

Pulmonary and Critical Care Medicine

Fellowship Program Curriculum

**BRODY SCHOOL OF MEDICINE at
EAST CAROLINA UNIVERSITY**

in collaboration with

**PITT COUNTY MEMORIAL HOSPITAL –
UNIVERSITY HEALTH SYSTEMS OF EASTERN CAROLINA**



Version 3.0

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OVERVIEW

The Brody School of Medicine Division of Pulmonary and Critical Care Medicine offers an accredited fellowship training program in Pulmonary Disease and Critical Care Medicine. Two fellows are accepted into the three-year program each year.

The program, which is affiliated with Pitt County Memorial Hospital in Greenville, N.C., allows the fellows to sit for the pulmonary medicine and critical care medicine board examinations.

The goal of the Pulmonary & Critical Care Medicine Fellowship is to train the highest caliber academic physicians who will have top-notch clinical skills. In addition, fellows will receive scholarly training to think critically, evaluate the current literature, participate actively in conferences (including formal presentations), and engage meaningfully in translational research. In order to learn the relevant clinical skills, under appropriate supervision, fellows will spend time (as delineated below) in the MICU, on the in-patient consult service, in the outpatient clinic, and in the procedure suite.

A strength of this training program is the large clinical volume of both in-patient and outpatient diagnoses, the breadth of clinical disorders (common as well as rare), and the large volume of available procedures. In order to learn the cognitive skills, fellows will participate in a variety of mandatory core conferences as well as engage in substantial self-study of the literature and text books. Finally, to accomplish research expectations, fellows will engage in appropriate clinically oriented research endeavors with a goal of presentation at national meetings as well as peer-reviewed publications. A minimum expectation is for fellows to pass the American Board of Internal Medicine (ABIM) pulmonary and critical care board examinations. However, the expectation is much higher and there is in fact no “ceiling” as to excellence.

The overall goal is to train professionals to practice in several possible settings including community practice, faculty at academic places including our division at the Brody School of Medicine (BSOM), and generally playing an active leadership role. More detailed metrics for expectations and objective performance are detailed below. Most importantly, fellowship is a serious and “elective” endeavor; it represents joining a collegial and caring division for faculty who are committed to career development and mentoring to meet the optimal requirements of individual professionals.

RESEARCH/CONFERENCE EXPECTATIONS FOR FELLOWS

- 1) Give pulmonary/critical care medicine grand rounds once per year, each year of the fellowship, thus giving a total of three grand rounds presentations during the course of the program. The fellow may choose a topic for their formal talk that includes a critical review of literature and shows in-depth research and critical thinking.
- 2) Research-in-progress conferences are given once per month. Fellows will give a presentation about research-in-progress twice per year, either on the same project or different ones. The fellow will choose a faculty mentor who must be present at the fellow's presentation.
- 3) Fellows will complete a minimum of two abstracts for national meetings: one review-type paper, and one original publication in the course of their three-year fellowship.
- 4) Fellows will participate in the Family Medicine Lecture Series (Research Module). Attendance is mandatory for all fellows in order to reinforce and further individual research more effectively.

- 5) Fellows will attend the outpatient clinic weekly and will have at least two new patients and two returning patients per clinic visit.
- 6) Fellows will attend two national meetings over the three years of the program. Recommended meetings include American Thoracic Society (ATS), American College of Chest Physicians (ACCP) (CHEST annual meetings), or the Society of Critical Care Medicine (SCCM). The fellows will preferably attend as an abstract presenter. It is also recommended that fellows become a member of these societies. Travel costs will be the responsibility of the fellow, but some money is given from the GME office at Pitt County Memorial Hospital (PCMH).
- 7) Fellows are expected to own a standard pulmonary/critical care medicine textbook (suggestions: Murray & Nadel, Fishman). The costs of these books are the responsibility of the fellow.
- 8) Fellows will be responsible for an ongoing journal club series with a faculty mentor. A lead fellow will coordinate identification and distribution of appropriate papers for discussion.
- 9) Fellows will attend a weekly pulmonary/critical care medicine grand rounds every Wednesday. While the pulmonary/critical care medicine grand rounds is mandatory, attendance is suggested at the weekly medicine grand rounds.
- 10) Fellows will participate in a monthly radiation-pathology (rad-path) conference and will be coordinated by a fellow on a rotating basis. This conference is also mandatory for all fellows.

The fellowship program provides educational and clinical opportunities to acquire the six core competencies established by the Accreditation Council for Graduate Medical Education (ACGME) to become experts in the management of patients with pulmonary disorders. The six core competencies are:

- Patient Care
- Medical Knowledge
- Practice-Based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice

TRAINING SITES

Pitt County Memorial Hospital (PCMH) is the primary training site at which fellows spend more than 85% of their training.

Other training sites include:

- Pulmonary Outpatient Clinic at the Moye Medical Building
- Physicians East, Greenville, NC
- East Carolina Neurology / Sleep Clinic (Doctors Park #4)
- The Allergy Center East
- University of North Carolina at Chapel Hill
- Duke University

FACULTY

- Mani S. Kavuru, MD, Professor and Division Chief, Pulmonary/Critical Care Division at the Brody School of Medicine. Certified by National Board of Medical Examiners, American Board of Internal Medicine (ABIM) in Internal Medicine, Pulmonary Disease, and Critical Care Medicine.
- Cynthia D. Brown, MD, Assistant Professor of Medicine, Pulmonary/Critical Care Division at the Brody School of Medicine, East Carolina University. Director, outpatient clinic. Certified by National Board of Medical Examiners. Certified by the American Board of Internal Medicine (ABIM) in Internal Medicine.
- Carter J.H. Childs, MD, Assistant Professor of Medicine, Interim Fellowship Director, Pulmonary/Critical Care Division at the Brody School of Medicine, East Carolina University. ABIM-certified in Internal Medicine, Critical Care Medicine, and Pulmonary Disease.
- Yash P. Kataria, MD, Professor of Medicine, Pulmonary/Critical Care Division at the Brody School of Medicine, East Carolina University, Director Sarcoidosis Clinic Fellow of American College of Physicians. Fellow of the Royal College of Physicians, Edinburgh, Scotland (F.R.C.P.E.). Boards in Internal Medicine from UK (M.R.C.P. Edin.)
- Mark A. Mazer, MD, Clinical Associate Professor at the Pulmonary/Critical Care Division (BSOM), Co-Director, Medical Intensive Care Unit (PCMH), Associate Program Director, Internal Medicine Residency (BSOM), and Co-Director, Internal Medicine-Emergency Medicine Residency (BSOM). Certified by the National Board of Medical Examiners, American Board of Internal Medicine (AIM) in Internal Medicine and Critical Care Medicine.

STRUCTURE/SCHEDULE OF TRAINING

F1: Pulmonary Consultation Service	5 months
MICU	4 months
Ambulatory/Rehab	1 month
Elective/Research	2 months
F2: Pulmonary Consultation Service	1 month
MICU	2 months
Ambulatory/Rehab	1 month
Elective/Research	8 months
F3: Pulmonary Consultation Service	4 months
MICU	3 months
Trauma Surgery Intensive Care Unit	2 months
Cardiac Intensive Care Unit	1 month
Renal	1 month
Elective/Research	1 month

IN-PATIENT PULMONARY CONSULT SERVICE

MAIN EDUCATIONAL PURPOSE & RATIONALE

The program provides pulmonary and critical care medicine (PCCM) fellows with educational and clinical opportunities to acquire the knowledge, clinical skills, and professional attitudes required becoming expert in the management of patients with pulmonary disorders.

Inpatient and emergent consultations for pulmonary diseases and related problems is a major portion of clinical pulmonary medicine. The members of the Division of Pulmonary and Critical Care Medicine at the Brody School of Medicine are responsible for the education of fellows in the field of pulmonary and critical care medicine.

RESPONSIBILITIES

Responsibilities for All Fellows (Years 1, 2, and 3)

Under supervision of the pulmonary consult attending, the Pulmonary and Critical Care Medicine (PCCM) fellows will provide consultation to all inpatient services upon request. The fellow will be given the opportunity to be the first person to see pulmonary consultations (either on his or her own or in supervising the medical resident or student). After performing a complete history and physical exam, the fellow will do a pertinent write up and will present the patient to the attending physician for discussion, interpretation of pertinent data, and formulation of differential diagnosis and management plans. Recommendations will be communicated to the primary service.

