autopsy results with physicians from the Department of Pathology.

XII. Evaluation Methods

a. Professional Competencies will be evaluated by:

Evaluation Method	Observation & Feedback	Report/Presentation	Other (specify)
Competency			
Patient Care	X	X	Observed central line, arterial line, and IV Placement, bedside ultrasound, Lumbar puncture and mock code blue
Medical Knowledge	X	X	
Practice-based Learning	X	X	
Communication Skills	X	X	
Professionalism	X	X	

Systems-based Practice	X	X	
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b. Evaluation Methods

Faculty will evaluate the performance of each medical resident in writing at the end of each rotation using the appropriate evaluation form. Faculty will provide formative, face-to-face feedback on a daily basis as well as at the midpoint and end of each rotation.

Evaluation forms will be submitted to the appropriate Program for review by the Program Director and by the Residency Oversight Committee.

Medical residents will complete evaluations of their attending faculty, their supervising fellow, and the rotation itself. These evaluations will be submitted to the Residency Program for Review by the Program Directors and the Curriculum Committee. Copies of evaluations will be submitted to the Division Chiefs for their review.

XIII. Responsibilities of Pulmonary and Critical Care Fellow, Residents, and Attendings:

Fellow: The MICU Fellow has overall responsibility for all patient care activities in the ICU. The fellow will be available at all times to assist the house staff (sub intern, PGY1, and PGYII/III) with any problems in the ICU.

The fellow will be responsible for supervision of procedures in the ICU, and will assist with procedures as appropriate.

The fellow will be expected to have a major role in teaching in as well.

PGY1 and subintern: Will be responsible for admitting their patients, managing their patients, and providing post-ICU follow-up on their patients. In addition, PGY 1 will be responsible for cross covering other members of the team

PGY 2 & 3: Will be responsible for supervision and backup of PGY1 and subintern duties, teaching students (subinterns) and PGY 1 residents, and giving feedback to students and PGY1 residents.

Expanded descriptions:

Residents: PGY 1 Residents

Patient Care Responsibilities:

Residents are responsible for following of a select number of patients on the ICU service in accord with duty hours regulations and patient care caps. Patient selection is directed by the senior resident. All patient care activities of the PGY1 resident are under direct supervision of the senior resident, fellow or attending.

Procedures:

The PGY1 resident can perform procedures appropriate for their level of training on the consult service. All procedures will be performed under the direct supervision of the resident or fellow.

Education:

The residents are expected to contribute on rounds. They are expected to present their patients on rounds, and contribute to the discussion of diagnosis, management, pathophysiology, and any related basic science issues. They will present patients at conference. They are expected to review pertinent medical literature. Guidance from the fellows and senior residents will be provided.

Patient Care:

The PGY1 residents will perform full consultation H&P on all new consults under their care. They will be responsible for collecting all database information, reviewing prior records, following laboratory information, and writing recommendations under direct supervision of the fellow.

Senior Residents (PGY 2 & 3)

Senior residents will be responsible for all activities noted for PGY1 residents. In addition, these residents will be responsible for coordinating teaching efforts for interns and medical students. The senior residents will place emphasis on Medical Knowledge Management in the context of ICU patient management. The senior residents will participate in divisional conferences and present appropriate cases with literature review and critical appraisal. The senior residents will be available to teach medical students physical diagnosis.

The senior resident will be certified in basic procedures including thoracentesis, paracentesis, arterial blood gas procedures, and lumbar puncture, and will be responsible for teaching these procedures to the PGY1 residents.

Attending physician:

The attending physician is responsible for all activities, clinical and teaching in the intensive care unit. The attending will round daily, with teaching rounds 7 days per week. Attending physicians will directly supervise resident and student education, including didactic lectures, teaching rounds, resident and student presentations. The attending will supervise procedures as appropriate and required by MICU, Hospital, and Department of Medicine policies.