PULMONARY/CRITICAL CARE FELLOWSHIP CURRICULUM

I. Background

The Pulmonary/Critical Care fellowship at The Ohio State University Medical Center is a three-year program administered through the Ohio State University School of Medicine and run by the Division of Pulmonary, and Critical Care Medicine. The program is designed to be in accordance with the guidelines set forth by the ACGME and the ABIM to guarantee that all individuals completing the entire three-year program will be eligible for board certification in both pulmonary and critical care medicine.

II. Goals and Rationale

The goal of the Pulmonary/Critical Care fellowship training program is to prepare fellows for a career in Pulmonary and Critical Care Medicine (CCM) by providing extensive clinical training, basic or clinical research experience, and teaching responsibilities. The fellow will develop these skills in an environment of scholarship and inquiry. The graduating fellow will possess the cognitive knowledge, procedural and interpersonal skills, professional attitudes and practical experience required to become a practicing pulmonologist/intensivist.

The successful Pulmonary/CCM academician must possess a broad variety of skills that will be provided by the fellowship training program. Trainees will develop experience and expertise in the diagnosis and management of a diverse spectrum of patients with disorders referable to the disciplines of Pulmonary and CCM. This experience and expertise will be acquired by the trainee under the supervision of attending faculty through the management of patients in primary care and consultative roles in diverse inpatient and ambulatory settings. The trainee will acquire skills in basic or clinical investigation by conducting research in a structured and supervised environment. These clinical and research experiences will be supplemented by numerous conferences and didactic lectures.

III. Structure

The fellowship program encompasses 18 months of research time and 18 months of clinical time. The first year of the fellowship program emphasizes clinical training. The other two years of training emphasize research punctuated with an additional six months of clinical training (3 months per year). The clinical track fellows spend 6 months working on a research project in each of their second and third years of training. All fellows spend one half day per week in an outpatient pulmonary continuity clinic for 36 months of their training.

IV. Clinical Curriculum

The clinical curriculum is composed of 18 months of clinical rotations. Each rotation is one month in length. Fellows may undertake some rotations more than once to increase exposure to certain types of pulmonary and critical care patients. These rotations are performed at The Ohio State University Hospital, Ohio State East Hospital, and The Arthur James Cancer Hospital. The fellows' schedules are devised to ensure that each fellow meets the requirements for board eligibility in both pulmonary and critical care medicine, completing six months of training in pulmonary rotations, six months of training in critical care rotations and six months of rotations with components of both pulmonary and critical care medicine. In fulfilling these requirements, fellows rotate on services that provide both primary and consultative patient care experiences.

A. Type of Rotation

Rotations involving primary patient care

1. OSU University Hospital MICU
2. OSU University Hospital SICU
3. OSU Ross Heart Hospital Consult Service (cardiology/surgery)

Rotations involving consultative patient care

1. OSU Hospital Pulmonary/Critical Care Consult Service
2. OSU James Cancer Hospital Consult Service
3. OSU East Pulmonary Consult Service
4. OSU Ross Heart Hospital Consult Service

B. Program Content for Pulmonary/Critical Care Fellowship

Required Clinical Topics to be covered during the fellowship training period (taken from ACGME/ABIM recommendations)

1. Pulmonary Disease
   a) Obstructive lung diseases including asthma, bronchitis, emphysema, bronchiectasis and cystic fibrosis.
   b) Pulmonary malignancy including primary lung cancers and metastatic tumors.
   c) Pulmonary infections including tuberculosis, fungal and those in the immunocompromised host.
   d) Interstitial lung disease.
   e) Pulmonary vascular disease including primary and secondary pulmonary hypertension and the vasculitis and pulmonary hemorrhage syndrome.
   f) Occupational and environmental lung diseases.
   g) Iatrogenic respiratory diseases including drug-induced disease.
   h) Acute lung injury including radiation, inhalation and trauma
   i) Pulmonary manifestations of systemic diseases, including collagen vascular diseases, which are primary in other organs.

j) Respiratory failure including the adult respiratory distress syndrome, acute and chronic respiratory failure in obstructive lung diseases and neuromuscular respiratory drive disorders.
k) Disorders of the pleura and mediastinum.
l) Genetic and developmental disorders of the respiratory system.
m) Sleep disorders.