New consults will be called to the pulmonary fellow on the consult service between the hours of 8am and 5pm. It will be the fellow's responsibility to see the new patients either on his own or with rotating students or internal medicine residents. All patients on the consult service will be seen daily by the fellow and a progress note will be written. When all patients have been seen, the fellow should contact the consult attending to designate a time to meet. If there are any urgent issues or questions the attending may be contacted at any time by phone or pager. Rounds will be conducted on a daily basis with the consult attending. Signing off on a patient will be at the discretion of the attending.

The fellow should update the list of consult patients and attending daily to determine which patients will be followed.

Pulmonary function studies will be interpreted by the fellow on a daily basis under the supervision of the consult attending. The consult fellow with the attending of record will interpret exercise studies. When not conflicting with other consult duties, the fellow should attend the performance of all cardiopulmonary exercise studies. The schedule is available through the pulmonary function lab.

All procedures will be scheduled by and performed by the fellow under the supervision of the consult attending.

The fellow is required to attend all division conferences as well as medical grand rounds. He or she is encouraged to attend resident morning report. Fellows will be scheduled to present at each of these conferences on a rotating basis. Patient care emergencies may not permit conference attendance, but this is the only reason conference attendance is excused.

The consult fellow will also make weekly multidisciplinary ventilator rounds on the MICU unless there is a patient care conflict.

First-year Fellow Responsibilities

- Triage and/or perform all pulmonary consults for the four-week rotation (as volume dictates and presence of medicine resident rotators/medical students)
- Become actively involved in all patient care issues for all patients on service, including active review/supervision of housestaff work-ups
- Perform all bronchoscopies (with attending supervision) with airway exam
- Actively bring selected educational and reading material for rounds

Second-year Fellow Responsibilities

- All items, as above
- Perform bronchoscopies with additional complexity (i.e. TBBx, TBNA)
- Attend administrative meetings related to the specialty (i.e. bronchoscopy users group, respiratory therapy meetings, etc)

Third-year Fellow Responsibilities

- All items, as above
- Performs “interventional bronchoscopy” procedures (i.e. stents, pleuroscopies, etc)

Monthly Pulmonary/Critical Care Educational Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning		7:30am Case, research-in-progress, or rad-path conference	Pulmonary Grand Rounds / Fellows Lecture Series		Medical Grand Rounds
Noon				Monthly Multidisciplinary/ Critical Care Conf.	
Afternoon and Evening		Monthly Toxicology/Critical Care Conf.	Fellows Clinic	Weekly Critical Care Journal Club & Monthly Pulmonary Journal Club	Family Medicine Lecture Series

MEDICAL KNOWLEDGE

Pulmonary/Critical Care Medicine (PCCM) fellows must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care. Fellows will demonstrate an investigatory and analytical thinking approach to clinical situations, know and apply the basic and clinically supportive sciences which are appropriate to pulmonary medicine.

The following topics will be covered in detail through either didactic lecture given during the Pulmonary and Critical Care Medicine lecture series or by discussions pertaining to individual patients cared for by the fellows:

- 1) To be able to make a diagnosis of Adult Respiratory Distress Syndrome (ARDS) and to understand techniques for providing adequate ventilation for these patients.

- 2) To be able to diagnose and treat acute and chronic respiratory failure in obstructive lung disease and neuromuscular disease.
- 3) To be able to diagnose and treat patients with airway diseases including:
 - Asthma
 - Bronchitis
 - COPD
 - Upper Airway Obstruction
 - Bronchiectasis
- 4) To be able to diagnose and treat patients with Aspiration Pneumonia.
- 5) To understand inheritance patterns, prognostic factors, diagnosis and treatment of congenital lung diseases including:
 - Cystic fibrosis
 - Alpha1-antitrypsin deficiency
 - Dysmotile cilia syndrome
- 6) To be able to determine which diagnostic techniques and treatment options are effective in the treatment of community-acquired pneumonia, hospital-acquired pneumonia, pneumonia in immunosuppressed patients; as well as empyema, lung abscess, pulmonary mycoses, tuberculosis, and atypical mycobacteria.
- 7) To understand x-ray presentations of, diagnosis of, and treatment options for interstitial lung diseases including those associated with drugs, hypersensitivity reactions, idiopathic pulmonary fibrosis, sarcoidosis, collagen vascular disease, and eosinophilic pneumonia.
- 8) To understand the diagnosis, staging, and treatment of patients with lung neoplasms including lung cancer, solitary pulmonary nodules, and mediastinal adenopathy.
- 9) To be able to identify patients who have occupational lung diseases including asbestos-related lung disease, occupational asthma, and other pneumoconioses.
- 10) To understand the differential diagnosis of pleural diseases, as well as the interpretation of diagnostic studies and management options, as related to pleural effusions and pneumothoraces.
- 11) To understand the significance of prevention in pulmonary disease, including the avoidance of respiratory irritants, allergens and carcinogens, immunization, and smoking cessation.
- 12) To be able to diagnose and treat patients with pulmonary diseases during pregnancy.
- 13) To understand the concepts behind the diagnosis and management of sleep-disordered breathing.
- 14) To be able to diagnose and treat patients with pulmonary vascular disease including pulmonary hypertension, cor pulmonale, pulmonary thromboembolic disease, and pulmonary vasculitis.

PATIENT CARE

Pulmonary/Critical Care Medicine (PCCM) fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

Fellows will arrive at an appropriate hour, pre-round on previous consultations and begin intakes of new consultations. They will coordinate residents on the service to perform these chores and teach residents patients' problems. Fellows will perform initial assessments as appropriate with residents. Consultations may be requested from any inpatient hospital service and the emergency department.

Practical skills pertaining to patient care to be developed further during the pulmonary consultation service include:

- Performing appropriately focused history and physical exam
- Synthesis of differential diagnoses and plans for patient management
- Ability to coordinate diagnoses and plans for patient management
- Understanding the role of consulting physician
- Treating the various conditions listed above in **Medical Knowledge**

The clinical experience will foster the involvement of sound clinical judgment and efficient clinical practical skills.

- 1) PCCM fellows will further develop skills on history-taking from patients and family members by performing a complete history and physical examination on all pulmonary patients seen.
- 2) Faculty will review the fellows' evaluation and management skill, and provide guidance and instruction.

Faculty will provide one-on-one instruction in the performance of procedures. Diagnostic and therapeutic procedural skills that will be developed during the fellow's rotation on pulmonary consultation service and pulmonary subspecialty clinic:

- Arterial Blood Gas interpretation
- Pulmonary Function Test interpretation
- Chest interpretation
- Chest CT scan interpretation
- Radionuclide scans
- Pulmonary Arteriograms
- Ventilatory support, weaning and respiratory care techniques
- Hemodynamic Monitoring techniques
- Thoracentesis
- Diagnostic Fiberoptic Bronchoscopy
- Central Line Placement

PRACTICE-BASED LEARNING AND IMPROVEMENT

PCCM fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. They will assist the attending physician in teaching residents as per the residents' curriculum.

Fellows will attend these formal conferences:

- Pulmonary Case Conferences (twice per month)
- Weekly Pulmonary Grand Rounds
- Weekly Internal Medicine Grand Rounds
- Weekly Critical Care Journal Club
- Monthly Rad-Path Conference
- Monthly Research-in-Progress Conference
- Monthly Pulmonary Journal Club
- Monthly Toxicology/Critical Care Conference
- Monthly Multidisciplinary/Critical Care Conference
- Monthly Thoracic Oncology Conference
- Family Medicine Lecture Series (schedule varies)

Fellows will present at the Pulmonary Grand Rounds, Pulmonary Case Conference, and Pulmonary Journal Club as directed by the attending. They will provide appropriate state-of-the-art articles on patient management germane to cases.

PCCM Fellows will examine own practice for errors and quality of care, conformance with evidence-based standards of care. When error is recognized, they write a formal review of the case and how to avoid the error in the future.

INTERPERSONAL AND COMMUNICATION SKILLS

PCCM fellows will develop interpersonal and communication skills that result in an effective information exchange with patients, patient families, and professional associates.

- 1) Develop methods for appropriately communicating with referring physicians
- 2) Learn to concisely and accurately communicate clinical information both in verbal and written form. They will communicate information to patients and family members clearly and compassionately in order to create and sustain a therapeutic and ethically-sound relationship.
- 3) Faculty will serve as role models during bedside rounds, during teaching sessions, and during clinic encounters.

PROFESSIONALISM

PCCM fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. They are expected to coordinate the team's activities (within the constraints of the above schedule) and provide timely updates, as appropriate and required, to the attending faculty member. They are to fulfill a surrogate leadership role with residents in the absence of the pulmonary attending.

SYSTEMS-BASED PRACTICE

PCCM fellows will be able to use the interdisciplinary resources available, including nurse case management, physical therapy, outpatient rehabilitation, and occupational therapy to effectively call on system resources to provide care that is of optimal value. They will also attend weekly multidisciplinary vent-weaning rounds.

SELF-LEARNING METHODS

- 1) Recommended reading list of articles is provided and can also be found on the ATS website. (www.thoracic.org/fellows)
- 2) Recommended text books:
 - Murray & Nadel – *Textbook of Respiratory Medicine*
 - Parrillo & Dellinger – *Critical Care Medicine*
 - Kryger et al – *Principles & Practice of Sleep Medicine*
 - Marino – *The ICU Book*
- 3) Fellows will be instructed to research clinical problems by using text references and computer-assisted literature reviews.
- 4) Fellows will teach medical students and medicine fellows, and their teaching methods will be assessed and critiqued.

ASSESSMENT

PCCM Fellow Evaluations:

The fellow will be evaluated in written form at the end of each monthly rotation by the pulmonary faculty. This evaluation will be discussed with the house staff by the pulmonary faculty both at the end of the rotation and midway through the rotation with the hope of promoting improvement in fellow performance. These evaluations will then be reviewed by the fellow quarterly with the Program Director. The purpose of these and all evaluations is to foster improvement in house staff performance.

Pulmonary Rotation Evaluation:

The fellows evaluate the pulmonary service and the attending in written form at the end of each month. These evaluations are reviewed by the program director with feedback to attending staff as needed.

MEDICAL INTENSIVE CARE UNIT

MAIN EDUCATIONAL PURPOSE

The program provides pulmonary fellows with educational and clinical opportunities to acquire the knowledge, clinical skills, and professional attitudes required to become proficient in management of patients with medical illness requiring admission to the Medical Intensive Care Unit (MICU).

RATIONALE FOR THIS EDUCATIONAL ROTATION

- Critically ill patients are commonly encountered in the practice of pulmonary and critical care medicine
- The members of the Division of Pulmonary and Critical Care Medicine at the Brody School of Medicine are responsible for the education of fellows in the field of pulmonary medicine

RESPONSIBILITIES

Patients are admitted to the MICU service from other inpatient wards, the emergency department, or transferred from other institutions.

Responsibilities for All Fellows

PCCM Fellows will:

- 1) Provide guidance to the internal medicine, family medicine, and emergency medicine residents (MICU rotators) on the MICU service.
- 2) Review all MICU patients with the MICU rotators prior to daily attending rounds.
- 3) Provide one-on-one instruction to the MICU rotators in the performance of procedures in which he or she is competent.
- 4) Be evaluated on patient evaluation and management skill.

First-Year Fellow Responsibilities

- 1) Fellows will arrive before teaching rounds and will:
 - Review new admissions with the resident team
 - Review ventilator management of appropriate patients with the resident team with specific emphasis on ventilator weaning and liberation from mechanical ventilation decisions
 - Review hemodynamic management of appropriate patients with the resident team and will assist in decisions regarding fluid resuscitation and vasopressor management
- 2) During teaching rounds fellows will:
 - Assist the teaching attending with resident education
 - Be the first to be called on to see new admissions from the floor, emergency department, or transfers from outside hospitals.
 - Be the first to be called to see acutely deteriorating patients who need immediate attention and will perform the necessary procedures and resuscitation

- 3) After teaching rounds fellows will:
- Review new admissions to the ICU with the resident team
 - Assist with appropriate procedures
 - Lead resident checkout rounds.
 - After the above, meet with the attending and present the new patients as well as the decisions made on checkout rounds

Upper Level Fellow Responsibilities

- 1) Fellows arrive before teaching rounds and will:
- Review new admissions with the resident team
 - Review ventilator management of appropriate patients with the resident team with specific emphasis on ventilator weaning and liberation from mechanical ventilation decisions
 - Review hemodynamic management of appropriate patients with the resident team and will assist in decisions regarding fluid resuscitation and ventilator management
- 2) During teaching rounds will:
- Lead the team discussion on patients and the teaching sessions
 - Then present to the attending the patients after the conclusion of teaching rounds
- 3) After teaching rounds will:
- Review new admissions to the ICU with the resident team
 - Assist with appropriate procedures.
 - Lead resident checkout rounds.
 - After the above, meet with the attending and present the new patients as well as the decisions made on checkout rounds

Pulmonary/CCM Faculty Responsibilities

- 1) Faculty will provide one-on-one instruction in the performance of procedures the fellow is not certified to perform alone.
- 2) Faculty will serve as role models during bedside rounds, during teaching sessions, family conferences and clinic encounters.

Monthly Pulmonary/Critical Care Educational Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning		7:30am Case, research-in-progress, or rad-path conference	Pulmonary Grand Rounds / Fellows Lecture Series		Medical Grand Rounds
Noon				Monthly Multidisciplinary/ Critical Care Conf.	
Afternoon and Evening		Monthly Toxicology/Critical Care Conf.	Fellows Clinic	Weekly Critical Care Journal Club & Monthly Pulmonary Journal Club	Family Medicine Lecture Series

MEDICAL KNOWLEDGE

PCCM fellows on the MICU rotation must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care. Fellows will demonstrate an investigatory and analytical thinking approach to clinical situations, know and apply the basic and clinically supportive sciences which are appropriate to management of patients in the MICU.

The following topics will be covered in detail through either didactic lectures given during the Pulmonary and Critical Care Medicine daily lecture series or by discussions pertaining to individual patients cared for by the pulmonary fellow. PCCM fellows will be able to:

- 1) Make a diagnosis of Adult Respiratory Distress Syndrome (ARDS) and to understand techniques for providing adequate ventilation for these patients.
- 2) Diagnose and treat acute respiratory failure in obstructive lung disease including:
 - Status asthmaticus
 - COPD exacerbation
 - Upper Airway Obstruction
- 3) Understand the risk factors for and etiology of severe community-acquired pneumonia, aspiration pneumonia, hospital-acquired pneumonia, and pneumonia in immunosuppressed patients.
- 4) Understand the differential diagnosis, apply appropriate diagnostic techniques, and manage patients with severe hemoptysis.
- 5) Understand the differential diagnosis, apply appropriate diagnostic techniques, and manage patients with alveolar hemorrhage.
- 6) Diagnose and treat patients with respiratory failure during pregnancy.
- 7) Diagnose and treat patients with massive pulmonary embolism.
- 8) Diagnose and treat patients with respiratory failure secondary to cardiac disease.
- 9) Diagnose and manage patients with circulatory shock. The fellow will be able to formulate a differential diagnosis for patients with hemodynamic instability, perform appropriate monitoring techniques and learn resuscitative measures and become familiar with various vasoactive drugs.

PATIENT CARE

Pulmonary fellows on the MICU rotation must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

Work rounds are conducted daily with the MICU attending, PCCM fellow, and rotating medical residents. The MICU nursing staff and respiratory therapists participate in daily rounds and consultation is obtained with multiple other subspecialties as appropriate for individual patients.

Practical skills pertaining to patient care to be developed further during rotation in the MICU include:

- 1) History-taking from patients and family members by performing a complete history and physical examination on all patients admitted to the MICU.
- 2) Synthesis of differential diagnoses and plans for patient management.
- 3) Ability to coordinate diagnoses and plans for patient management.
- 4) Ability to treat the conditions listed above in **Medical Knowledge**.

The experience in the MICU will foster the involvement of sound clinical judgment and efficient clinical practical skills. Faculty will provide one-on-one instruction in the performance of procedures. Diagnostic and therapeutic procedural skills that will be developed during the fellow's rotation on MICU service:

- 1) Develop knowledge and clinical competence in airway management and endotracheal tube insertion.
- 2) Develop knowledge and clinical competence in the use of different forms of ventilatory support and oxygen delivery devices.
- 3) Develop knowledge and clinical competence with different forms of mechanical ventilation including volume cycled, pressure cycled, and flow cycled modes. To understand the differing indications for each and the potential advantages and disadvantages of the modes.
- 4) Gain knowledge and clinical competence in the use of respiratory therapy including endotracheal suctioning, nebulized therapy, chest physiotherapy, and incentive spirometry.
- 5) Develop knowledge and clinical competence weaning patients from mechanical ventilation.
- 6) Develop knowledge and clinical competence in performing arterial line insertion and the interpretation of arterial blood gases.
- 7) Develop knowledge and clinical competence in performing central line placement and the placement of pulmonary artery balloon flotation catheters.
- 8) Develop knowledge and clinical competence in the calibration hemodynamic recording systems and the interpretation of the data obtained from such systems.
- 9) Develop knowledge and clinical competence in performing basic and advanced life support.
- 10) Develop knowledge and clinical competence in managing patients with unstable cardiac rhythms including the use of antiarrhythmic drugs and cardioversion.
- 11) Develop knowledge and clinical competence in performing various diagnostic and therapeutic procedures including thoracentesis, pleural biopsy, and fiberoptic bronchoscopy.