2. Pulmonary Disease Procedural Competency Requirements.
   a) Establishment of airway
   b) Maintenance of open airway in nonintubated, unconscious, paralyzed patients.
   c) Oral and nasotracheal intubation
   d) Breathing, ventilation
      - Ventilation by bag or mask
      - Mechanical ventilation using pressure cycled and volume cycled mechanical ventilators
      - Use of reservoir masks and CPAP masks for delivery of supplemental oxygen, humidifiers, nebulizers and incentive spirometry
      - Weaning and respiratory care techniques
      - Management of pneumothorax (needle insertion and drainage systems)
   e. Maintenance of circulation
      - Arterial puncture and blood sampling
      - Insertion of central venous, arterial and pulmonary artery balloon flotation catheters
      - Basic and advanced cardiopulmonary resuscitation
      - Cardioversion
   f. Pulmonary function tests to assess respiratory mechanics, gas exchange and respiratory drive, including spirometry, flow-volume studies, lung volumes, diffusing capacity, arterial blood gas analysis and exercise studies.
   g. Diagnostic and therapeutic procedures including thoracentesis, pleural biopsy, flexible fiberoptic bronchoscopy and related procedures.
   h. Calibration and operation of hemodynamic recording systems.
   i. Examination and interpretation of sputum, bronchopulmonary secretions, pleural fluid/tissue, and lung tissue for infectious agents, cytology and histopathology.

3. Interpretative skills for:
   a. Chest roentgenogram
   b. Computed axial tomograms
   c. Radionuclide scans
   d. Pulmonary angiograms
   e. Sleep studies

4. Monitoring and Supervising:
   a. Critical care units
   b. Pulmonary function laboratories
   c. Respiratory physical therapy and rehabilitation services

d. Respiratory care techniques and services

5. Clinical competence to perform:
   a. Inhalation challenge studies
   b. Chest tube insertion and drainage

6. Critical Care Medicine, areas of clinical competency:
   a. 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 disease.
   b. Electrolyte and acid base physiology, pathophysiology, diagnosis and therapy.
   c. Metabolic, nutritional, and endocrine affects of critical illnesses.
   d. Hematologic and coagulation disorders secondary to critical illness.
   e. Critical obstetric and gynecologic disorders.
   f. Management of the immunosuppressed patient.
   g. Management of anaphylaxis and acute allergic reactions.
   h. Trauma.
   i. Pharmacokinetics, pharmacodynamics, drug metabolism and excretion in critical illness.
   j. Use of paralytic agents.
   k. Ethical, economic and legal aspects of critical illnesses.
   l. Psychosocial and emotional affects of critical illnesses.
   m. Iatrogenic and nosocomial problems in critical care medicine.
   n. Personal development, attitudes and coping skills of physicians and other health care professionals who care for critically ill patients.
   o. Biostatistics and experimental design.
   p. Occupational Safety and Health Administration regulations and universal precautions, and protection of health care workers.

7. Know the indication, limitations, complications and technical skills needed for:
   a. Parenteral nutrition
   b. Monitoring/bioengineering including
      i. Utilization, zeroing, calibration of transducers
      ii. Use of amplifiers and recorders

8. Know the indications, limitations, contraindications and technical skills needed for:
   a. Pericardiocentesis
   b. Transvenous pacemaker insertion
   c. Peritoneal dialysis
   d. Peritoneal lavage
   e. Aspiration of major joints
   f. Percutaneous needle aspiration and/or cutting lung biopsy
   g. Endobronchial cryotherapy and/or laser therapy
   h. Intracranial pressure monitoring

9. Analysis of data pertaining to the following:

a. Cardiac output determination by thermodilution
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

V. Research Experience

Each fellow will be allotted protected time to conduct a research project under the supervision of a faculty mentor. Clinical responsibilities during the research project will largely be limited to one-half day per week outpatient clinic and weekend call approximately once per month.