12) Develop knowledge and clinical competence in the performance of and interpretation of various radiology studies including Chest x-rays, Chest CT scans, radionuclide imaging and pulmonary angiograms.

PRACTICE-BASED LEARNING AND IMPROVEMENT

PCCM fellows on the MICU rotation must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. They will assist the attending MICU physician in teaching residents as per the residents' curriculum.

Fellows will attend these formal conferences:

- Pulmonary Case Conferences (twice per month)
- Weekly Pulmonary Grand Rounds
- Weekly Internal Medicine Grand Rounds
- Weekly Critical Care Journal Club
- Monthly Rad-Path Conference
- Monthly Research-in-Progress Conference
- Monthly Thoracic Oncology Conference
- Monthly Pulmonary Journal Club
- Monthly Toxicology/Critical Care Conference
- Monthly Multidisciplinary/Critical Care Conference
- Family Medicine Lecture Series (schedule varies)

Fellows will present at the Pulmonary Grand Rounds, Pulmonary Case Conference, Pulmonary Journal Club, and Critical Care/Toxicology Conference as directed by the attending. They will provide appropriate state-of-the-art articles on patient management germane to cases.

Fellows will examine own practice for errors and quality of care, conformance with evidence-based standards of care. When error is recognized, write a formal review of the case and how to avoid the error in the future.

INTERPERSONAL AND COMMUNICATION SKILLS

PCCM fellows serving in the MICU will develop interpersonal and communication skills that result in an effective information exchange with patients, patient families, and professional associates, including nursing staff, respiratory care staff, physical therapy staff, occupational therapy staff, and chaplains

- 1) They will learn to concisely and accurately communicate clinical information both in verbal and written form. They will communicate information to patients and family members clearly and compassionately to create and sustain a therapeutic and ethically sound relationship. Particular emphasis will be placed on how to compassionately relay bad news and deal with end-of-life discussion/decision-making, including organ donation.
- 2) They will develop methods for appropriately communicating with referring physicians
- 3) Faculty will review the fellow's evaluation and management skill, and provide guidance and instruction.

- 4) Faculty will serve as role models during bedside rounds, during teaching sessions, and during clinic encounters.

PROFESSIONALISM

Pulmonary fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. They are expected to coordinate the team's activities (within the constraints of the above schedule) and provide timely updates, as appropriate and required, to the attending faculty member. They are to fulfill a surrogate leadership role with residents in the absence of the MICU attending.

SYSTEMS-BASED PRACTICE

Pulmonary fellows on the MICU rotation will be able to use the interdisciplinary resources available, including nurse case management, physical therapy, outpatient rehabilitation, and occupational therapy to effectively call on system resources to provide care that is of optimal value.

SELF-LEARNING METHODS

- 1) A reading list to cover topics not covered in other manners will be provided to the fellows.
- 2) Recommended text books:
 - Murray & Nadel – *Textbook of Respiratory Medicine*
 - Parrillo & Dellinger - *Critical Care Medicine*
 - Kryger et al – *Principles & Practice of Sleep Medicine*
 - Marino – *The ICU Book*
- 3) Fellows will be instructed to research clinical problems by using text references and computer-assisted literature reviews.
- 4) Fellows will teach medical students and medicine residents, and their teaching methods will be assessed and critiqued.

ASSESSMENT

PCCM Fellow Evaluations:

The PCCM fellow will be evaluated in written form at the end of each monthly rotation by the pulmonary/MICU faculty. This evaluation will be discussed with the house staff by the pulmonary faculty both at the end of the rotation and midway through the rotation with the hope of promoting improvement in fellow performance. These evaluations will then be reviewed by the fellow quarterly with the Program Director. The purpose of these and all evaluations are to foster improvement in house staff performance.

Pulmonary Rotation Evaluation:

PCCM fellows evaluate the MICU rotation in written form at the end of each month. These evaluations are reviewed by the program director with feedback to attending staff as needed.

PULMONARY ABULATORY FELLOWS' CLINIC: LONGITUDINAL EXPERIENCE

MAIN EDUCATIONAL PURPOSE

The educational goal of this experience is to learn both the initial consultative approach as well as subsequent follow-up to outpatient respiratory disorders. In addition, an important part of this experience is to understand the natural history of common and less common disorders as well as learning the "tempo of approach" to outpatient management. Since this is a longitudinal experience, learning is cumulative and it is imperative for fellows to build an ongoing relationship with a cohort of patients with a variety of respiratory illnesses.

The goal is met by the specific objective that the fellow is the main provider of direct patient care for all respiratory and relevant problems. This outpatient clinical experience consists of one half day per week throughout the 3 year fellowship (except for the ICU rotations). The fellow participates in this experience by seeing patients on his or her own schedule, under attending supervision. An average half-day session will include four to eight patients, with at least two new patients. All new patients are primarily seen and examined by the fellow, all relevant data including PFTs and imaging studies are reviewed by the fellow and an impression and management plan is outlined by the fellow in the patient's electronic medical record. This data is presented to the on-site attending physician who will review all data including the history, exam, PFTs, and imaging. Subsequently a specific management plan is put into action by the fellow with appropriate follow-up of data, response to interventions, etc.

RESPONSIBILITIES & ORGANIZATION OF THE OUTPATIENT CLINIC

The fellow clinic will occur one half day per week, usually afternoons. Each fellow will have their "own schedule." The clinic staff will page the fellow as the first patient shows up onsite.

At each half-day session, the fellow will:

- 1) Promptly arrive and begin the clinic session and will personally interview and examine each patient, review all primary data, and chart a complete note on the patient's EMR.
- 2) Manage the clinic so as to minimize patient wait times, communicate additional testing, review results including outside studies, give prescriptions, and arrange for appropriate follow-up.
- 3) Get supervision and feedback from the onsite attending.
- 4) Develop a mechanism to keep track of pending studies, arranging bronchoscopies, exercise studies, etc. (Ultimately, the patient "belongs" to the fellow for all subsequent correspondence including phone calls, prescription refills, etc.)
- 5) Conduct the clinic so as to complete all onsite patient care well before 5:00pm to be sensitive to the schedules of clinic personnel.
- 6) Attend all conferences while on the rotation.

Monthly Pulmonary/Critical Care Educational Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning		7:30am Case, research-in-progress, or rad-path conference	Pulmonary Grand Rounds / Fellows Lecture Series		Medical Grand Rounds
Noon				Monthly Multidisciplinary/ Critical Care Conf.	
Afternoon and Evening		Monthly Toxicology/Critical Care Conf.	Fellows Clinic	Weekly Critical Care Journal Club & Monthly Pulmonary Journal Club	Family Medicine Lecture Series

MEDICAL KNOWLEDGE

Upon completion of the three-year longitudinal outpatient clinic, the fellow will:

- 1) Understand the outpatient approach, tempo of illness, pathophysiology, and natural history of a variety of respiratory clinical disorders
- 2) Learn the longitudinal utility of serial PFTs, imaging studies, and other data
- 3) Increase skills to manage common respiratory disorders, including but not limited to:
 - Obstructive disorders including asthma and emphysema
 - Approach to evaluating symptoms such as cough, dyspnea, hemoptysis, activity intolerance
 - Follow-up for an abnormal chest x-ray or a pulmonary nodule
 - Hospital follow-up of acute respiratory illness
 - Interstitial lung disorders such as sarcoidosis and pulmonary fibrosis
 - Pulmonary vascular disease
 - Lung cancer
 - Obesity and sleep disorders
 - Occupational lung disease and disability evaluation
 - Use of the PFT lab including inhalational challenge, cardiopulmonary stress, etc.
- 4) Learn indications for hospital admission as well as alternative delivery systems for medical services and their implementation

PATIENT CARE

PCCM fellows on the Ambulatory rotation must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

PRACTICE-BASED LEARNING AND IMPROVEMENT

PCCM fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

Fellows will attend these formal conferences:

- Weekly Pulmonary Grand Rounds
- Weekly Internal Medicine Grand Rounds
- Weekly Pulmonary Case Conferences
- Weekly Critical Care Journal Club
- Monthly Rad-Path Conference
- Monthly Research-in-Progress Conference
- Monthly Thoracic Oncology Conference
- Monthly Pulmonary Journal Club
- Monthly Toxicology/Critical Care Conference
- Monthly Multidisciplinary Critical Care Conference
- Family Medicine Lecture Series (schedule varies)

Fellows will present at the Pulmonary/Critical Care Grand Rounds, Pulmonary/Critical Care Case Conference, Pulmonary/Critical Care Journal Club, and Critical Care/Toxicology Conference as directed by the attending. They will provide appropriate state-of-the-art articles on patient management germane to cases.

Fellows will examine their own practice for errors and quality of care, conformance with evidence-based standards of care. When error is recognized, they will write a formal review of the case and how to avoid the error in the future.

INTERPERSONAL AND COMMUNICATION SKILLS

PCCM fellows serving in the Ambulatory will develop interpersonal and communication skills that result in an effective information exchange with patients, patient families, and professional associates, including internal medicine interns, residents, nursing, pharmacy, respiratory therapy, and the nutritional services.

- 1) Fellows will learn to concisely and accurately communicate clinical information both in verbal and written form. They will communicate information to patients and family members clearly and compassionately to create and sustain a therapeutic and ethically sound relationship.
- 2) Fellows will develop methods for appropriately communicating with referring physicians.
- 3) Faculty will review the fellow's evaluation and management skill, and provide guidance and instruction.
- 4) Faculty will serve as role models during clinic encounters.

PROFESSIONALISM

PCCM fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

SYSTEMS-BASED PRACTICE

PCCM fellows on the Ambulatory rotation will be able to use the interdisciplinary resources available, including nurse case management, nutritional services, physical therapy, outpatient rehabilitation, and occupational therapy to effectively call on system resources to provide care that is of optimal value.

SELF-LEARNING METHODS

- 1) A reading list to cover topics not covered in other manners will be provided to the fellows.
- 2) Fellows will be instructed to research clinical problems by using text references and computer-assisted literature reviews.
- 3) Fellows will teach medical students and medicine residents, and their teaching methods will be assessed and critiqued.

ASSESSMENT

PCCM Fellow Evaluations

The PCCM fellow will be evaluated in written form at the end of each monthly rotation by the pulmonary faculty. These evaluations will then be reviewed by the fellow quarterly with the Program Director. The purpose of these and all evaluations are to foster improvement in house staff performance.

Ambulatory Rotation Evaluation

The fellows evaluate the Ambulatory service and the attendings in written form at the end of each month. These evaluations are reviewed by the Program Director with feedback to attending staff as needed.

PULMONARY RESEARCH ROTATION

GOALS & EDUCATIONAL RATIONALE

- To provide the fellow with an opportunity to develop the necessary skills to participate meaningfully in critical thinking and an organized and scholarly approach to a research project.
- Participation in a research project should improve identifying gaps in existing literature, hypothesis generation, an organized approach to collecting and interpreting primary data, statistical methods, study design and experimental method, manuscript preparation, and human subject protection/informed consent process.
- Participation in a research project allows the fellow to focus and develop depth in a particular area of interest.

SPECIFIC EDUCATIONAL OBJECTIVES

- To be able to critically review scientific literature and identify gaps
- To develop a hypothesis-driven research project with a faculty mentor. The following is an expected time line for completion of this project:
 - Identify a faculty mentor by January of the first year
 - Present the proposed project and background information at pulmonary research-in-progress before the end of the first year
 - Complete the research project during the second year of the training program (there will be a six-month period of time to which a substantial portion is dedicated to research).
- Interpret and report scientific results
 - Because of the length of the training program it is anticipated that fellows will need to complete the interpretation and reporting of their results as one-two abstracts and one manuscript in the three years.
 - The fellow will present his or her findings at section conference prior to completing the second year
 - Submission of abstracts to the Department of Research & Graduate studies research day held each spring is strongly encouraged
 - Submission of abstracts to national meetings is encouraged

PRINCIPLE TEACHING METHODS

- The pulmonary fellow will identify a faculty mentor within the division of pulmonary & critical care medicine. The fellow and faculty member will meet one-on-one throughout the three-year program. (The fellow may choose a mentor outside the division but this is subject to approval of the program director and pulmonary faculty.)
- The fellow will attend all divisional conferences

- The fellow will review journal articles with faculty members which are being reviewed by certain faculty member for consideration of publications
- The fellow will attend the department of family medicine research module conference designed to develop clinical research skills (held August through May)
- The fellow will present a “research in progress” conference twice per year

Monthly Pulmonary/Critical Care Educational Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning		7:30am Case, research-in-progress, or rad-path conference	Pulmonary Grand Rounds / Fellows Lecture Series		Medical Grand Rounds
Noon				Monthly Multidisciplinary/ Critical Care Conf.	
Afternoon and Evening		Monthly Toxicology/Critical Care Conf.	Fellows Clinic	Weekly Critical Care Journal Club & Monthly Pulmonary Journal Club	Family Medicine Lecture Series

RESPONSIBILITIES

First-year Fellow Responsibilities

- Attend the mandatory family practice research lecture series
- Complete online HIPAA course
- Complete human subjects protection course
- Attend all division conferences
- Work with an assigned faculty research mentor throughout the four-week rotation in order to develop a research project and plan scholarship accordingly
- Present at two research-in-progress conferences per year
- Attempt submission of one protocol to the IRB

Second-year Fellow Responsibilities

- Substantial time is allotted for second-year fellows to complete research projects
- Submit at least one protocol to the IRB (if not completed in the first year)
- Begin writing assignments (at least one review-type paper)
- Present two research-in-progress conferences
- Submit at least one abstract for a national meeting
- Attend one national meeting (hopefully as a presenter) during years two and three
- Actively collect data for research projects

Third-year Fellow Responsibilities

- Continuation of above
- Active progress/completion of data collection for research project and write-up of manuscript

SELF-LEARNING METHODS

- 1) Fellows will develop a reading list including an exhaustive literature review from all available sources including computer-assisted search methods.
- 2) Fellows will proactively interact with the research mentor and others (including the IRB, data coordinators, etc) that will be involved in the research project and generate conversations to further define the methods and approaches to the project
- 3) Fellows will review literature related to human subjects protection, institutional guidelines for IRB submission, etc.

ASSESSMENT

PCCM Fellow Evaluations:

The PCCM fellow will be evaluated in written form at the end of each monthly rotation by his or her faculty mentor, research faculty, and research staff. These evaluations will then be reviewed by the fellow quarterly with the Program Director of the pulmonary/critical care training program.

Research Rotation Evaluation:

The fellows evaluate the faculty in written form at the end of each month. These evaluations are reviewed by the Program Director with feedback to research faculty and staff as needed. The fellow will also evaluate the Research rotation; the basis for this evaluation will be based on year of training in the areas of planning, data collection and analysis, participation of conferences, submission of research, and diligence of literature review.

TRAUMA SURGERY INTENSIVE CARE UNIT (SICU)

MAIN EDUCATIONAL PURPOSE

The program provides pulmonary/critical care medicine (PCCM) fellows with educational and clinical opportunities to acquire the knowledge, clinical skills and professional attitudes required to become proficient in management of patients in the post-operative period and who have suffered severe trauma.

RATIONALE FOR THIS EDUCATIONAL ROTATION

- In order to become a well-rounded critical care physician, experience is needed in caring for patients in the post-operative period as well as those who have suffered major trauma.
- The faculty of the section of Trauma and Critical Care Surgery at the Brody School of Medicine are responsible for the teaching of fellows in the field of trauma and surgical critical care.

RESPONSIBILITIES

Patients are admitted to the SICU service from the operating room, the emergency department, or transferred from other institutions.

Under the supervision of the surgical critical care attending, the PCCM fellow will be part of a team providing assessment, management and follow-up of critically ill trauma surgery patients. As a member of the SICU team, the PCCM fellow will be working in a collaborative manner with surgical interns, residents, surgical attendings, nursing, pharmacy, respiratory therapy, and the nutritional services.

The PCCM fellows will do this rotation during the third year of the pulmonary and critical care training program. He or she will have two years of experience including rotations in the medical intensive care unit and pulmonary consult service.

Responsibilities for All Fellows

PCCM Fellows will:

- 1) Be part of the SICU team, under the supervision of a Trauma and Surgical Critical Care attending, which will provide initial assessment, management, follow up, and discharge of adult patients in the SICU. The fellow will be expected to evaluate all patients he or she is following prior to rounds and perform detailed histories and physical exams. He or she will present the patient on rounds and be responsible for daily notes.
- 2) Assist the team with new patients. Their level of involvement will be dictated by the senior surgical resident and/or attending. This will be individualized based on the clinical situation and the skill of the PCCM fellow. The PCCM fellow would not be expected to go to the operating room.
- 3) With the aid of senior surgical residents, will develop diagnostic and therapeutic plans for their patients.