1. Goals

   Under the direction of a faculty research mentor, the fellow will learn the design, conduct and interpretation of research studies including research methodology. Evidence of completion of a given project will be presentation of an abstract at a regional or national meeting and authorship of a publication stemming from the research. The fellow will also be required to present their findings at the Pulmonary/CCM Research conference once per year. In addition to learning to give scientific presentations and write a scientific publication, the fellows should also become familiar with the process of writing research grants. The fellows are not required to obtain their own grant funding, but they should be involved in the application for grant funds made by their mentors. It is important for the fellows to become involved in and understand all the facets of academic research so they will be prepared to pursue a career in academic medicine.

2. Teaching Methods:

   The structure of the fellow's research experience will vary according to the individual fellow's research interests. The fellow, in conjunction with their research mentor, is responsible for designing a specific research project. This should include a written set of specific goals and a time-line for completion of the project within the given amount of research time available to the fellow. The fellow and their mentor should periodically review these goals and the fellow's progress. Research methodology and interpretation will be learned first hand through the performance of experimental studies. These experiences will be supplemented by attendance at a variety of clinical and research conferences that will assist the fellow in understanding the broader implications of their research findings. In addition, fellows may elect to participate in structured educational experiences to gain additional skills.

   A formal evaluation of the research progress of the fellow will be made twice per year by an outside committee made up of faculty researchers who are not involved in the given fellow's project. The pulmonary

fellowship director and the division director will be members of this committee.

VI. Responsibilities on Clinical Rotations

A. Faculty

The attending faculty member on pulmonary and critical care rotations is responsible for supervision of the fellows as well as other trainees on the service. In general, the attending physician allows the fellow and housestaff physicians to conduct their work rounds on a daily basis without faculty supervision. Once the "team" has completed their work rounds, the faculty physician will make management rounds with the team, confirming the findings of the trainees and revising care plans as necessary to efficiently implement patient care. Teaching rounds with the fellow and other members of the medical team will be conducted by the supervising faculty or another faculty member on a daily basis (with 4-5 hours teaching rounds per week). The specific topics to be covered will encompass both a predetermined curriculum as well as topics related to the medical problems present in the patients on the service. Specific teaching duties will be assigned by the attending to the fellow on service and will include specific didactic lectures, supervision of procedures by residents and medical studies, and bedside teaching of the residents and medical students. Furthermore, it is the responsibility of the supervising faculty to orient all team members to the rotation, clarify responsibilities among team members as necessary, and review written curricular goals with all members of the team.

The attending physician is also responsible for supervising all procedures performed by the pulmonary fellow including bronchoscopies, pulmonary artery catheterizations, pleural biopsies, line placements, intubations, thoracenteses, etc.

The attending physician maintains responsibility for evaluating the competency and clinical abilities of the pulmonary fellow on service. The attending physician should point out any weaknesses or deficiencies early in the rotation to give the fellow a chance to address the problem. Any major deficiencies should be brought to the attention of the program director. The attending physician is also responsible for completing a formal written evaluation of each fellow at the end of rotation.

B. Fellows

1. Primary Care Rotations

The fellow is responsible for rounding daily with the residents and students assigned to the service prior to staffing rounds. The fellow will have significant input in the management of all patients. During staffing round, the fellow should be able to provide staff physician with all pertinent patient information and elucidate a management plan for each patient.

The fellow will see all the patients on the service on a daily basis. This would include interviewing the patient, physical examination of the patient, reviewing pertinent laboratory and diagnostic studies, and formulating a care plan. These findings will be recorded in the medical chart by the housestaff (fellows are not required to write daily notes). The fellow will also be responsible for directing the residents and students in the day-to-day care of the patients. The attending physician will round daily with the team and provide additional input/teaching (as described above). The findings, assessment and plan recorded by the housestaff in the patient's chart will be reviewed by the attending physician and amended as needed or confirmed by cosignature. The fellow will also be required to take call for the service at night and on weekends. The fellow will be allowed to take at least two weekends per month off with the service being covered by another fellow. Call schedules will be arranged at the beginning of the academic year.