- 4) Communicate with all team members, especially the upper-level surgical residents if other services are needed of them: including the Pulmonary outpatient clinic, conference or educational lectures, or if you are post-call.
- 5) PCCM fellows will provide consultation services. Fellows will perform pulmonary and ventilator management consultations to patients on the SICU team at the request of the SICU attending. PCCM faculty will supervise. PCCM fellows are expected to gain further expertise in mechanical ventilation and to be a resource for more junior house officers.
- 6) Help instruct any team member, including nurses and residents, with vent management in order to assist in patient care.
- 7) Make bronchoscopies indications and facilitate arrangements and may supervise surgical residents performing them.
- 8) Be a resource for any patients having respiratory problems or other acute issues at any time.
- 9) The PCCM fellow is expected to attend all conferences while on the rotation.

Responsibilities of Trauma Surgery Faculty

Trauma Surgery Faculty will:

- 1) Review the fellow's evaluation and management skill, and will provide guidance and instruction.
- 2) Provide one-on-one instruction in the performance of procedures.
- 3) Serve as role models during bedside rounds and during teaching sessions.

Other Responsibilities/Expectations

- 1) Fellows are encouraged to learn all trauma ICU patients on ventilators and provide daily discussion with the respiratory therapist and trauma attending regarding weaning, or change of mode, or other changes to treatment.\
- 2) Fellows are encouraged to ask for participation in useful procedures, including chest tube placement, which may be overlooked by upper-year surgery residents.
- 3) Pulmonary consults may be performed by the PCCM fellow but need to be staffed with a pulmonary attending.
- 4) All procedures done in the SICU will be under the direct supervision of the surgical attending unless the pulmonary fellow has been certified to perform the procedure without supervision.

MEDICAL KNOWLEDGE

PCCM fellows on the SICU rotation must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care. Fellows will demonstrate an investigatory and analytical thinking approach to clinical situations, know and apply the basic and clinically supportive sciences which are appropriate to management of patients in the SICU.

The following topics will be covered in detail through either didactic lectures, or by discussions pertaining to individual patients cared for by the fellows.

- 1) The basic pathophysiology, diagnosis, and management of commonly encountered disorders in the surgical ICU such as (but not limited to); multi-organ system dysfunction syndrome, acute respiratory distress syndrome, shock, sepsis, acute renal failure, common electrolyte abnormalities, abdominal and extremity compartment syndromes, intracranial trauma and hemorrhage, bleeding disorders, and massive transfusions.
- 2) The indications, contraindications, complications, limitations and technical skills of common ICU procedures including (but not limited to); central line placement, arterial line placement, pulmonary artery flotation catheter placement, endotracheal intubation, tube thoracostomy, and diagnostic peritoneal lavage.
- 3) The maintenance of circulation including:
 - Fluid resuscitation (colloid and crystalloid)
 - Arterial and venous catheter placements
 - Vasopressor administration
 - Inotropic support
- 4) Basic and advanced cardiopulmonary resuscitation.
- 5) The indications, contraindications, complications, limitations, and the experience of using sedatives, analgesics, and neuromuscular blocking agents (paralytics).
- 6) The calibration and operation of hemodynamic recording systems and the interpretation of the data derived from their use.
- 7) Pharmacokinetics and pharmacodynamics in critically ill patients.
- 8) Nutritional support of critically ill patients.
- 9) The ethics of critical illness/ICU care.

PATIENT CARE

- PCCM fellows on the SICU rotation must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.
- Work rounds are conducted daily with the SICU attending, the senior surgical resident, surgical residents and interns, and PCCM fellow.
- Practical skills pertaining to patient care to be developed further during rotation in the SICU include:
 - 1) History taking from patients, family members, and EMS.

- 2) Physical examination skills.
 - 3) Concise and accurate communication of clinical information both in written and verbal form.
 - 4) Clear and compassionate communication of information to patients and family members.
 - 5) Synthesis of differential diagnoses and plans for patient management.
 - 6) The ability to coordinate and prioritize diagnoses and plans for patient management.
 - 7) The ability to act as a mentor, guide, and teacher to the other residents and students on the team, including bronchoscopies and ventilator management.
 - 8) Overall, the clinical experience will foster the involvement of sound clinical judgment and efficient clinical practical skills.
- The experience in the SICU will foster the involvement of sound clinical judgment and efficient clinical practical skills.
 - 1) PCCM fellows will further develop skills on history-taking from patients and family members by performing a complete history and physical examination on all SICU patients seen.
 - 2) Faculty will review the fellow's evaluation and management skill, and provide guidance and instruction.
 - Faculty will provide one-on-one instruction in the performance of procedures.
 - Diagnostic and therapeutic procedural skills that will be developed during the fellow's rotation on SICU service:
 - Arterial blood gas interpretation.
 - Ventilatory support, weaning, and respiratory care techniques.
 - Hemodynamic monitoring techniques.
 - Central line, arterial line, and pulmonary artery flotation catheter placement.
 - Vasopressor and inotropic support management.
 - Fluid resuscitation skills.
 - Basic and advanced cardiopulmonary resuscitation.
 - Tube thoracostomy insertion, maintenance, and removal.
 - Endotracheal intubations.
 - Diagnostic peritoneal lavage.

PRACTICE-BASED LEARNING AND IMPROVEMENT

PCCM fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. They will help teach the SICU team about common medical pulmonary and critical care issues.

Fellows will attend these formal conferences:

- Pulmonary Case Conferences (twice per month)
- Weekly Pulmonary Grand Rounds
- Weekly Internal Medicine Grand Rounds
- Weekly Critical Care Journal Club
- Monthly Rad-Path Conference
- Monthly Research-in-Progress Conference
- Monthly Thoracic Oncology Conference
- Monthly Pulmonary Journal Club
- Monthly Toxicology/Critical Care Conference
- Monthly Multidisciplinary/Critical Care Conference
- Family Medicine Lecture Series (schedule varies)
- Surgical Critical Care Conference
- Surgical Fellow's Conference
- Trauma Conference

Monthly Pulmonary/Critical Care Educational Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning		7:30am Case, research-in-progress, or rad-path conference	Pulmonary Grand Rounds / Fellows Lecture Series		Medical Grand Rounds
Noon				Monthly Multidisciplinary/Critical Care Conf.	
Afternoon and Evening		Monthly Toxicology/Critical Care Conf.	Fellows Clinic	Weekly Critical Care Journal Club & Monthly Pulmonary Journal Club	Family Medicine Lecture Series

Fellows will present at the Pulmonary/Critical care Grand Rounds, Pulmonary/Critical Care Case Conference, Pulmonary/Critical Care Journal Club, and Critical Care/Toxicology Conference as directed by the attending. They will provide appropriate state-of-the-art articles on patient management germane to cases.

Fellows will examine their own practice for errors and quality of care, conformance with evidence-based standards of care. When error is recognized, they will write a formal review of the case and how to avoid the error in the future.

INTERPERSONAL AND COMMUNICATION SKILLS

PCCM fellows serving in the SICU will develop interpersonal and communication skills that result in an effective information exchange with patients, patient families, and professional associates, including surgical interns, residents, surgical attendings, nursing, pharmacy, respiratory therapy, and the nutritional services.

- 1) Fellows will learn to concisely and accurately communicate clinical information both in verbal and written form. They will communicate information to patients and family members clearly and compassionately to create and sustain a therapeutic and ethically sound relationship. Particular emphasis will be placed on how to compassionately relay bad news and deal with end-of-life discussion/decision-making, including organ donation.

- 2) Faculty will review the fellow's evaluation and management skill, and provide guidance and instruction.
- 3) Faculty will serve as role models during bedside rounds, during teaching sessions, and during clinic encounters.

PROFESSIONALISM

PCCM fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. They are expected to coordinate the team's activities (within the constraints of the above schedule) and provide timely updates, as appropriate and required, to the attending faculty member.

SYSTEMS-BASED PRACTICE

PCCM fellows on the SICU rotation will be able to use the interdisciplinary resources available, including nurse case management, nutritional services, physical therapy, outpatient rehabilitation, and occupational therapy to effectively call on system resources to provide care that is of optimal value.

SELF-LEARNING METHODS

- 1) A reading list to cover topics not covered in other manners will be provided to the fellows.
- 2) Fellows will be instructed to research clinical problems by using text references and computer-assisted literature reviews.
- 3) Fellows will teach medical students and medicine residents, and their teaching methods will be assessed and critiqued.