2. Consultative Rotations
   On services where the fellow will be part of the a consultative team, the fellow will be responsible for seeing all new consultations prior to staffing rounds with the attending physician. The fellow will be responsible for doing a complete history and physical examination and reviewing all pertinent test results. The fellow should formulate an assessment and plan for each patient and record this in the medical chart. All patients will be seen by the pulmonary staff physician who will review the fellow's plan and provide feedback regarding the appropriateness of the fellow's plan. The fellow will be responsible for performing or supervising all diagnostic pulmonary procedures (thoracentesis, pleural biopsy, bronchoscopy, etc.) required for evaluation of the patient.

   While on the consultation rotations, the fellow will be responsible for reading all PFT's and cardiopulmonary exercise tests performed at that hospital. The interpretations will be reviewed with the attending physician on a daily basis.

3. Progressive Responsibility
   As fellows progress through each year of the program, they will assume increasing responsibility in several areas. The level of supervision provided to a fellow will gradually lessen as the fellow progresses through the program at a rate that is dependent on the skills and accomplishments of the individual fellow. In the outpatient setting, this may involve the assessment and management of greater numbers of patients for more senior fellows. Senior fellows will assume enhanced administrative responsibilities by participating in critical care committees and by serving as advisors to first year fellows. A senior fellow is also designated as a Chief Fellow with responsibilities for organizing conference and call schedules, and serving on the fellowship committee. Second and third year fellows are required to submit their research findings in abstract and manuscript form and present their findings at the weekly Pulmonary/CCM Research conference. Overall for the content of

the educational program and goals the expectations for progressive responsibility are outlined below:

	F1	F2	F3
Rotation	**Depends on regular faculty input**	**Relies on occasional faculty input and correction**	**Functions almost independently.**
Procedures	**Faculty supervision** **Depends upon regular faculty input** **Not independent**	**Faculty supervision for bronchoscopy and others not yet deemed proficient** **Occasional faculty input** **Qualifies for independent competency**	**Faculty supervision for bronchoscopy** **Functions almost independently**

4. Professionalism.
   An important aspect of subspeciality training includes the development by trainees of professional standards of conduct manifest by a broad variety of behaviors including: putting the interests of one's patients ahead of one's self-interests, commitment to scholarship, community service, etc.

VII. Clinical Rotations

A. Rotations with primary patient care responsibilities

For each of these rotations the fellow will be teamed with an attending physician(s) and in some cases with a team of residents, interns and/or medical students. The responsibilities of individual team members are well defined above (VI. Responsibilities on Clinical Rotations).

1. Educational Goals
   These rotations involve care for patients admitted or transferred to the ICU/pulmonary services at OSU University Hospital, OSU Ross Heart Hospital, OSU East Hospital or the Arthur James Hospital. The services census is variable between 10-15 patients. All aspects of pulmonary and critical care medicine are seen on these services, although there is a tendency toward patients with complex or uncommon pulmonary problems due to the fact that all of these hospitals are referral centers for the state of Ohio. The educational goals of these services are for the fellows to gain experience in the diagnosis and management of the clinical topics listed on pages 2-5 above. During the course of the rotation, the fellow will be exposed to patients with some, but not all, of the listed diagnoses. This is especially true for uncommon pulmonary diseases. It is anticipated that over the course of an entire fellowship period, each fellow will have had the opportunity to be involved in the care

and management of patients spanning the entire spectrum of pulmonary disease. In addition, the fellows will participate in didactic conferences (see conference schedule) where issues pertinent to the diagnosis and treatment of these disorders will be discussed.

2. Teaching Methods
The attending physician on service will be primarily responsible for the teaching of the fellow. Teaching will be performed using a variety of methods including daily bedside rounding with discussion of pertinent patient findings, daily review of roentgenogram with discussion of pertinent radiologic findings, and daily teaching rounds on which discussion of current or past patients will be augmented with recent reviews of similar cases/findings from the medical literature. The attending physician will be expected to direct the fellow to outside sources of information, which the fellow can then utilize to further his/her own knowledge base.

The pulmonary fellow will be expected to augment his/her own knowledge of pulmonary medicine through reading of current textbooks and review of recent medical journals. Current pulmonary, critical care and internal medicine textbooks are available in the medical library which is accessible on-line from computers at readily available computers in each hospital and in the fellows' office. In addition, an on-line fellow's curriculum is readily available on the local server with access from any of the hospital network computers including those in the fellow's office. The fellows have access to literature searching software and numerous on-line databases through these libraries.

3. Procedures
The fellow will also be responsible for performing a variety of pulmonary and critical care procedures under the direct supervision of a pulmonary faculty member. The fellow should learn the performance and the indications for the procedures listed on pages 3-5.

In addition to competency in performing the above procedures, it is also essential for the fellow, through review of the pertinent medical literature, to learn the cost effectiveness, diagnostic sensitivity and risk: benefit ratios for each of the procedures. The fellows will be required to keep a record of all procedures performed. The written log will contain the patient name, diagnosis, indication for procedure, complications and the name of the supervising faculty member. This record will be evaluated periodically during the fellow's training period.

B. MICU/SICU Patient Care Rotations
The fellows assigned to these rotations will be part of a large, often multidisciplinary, patient care team including attending physicians, residents, interns, medical students, nurses, respiratory, physical and occupational therapists, dietitians and social workers. The patients on these rotations have a wide variety of medical and surgical problems. OSU University Hospital is a level I trauma centers and have specialized

burn units. OSU University Hospital is a referral center where a large number of complex medical and surgical patients are transferred from throughout the state of Ohio. Therefore the fellows will see a variety of patients throughout these rotations.

1. Educational Goals
   In order to become truly competent in critical care, the fellows will be expected to achieve a great breadth of knowledge to care for the wide variety of problems encountered in the ICU. These critical care rotations will allow the fellows to become clinically competent in the areas listed on pages 3-5 above.

2. Teaching Methods
   The teaching methods outlined above will also be utilized on the ICU rotations. However, a larger portion of the teaching done on a critical care rotation is done at the bedside in the ICU. Therefore, it is likely that on these rotations, informal bedside teaching will take up more time than formal teaching rounds or didactic lectures.

   The attending physicians will work closely with the fellows so that the fellows will gain competence in the analysis of clinical data pertaining to:

   1. Cardiac output determination by thermodilution
   2. Evaluation of oliguria
   3. Management of massive transfusions
   4. Management of hemostatic defects
   5. Interpretation of antibiotic levels and sensitivities
   6. Monitoring and assessment of metabolism and nutrition
   7. Calculation of oxygen content, intrapulmonary shunt and alveolar arterial gradients
   8. Pharmacokinetics.

3. Procedures
   Invasive procedures are also an important component of critical care. As part of their training, the fellows will learn the indications, contraindications and relative risks for the following procedures. During critical care rotations, the fellows will be expected to gain competency in the following procedures.

   1. Endotracheal intubation
   2. Set up and initiation of mechanical ventilation
   3. Percutaneous cannulation of arteries (radial, femoral, axillary)
   4. Percutaneous cannulation of veins (subclavian, internal and external jugular, femoral)
   5. Placement of pulmonary artery catheters
   6. Thoracostomy tube insertion
   7. Cardioversion
   8. Basic and advanced cardiac life support

In addition to gaining competence to perform the above procedures, the fellows should become familiar with indications for each of these procedures, although clinical competence is not required.

1. Pericardiocentesis
2. Transvenous pacemaker insertion
3. Peritoneal dialysis
4. Peritoneal lavage
5. Aspiration of major joints
6. Percutaneous needle aspiration and/or cutting lung biopsy
7. Endobronchial cryotherapy and/or laser therapy
8. Intracranial pressure monitoring

C. Pulmonary Rotations with Consultative Care Responsibilities

A great deal of the practice of pulmonary medicine involves consultative medicine. Pulmonary consultation services are available at each of the major hospitals in our program. In general, these involve inpatient consultations on patients who are on acute care wards, being evaluated in outpatient clinics, or are in an ICU. Through these rotations, the fellows will develop the skills necessary to manage patients with pulmonary problems in addition to other medical or surgical problems. The fellows will also learn the importance of developing a good working relationship with physicians from other hospital services.

1. Educational Goals

   The fellows will become familiar the manifestations, diagnosis and treatment of the disease processes listed on page 2-4 as they present in the context of other disease processes. In addition, the fellows will need to develop effective communication skills and practice the principles of professionalism in dealing with other physicians.