ASSESSMENT

PCCM Fellow Evaluations:

The PCCM fellow will be evaluated in written form at the end of each monthly rotation by the surgery faculty. This evaluation will be discussed with the house staff by the surgery faculty both at the end of the rotation and midway through the rotation with the hope of promoting improvement in fellow performance. These evaluations will then be reviewed by the fellow quarterly with the Program Director of the pulmonary/critical care training program. The purpose of these and all evaluations are to foster improvement in house staff performance.

SICU Rotation Evaluation:

The PCCM fellows evaluate the SICU rotation in written form at the end of each month. These evaluations are reviewed by the program director with feedback to attending staff as needed.

CARDIAC INTENSIVE CARE UNIT (CICU)

MAIN EDUCATIONAL PURPOSE

The program provides pulmonary and critical care medicine (PCCM) fellows with educational and clinical opportunities to acquire the knowledge, clinical skills and professional attitudes required to become proficient in management of patients with cardiovascular disorders.

RATIONALE FOR THIS EDUCATIONAL ROTATION

- Cardiovascular diseases are frequently encountered in critically ill patients and their management is a major portion of clinical pulmonary and critical care medicine
- The members of the Division of Cardiology at the Brody School of Medicine are responsible for the education of fellows in the field of cardiovascular diseases

RESPONSIBILITIES

Patients are admitted to the CICU service from the cath lab, the emergency department, other inpatient wards, or are transferred from other institutions.

Under the supervision of the cardiology attending, the pulmonary/critical care medicine (PCCM) fellow will be part of a team providing assessment, management and follow-up of critically ill cardiac patients. As a member of the CICU team, the PCCM fellow will be working in a collaborative manner with cardiology interns, residents, cardiology attendings, nursing, pharmacy, respiratory therapy, and the nutritional services.

The PCCM fellow will do this rotation during the third year of the pulmonary and critical care training program. He or she will have 2 years of experience including rotations in the medical intensive care unit and pulmonary consult service.

Responsibilities for All Fellows

PCCM fellows will:

- 1) Be a part of the CICU team PCCM fellows will be a part of a team, under the supervision of a cardiology attending, which will provide initial assessment, management, follow up, and discharge of critically ill adult patients in the CICU. Fellows will be expected to evaluate all patients he or she is following prior to rounds. He or she will present the patient on rounds and be responsible for daily notes.
- 2) Assist the team with new patients. Their level of involvement will be dictated by the senior surgical resident and/or attending. This will be individualized based on the clinical situation and the skill of the PCCM fellow.
- 3) Perform detail histories and physicals on the patients admitted to the team.
- 4) Provide consultation services. PCCM fellows will perform pulmonary and ventilator management consultations to patients on the CICU team at the request of the primary admitting cardiologist. PCCM faculty will supervise.
- 5) Perform electrophysiology consults (EPS) requested by the adult MICU. Cardiology electrophysiology attendings will supervise.

- 6) Provide assistance and guidance in developing a diagnostic and therapeutic plan to the more junior members of the team.
- 7) Be responsible for following the progress of all patients who are actively being weaned from mechanical ventilation (after rounds are completed).
- 8) Be a resource for any patients having respiratory problems or other acute issues at any time.
- 9) Attend all conferences while on the rotation.

Responsibilities of Cardiology Faculty

Cardiology Faculty will:

- 1) Faculty will review the fellow's evaluation and management skill, and provide guidance and instruction.
- 2) Faculty will provide one-on-one instruction in the performance of procedures.
- 3) Faculty will serve as role models during bedside rounds and during teaching sessions.

Other Responsibilities/Expectations

- 1) Pulmonary consults may be performed by the PCCM fellow but need to be staffed with a pulmonary attending.
- 2) All procedures done in the CICU will be under the direct supervision of the attending unless the PCCM fellow has been certified to perform the procedure without supervision.
- 3) The senior cardiology fellow and attending physician will directly supervise the PCCM fellow.

Monthly Pulmonary/Critical Care Educational Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning		7:30am Case, research-in-progress, or rad-path conference	Pulmonary Grand Rounds / Fellows Lecture Series		Medical Grand Rounds
Noon				Monthly Multidisciplinary/ Critical Care Conf.	
Afternoon and Evening		Monthly Toxicology/Critical Care Conf.	Fellows Clinic	Weekly Critical Care Journal Club & Monthly Pulmonary Journal Club	Family Medicine Lecture Series

MEDICAL KNOWLEDGE

PCCM fellows on the CICU rotation must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care. Fellows will demonstrate an investigatory

and analytical thinking approach to clinical situations, know and apply the basic and clinically supportive sciences which are appropriate to management of patients in the CICU.

The following topics will be covered in detail through either didactic lectures, or by discussions pertaining to individual patients cared for by the fellows.

- 1) The diagnosis and management of acute coronary syndromes and their co-morbidities and complications.
- 2) The pathophysiology, diagnosis, and management of cardiogenic shock.
- 3) The diagnosis and management of life threatening arrhythmias.
- 4) The indications, contraindications, complications, limitations, and technical skills of electrical cardioversion.
- 5) The indications, contraindications, complications, limitations, and technical skills of external and transvenous pacing.
- 6) The maintenance of circulation including:
 - Arterial puncture and blood sampling
 - Insertion of central venous, arterial, and pulmonary artery balloon flotation catheters
 - Basic and advanced cardiopulmonary resuscitation
- 7) The calibration and operation of hemodynamic recording systems and the interpretation of the data derived from their use.
- 8) Pharmacodynamics and pharmacokinetics in critically ill patients.

PATIENT CARE

PCCM fellows on the CICU rotation must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

Work rounds are conducted daily with the CICU attending, the senior cardiology fellow, cardiology residents and interns, and the PCCM fellow.

Practical skills pertaining to patient care to be developed further during rotation in the CICU include:

- 1) History taking from patients and family members.
- 2) Physical exam skills.
- 3) Concise and accurate communication of clinical information both in verbal and written form.
- 4) Clear and compassionate communication of information to patients and family members.
- 5) Synthesis of differential diagnoses and plans for patient management.

- 6) The ability to coordinate diagnoses and plans for patient management.
- 7) The ability to act as a mentor, guide, and teacher to the other residents on the team.

The experience in the CICU will foster the involvement of sound clinical judgment and efficient clinical practical skills.

- PCCM fellows will further develop skills on history-taking from patients and family members by performing a complete history and physical examination on all CICU patients seen
- Faculty will review the fellow's evaluation and management skill, and provide guidance and instruction

Faculty will provide one-on-one instruction in the performance of procedures. Diagnostic and therapeutic procedural skills that will be developed during the fellow's rotation on CICU service:

- Arterial Blood Gas Interpretation.
- Ventilatory support, weaning, and respiratory care techniques.
- Hemodynamic monitoring techniques.
- Central line, arterial line, and pulmonary artery catheter placement.
- Vasopressor, and Inotropic support management.
- Basic and advanced cardiopulmonary resuscitation.
- Transvenous pacemaker insertion and management.
- Pericardiocentesis.
- Cardiac output determinations by thermodilution and/or other techniques.

PRACTICE-BASED LEARNING AND IMPROVEMENT

PCCM fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. They will help teach the CICU team about common medical pulmonary and critical care issues.

Fellows will attend these formal conferences:

- Weekly Pulmonary Case Conference (twice per month)
- Weekly Pulmonary Grand Rounds
- Weekly Internal Medicine Grand Rounds
- Weekly Critical Care Journal Club
- Monthly Rad-Path Conference
- Monthly Research-in-Progress Conference
- Monthly Thoracic Oncology Conference
- Monthly Pulmonary Journal Club
- Monthly Toxicology/Critical Care Conference
- Monthly Multidisciplinary Critical Care Conference
- Family Medicine Lecture Series (schedule varies)
- Surgical Critical Care Conference
- Surgical Fellow's Conference

- Trauma Conference
- Weekly EKG Conference
- Weekly Echo Conference
- Weekly Cardiology Grand Rounds
- Monthly Cardiac pathology conference
- Monthly Cardiovascular Journal Club
- Weekly CT surgery/Cath conference

Fellows will present at the Pulmonary/Critical Care Grand Rounds, Pulmonary/Critical Care Case Conference, Pulmonary/Critical Care Journal Club, and Critical Care/Toxicology Conference as directed by the attending. They will provide appropriate state-of-the-art articles on patient management germane to cases.

Fellows will examine their own practice for errors and quality of care, conformance with evidence-based standards of care. When error is recognized, they will write a formal review of the case and how to avoid the error in the future.

INTERPERSONAL AND COMMUNICATION SKILLS

PCCM fellows serving in the CICU will develop interpersonal and communication skills that result in an effective information exchange with patients, patient families, and professional associates, including cardiology interns, residents, surgical attendings, nursing, pharmacy, respiratory therapy, and the nutritional services.