2. Teaching Methods

   Teaching methods for these rotations will be similar to those outlined under VII. A.2, “Teaching methods for pulmonary rotations with direct inpatient care responsibilities.” The faculty attending physician will be the leader of the consultation team and will be responsible for teaching the fellows the “art” of pulmonary consultation. This will involve additional emphasis on recognition and diagnosis of pulmonary disease in patients with other medical/surgical problems, as well as demonstrating the communication skills and professional behavior necessary to inform referring physicians of the nature and severity of the pulmonary condition of their patient.

3. Procedures

   The pulmonary fellow will learn the indication, contraindications and relative benefits for the following procedures which are commonly ordered as part of an inpatient pulmonary consultation: bronchoscopy, thoracentesis, closed pleural biopsy, pulmonary function testing, and overnight sleep studies. All procedures and interpretation of results will be supervised by a pulmonary faculty member.

VIII. Outpatient Clinic Responsibilities

The fellows will participate in a minimum of one half day per week pulmonary clinic throughout their fellowship training. First and second year fellows will complete 24 consecutive months of ½ day per week general pulmonary continuity clinic under the supervision of a single faculty member. In addition, all first year fellows have a mandatory one month ambulatory subspecialty clinic experience which includes seven half days of clinic per week in the various sub-specialty clinics and ½ day per week in his/her own continuity clinic. For this month, the fellows must attend clinics in pulmonary hypertension, cystic fibrosis, lung cancer, and lung transplantation. Others are optional.

Third year fellows will rotate through sub-specialty clinics of their choice in two six-month blocks. The first six-month block will include ½ day per week of the chosen subspecialty clinic. The second six-month block will include two half days per week in two different subspecialty clinics (for a combined total of 3 subspecialty clinic blocks), and should occur at a time when the fellow has no competing clinical service assignments.

General pulmonary outpatient clinic experiences will be available at the outpatient clinic center and outreach clinic sites. Sub-specialized clinic opportunities include sleep disorders, COPD, adult cystic fibrosis, asthma, sarcoidosis, interstitial lung disease, interventional pulmonology, pulmonary hypertension, lung transplant, allergy and immunology, lung cancer, and pulmonary rehabilitation.

1. Educational Goals

   The goals of the outpatient clinic experience are for the fellows to gain experience in the outpatient evaluation, diagnosis and treatment of the disease processes listed on pages 2-3. In addition, the fellows will learn how to work as part of a multidisciplinary pulmonary care team in the outpatient setting. This team will include nurse practitioners, advance practice nurses, respiratory therapists and physician assistants.

2. Teaching Methods

   The continuity clinic assignment will continue for 24 months and during this time, the fellow will see his/her own group of patients for both initial evaluation and follow-up. The fellow will work with one faculty member during this time, and he/she will be responsible for supervising the care provided by the fellow. Similarly, during the six-month subspecialty blocks, the fellow will work directly with the attending who will supervise all care that is provided by the fellow.

   The fellow will present each patient to the faculty member and get feedback regarding the specific diagnostic and treatment plan formulated by the fellow. The faculty will review the fellow's care plan and offer suggestions, if necessary, to improve the care of the patient. The faculty members will also be responsible for giving short didactic sessions to the fellow in clinic on subjects pertinent to the care of the patients seen.

3. Clinical Responsibilities
   During their outpatient continuity clinic experience, the fellow will be the primary pulmonary care provider for his/her own group of patients under the supervision of a pulmonary faculty member. The fellow will see both new and return patients and will be responsible for all aspects of their ongoing evaluation and management. This will include providing either written or dictated notes on each patient and providing necessary communication to referring physicians in a timely manner. On average, the fellow will be responsible for 1-4 new patients and 2-4 return patients per half-day clinic session.

   During the subspecialty clinic rotations the fellow will act as the primary provider of patient care but will work very closely with the sub specialty attending physician to discuss any and all patient care issues.

   Fellows are excused from clinic when rotating in the surgical intensive care unit and when participating in cardiovascular and thoracic surgery rotations. When absent from clinic or when the fellow is out of town for vacation or conference attendance, he/she is responsible for identifying a physician to provide coverage for all patient care issues.

IX. Conferences

There are several pulmonary specific conferences scheduled each week, which cover both clinical practice and research topics. All the fellows attend these conferences. Fellows must attend at least 60% of conferences over the 3 year fellowship in order to be eligible for graduation. The overall goal of our conferences is to foster learning and engender discussion about topics pertinent to the practice of pulmonary/critical care/sleep medicine. We strongly believe in teaching based on the principles of evidence-based medicine, defined as the integration of best research evidence with clinical expertise and patient values. Our conferences include:

Monday
1200 Radiology Conference (2nd Monday)
Sleep Conference (1st Monday)
Career Conference (3rd Monday)
Clinical Physiology Conference (4th Monday)

Tuesday
1200 Multidisciplinary Case Conference

Wednesday
1200 Sub-Subspecialty Clinical Conference (1st Wednesday)
Journal Club (2nd Wednesday)
Sub-Subspecialty Clinical Conference (3rd Wednesday)
MICU M&M (4th Wednesday)

Thursday
0730 Internal Medicine Grand Rounds
1200 Pulmonary Research Conference

Friday
1200 Pulmonary Didactic Session (1st Friday)
0730 Pulmonary Grand Rounds (2nd Friday)
1200 Critical Care Didactic Session (3rd Friday)
1200 Pulmonary Noon Report (4th Friday)
1600 ILD Case Conference @ OSU East (1st and 3rd Friday)

The Monday **Radiology Conference** is a joint conference with the Department of Radiology, specifically with Dr. Melissa Rosado. Case history and radiographs are reviewed for select topics as well as select patients.

The Monday **Sleep Conference** will include didactic sessions and case presentations. A full range of sleep disorders will be discussed, and pertinent PSG/MSLT tracings will be reviewed.

The Monday **Career Conference** is an informal forum devoted to review key aspects of building a successful career in pulmonary/critical care medicine.

The Monday **Clinical Physiology Conference** is devoted to reviewing basic physiology as it applies to everyday practice of pulmonary/critical care medicine.

The Tuesday **Multidisciplinary Chest Conference** is a case based conference with typically 2 cases being presented by either pulmonary staff or a pulmonary staff and a fellow

Wednesday's **Sub-Subspecialty Clinical Conference** is a multi-format conference focused on topics related to the clinical management of sub subspecialty patients such as allergy, asthma, COPD, cystic fibrosis, interstitial lung disease, interventional pulmonology, lung cancer, pulmonary hypertension, pulmonary transplantation, sarcoid and sleep medicine.

Wednesday's **Journal Club** is organized by the Chief Fellow with a faculty mentor (Scott Aberegg). Recent publications pertinent to pulmonary and critical care medicine are reviewed. The goal of this exercise is to teach fellows how to critically review research articles, and will utilize the JAMA criteria on reviewing the medical literature. Particular attention will be given to review of clinical trials in regard to study design and statistical analysis. The fellows will be expected to learn the principles of study design, power analysis, statistical comparison of parametric and non-parametric measures, confidence intervals, relative risk, and life table and survival analysis. The fellow will also gain experience in different methods of data presentation and the applicability of medical research to patient care.

Wednesday's **MICU M&M Conference** is conducted by the MICU director and will review the previous month's MICU activity. Adverse events will be discussed with discussion of solutions and prevention of future events.

The Thursday **Research Conference** is organized by the Chief Post-Doctoral Fellow and is devoted to updates on both clinical and basic science research. Speakers are

from within the Pulmonary/CCM division, from other departments on campus and from other universities. The fellows will be expected to present their research once per year.

Internal Medical Grand Rounds, held weekly, includes reviews of topics pertinent to both Pulmonary and Critical Care Medicine.

The Friday **Pulmonary and Critical Care Didactic Conferences** are organized by the Chief Fellow (with guidance from the program director) and involve a set series of rotating topics specified by the program director, and conforming to the ACGME topic requirements over a three year period. There are didactic lectures given on a variety of pulmonary and critical topics given by faculty from both Pulmonary/CCM division as well as other departments on the medical center campus.

Friday morning's **Pulmonary Grand Rounds** are usually given by visiting professors. This conference is often attended by pulmonary/critical care physicians from the Columbus area.