- 1) Fellows will learn to concisely and accurately communicate clinical information both in verbal and written form. They will communicate information to patients and family members clearly and compassionately to create and sustain a therapeutic and ethically sound relationship. Particular emphasis will be placed on how to compassionately relay bad news and deal with end-of-life discussion/decision-making, including organ donation.
- 2) Fellows will develop methods for appropriately communicating with referring physicians.
- 3) Faculty will review the fellow's evaluation and management skill, and provide guidance and instruction.
- 4) Faculty will serve as role models during bedside rounds, during teaching sessions, and during clinic encounters.

PROFESSIONALISM

PCCM fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. They are expected to coordinate the team's activities (within the constraints of the above schedule) and provide timely updates, as appropriate and required, to the attending faculty member.

SYSTEMS-BASED PRACTICE

PCCM fellows on the CICU rotation will be able to use the interdisciplinary resources available, including nurse case management, nutritional services, physical therapy, outpatient rehabilitation, and occupational therapy to effectively call on system resources to provide care that is of optimal value.

SELF-LEARNING METHODS

- 1) A reading list to cover topics not covered in other manners will be provided to the fellows.
- 2) Fellows will be instructed to research clinical problems by using text references and computer-assisted literature reviews.
- 3) Fellows will teach medical students and medicine residents, and their teaching methods will be assessed and critiqued.

ASSESSMENT

PCCM Fellow Evaluations:

The PCCM fellow will be evaluated in written form at the end of each monthly rotation by the cardiology faculty. This evaluation will be discussed with the house staff by the cardiology faculty both at the end of the rotation and midway through the rotation with the hope of promoting improvement in fellow performance. These evaluations will then be reviewed by the fellow quarterly with the Program Director of the pulmonary/critical care training program. The purpose of these and all evaluations are to foster improvement in house staff performance.

CICU Rotation Evaluation:

The fellows evaluate the CICU service and the attendings in written form at the end of each month. These evaluations are reviewed by the Program Director with feedback to attending staff as needed.

NEPHROLOGY (RENAL) ROTATION

MAIN EDUCATIONAL PURPOSE

The program provides pulmonary and critical care medicine (PCCM) fellows with educational and clinical opportunities to acquire the knowledge, clinical skills, and professional attitudes required becoming expert in the management of patients with a variety of acute and chronic renal diseases.

RESPONSIBILITIES

The fellow will be a member of the renal consult team. They will be primarily focused on patients located the various ICUs at PCMH, but will also see patients on the entire consult service. The fellow will be assigned patients per the Nephrology section's policies and standard procedures. They will see patients, perform the necessary history and physical exams, review the pertinent lab and/or imaging studies, and present the patient on rounds. Formal teaching, instruction, and feedback will be given.

- 1) Fellows will take appropriate histories, and physical exams.
- 2) Fellows will review appropriate lab studies and provide interpretation. This includes urinalysis, and microscopy.
- 3) Fellows will present patients to the nephrology attending.
- 4) Fellows will learn to manage hemo- and peritoneal dialysis performed on their patients.

Monthly Pulmonary/Critical Care Educational Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning		7:30am Case, research-in-progress, or rad-path conference	Pulmonary Grand Rounds / Fellows Lecture Series		Medical Grand Rounds
Noon				Monthly Multidisciplinary/ Critical Care Conf.	
Afternoon and Evening		Monthly Toxicology/Critical Care Conf.	Fellows Clinic	Weekly Critical Care Journal Club & Monthly Pulmonary Journal Club	Family Medicine Lecture Series

MEDICAL KNOWLEDGE

Fellows will demonstrate knowledge in the following disease conditions:

- Acute Renal Failure
- Chronic Renal Failure
- Indications for Hemodialysis, including intermittent and continuous
- Indications for peritoneal dialysis
- Electrolyte abnormalities including hyper/hypo natremia, kalemia, phosphatemia, and calcemia
- Toxic ingestions

PATIENT CARE

Principle Educational Goals:

- Evaluate and manage, with attending assistance, patients with acute renal failure, fluid/electrolyte imbalance and acid/base problems.
- Evaluate and manage, with attending assistance, consultative patients with end-stage renal disease.
- Evaluate and manage, with attending assistance, patients with pregnancy related disorders: pre-eclampsia, chronic hypertension in pregnancy.
- With attending assistance, evaluate patients on hemodialysis and write hemodialysis orders.
- With attending assistance, evaluate patients on peritoneal dialysis and write peritoneal dialysis orders.
- With attending assistance, evaluate patients on plasmapheresis and write plasmapheresis orders.
- With attending and pharmacy assistance, ensure proper drug dosing in all patients to avoid nephrotoxic agents and dose-adjust for kidney function as needed.

PRACTICE-BASED LEARNING AND IMPROVEMENT

PCCM fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. Fellows will also:

- Identify, acknowledge and correct gaps in personal knowledge and skills in the care of patients with acute and chronic kidney disease.
- Analyze rounding patterns and identify areas for improvement to optimize and balance quality care of acute and chronically ill kidney patients.

Fellows will attend these formal conferences:

- Weekly Nephrology Case Conferences
- Weekly Nephrology Core Conference
- Monthly Nephrology Journal Club
- Monthly Nephrology Grand Rounds
- Monthly Fellows Pathology Conference
- Monthly Renal Biopsy Conference
- Dialysis Care Plan Conference
- Monthly Clinical Transplant Conference
- Institutional Research Conference
- Weekly Pulmonary Grand Rounds
- Pulmonary Case Conferences (twice per month)
- Weekly Critical Care Journal Club
- Monthly Rad-Path Conference
- Monthly Research-in-Progress Conference
- Monthly Pulmonary Journal Club
- Family Medicine Lecture Series (schedule varies)

Fellows will present at the Pulmonary Case Conference and/or Pulmonary Journal Club as directed by the attending. They will provide appropriate state-of-the-art articles on patient management germane to cases.

PCCM Fellows will examine own practice for errors and quality of care, conformance with evidence-based standards of care. When error is recognized, they write a formal review of the case and how to avoid the error in the future.

INTERPERSONAL AND COMMUNICATION SKILLS

PCCM fellows will develop interpersonal and communication skills that result in an effective information exchange with patients, patient families, and professional associates.

- 1) Develop methods for appropriately communicating with referring physicians.
- 2) Learn to concisely and accurately communicate clinical information both in verbal and written form. They will communicate information to patients and family members clearly and compassionately in order to create and sustain a therapeutic and ethically-sound relationship.
- 3) Faculty will serve as role models during bedside rounds, during teaching sessions, and during clinic encounters.

PROFESSIONALISM

PCCM fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. They are expected to coordinate the team's activities (within the constraints of the above schedule) and provide timely updates, as appropriate and required, to the attending faculty member. They are to fulfill a surrogate leadership role with residents in the absence of the pulmonary attending.

SYSTEMS-BASED PRACTICE

PCCM fellows will be able to use the interdisciplinary resources available, including nurse case management, physical therapy, outpatient rehabilitation, and occupational therapy to effectively call on system resources to provide care that is of optimal value. They will also attend weekly multidisciplinary vent-weaning rounds.

SELF-LEARNING METHODS

www.uptodate.com (free via ECU Laupus Library homepage)

LexiDrugs via uptodate

Micromedex via PCMH homepage

MDCConsult via PCMH homepage

www.hdcn.org (logon/password = ecukidney/library)

<http://www.kidneyatlas.org/>

<http://svch.blogspot.com/2004/07/procedure-skills-and-acls-refresher.html>

<http://www.site-rite.com/products.html>

<http://www.fleshandbones.com/readingroom/pdf/947.pdf>

http://medicine.ucsf.edu/housestaff/handbook/HospH2002_C15.htm

http://www.kidneyatlas.org/book1/adk1_08.pdf

<http://content.nejm.org/cgi/reprint/334/22/1448.pdf> logon/password = ecukidney/library

<http://www.e-dialysis.org/> (click on "education" for ISPD courses online)

<http://www.kidney.org/professionals/kdoqi/guidelines.cfm>

<http://www.ispd.org/guidelines/articles/update/index.html>

<http://crrtonline.com/>

ASSESSMENT

PCCM Fellow Evaluations:

The fellow will be evaluated in written form at the end of each monthly rotation by the Nephrology faculty. These evaluations will then be reviewed by the fellow quarterly with the Program Director.

Pulmonary Rotation Evaluation:

The fellows evaluate the nephrology service and the attendings in written form at the end of each month. These evaluations are reviewed by the program director with feedback to attending staff as needed.