Pulmonary Noon Report is held on the 4th Friday of the month and is an informal clinical conference where the consult fellows discuss current interesting cases being cared for on the consult service ("what's in your pocket") or specific management issues regarding difficult or interesting cases. Faculty can also present cases for input or discussion.

Interstitial Lung Disease Case Conference is a weekly multi-disciplinary case conference held at OSU East where cases and management of ILD patients are discussed (it is not required).

Reading List for Pulmonary and Critical Care Medicine
www.thoracic.org/go/atsreadinglist.

The Department of Medicine provides a web-based independent learning seminar that encompasses topics in the areas of business of medicine, ethics, communication, health care policy, practice plans and other areas which help round out the fellows clinical and research training. Completion of this core educational series by the end of the first year is required. Two modules, sleep deprivation and physician impairment, are mandatory per OSU Medical Center's policy. This series can be accessed at the following web site: http://ccme.osu.edu

X. Evaluation

A. Evaluation of fellows

1. By Supervising faculty
   The fellows will be evaluated on a monthly basis by their attending faculty member while they are on clinical rotations. These evaluations, which involve completion of ABIM forms via the E*Val electronic evaluation system, will be kept on file in the fellowship director's office. Categories of performance that will be assessed will include (but are not limited to):

medical knowledge, the quality of medical care provided, history-taking and physical exam skills, medical decision making, proficiency at technical procedures, humanistic qualities and professional attitude. Each faculty member will discuss their evaluation with the fellow at the end of the rotation providing constructive criticism or praise in the variety of performance areas mentioned above. The fellows will also be evaluated by their outpatient clinic staff and their research mentors on a regular basis. All of these evaluations will be discussed with each fellow when they meet with the fellowship director every six months.

2. By the program director
   Twice a year, the program director will meet with each fellow to review their performance and progress since their previous evaluation. A form documenting the content of this review will be completed and placed in each fellow's file. At the program director's discretion, should review and assessment of a fellow's performance be deemed unsatisfactory, more frequent evaluation may be performed, or other individuals may be involved in the review process e.g. the Director of Pulmonary/CCM Division, the members of the Pulmonary/CCM Education Committee, The Director of the Internal Medicine Residency Program, The Chairman of the Department of Medicine or other faculty as needed. Each fellow will receive a copy of the "end of year" evaluation done by the program director.

3. By research mentors
   During the performance of their research projects, each fellow will be evaluated in writing by their preceptor annually.

4. By the research mentor committee
   Each fellow is assigned a research mentor committee that meets at least quarterly. The Fellow is responsible for arranging these meetings and for taking minutes of the meetings which also serve to provide the fellow with face-to-face feedback on their research progress and goals.

5. By outpatient clinic mentors
   Supervising faculty in outpatient clinics will be required to perform written evaluations of the fellow in their clinic annually over the course of the three year outpatient clinic experience. In addition, it is recommended that verbal feedback/evaluation should be provided to the fellows every two to three months as they progress in their outpatient clinic.

6. By the Department Chairman
   Annually, the program director will prepare a report for the Chairman of the Department of Medicine to summarize the performance evaluations of fellows by their supervising faculty, and the evaluations of the faculty by the fellows. In extraordinary cases of deficient performance by either the fellow or the faculty, the Director of the Division of Pulmonary and Critical Care Medicine, The Director of the Internal Medicine Residency Program, as well as the Chairman of the Department of Medicine will be consulted.

B. Evaluation of faculty by the fellows
The fellows will evaluate their individual attending faculty on a monthly basis. Anonymous summaries of these evaluations will be made available to both the individual faculty members as well as the division director.

C. Evaluation of the curriculum and the training program
The program director will meet formally with fellows individually or as a group at any time to assist trainees with personal or professional issues or to address deficiencies or problems in the training program. Fellow meetings will be held monthly to discuss issues pertinent to all fellows and to devise mechanisms to address problems in the training program. At each formal meeting with the program director, directed feedback from the fellow will be requested to enhance the quality of the training program and curriculum. This feedback from the fellows will be periodically reviewed by the Pulmonary/Critical Care Division Education Committee composed of both faculty and fellow representatives.

D. 360 Degree Evaluation
While in the MICU, the fellow will also be evaluated by the MICU nursing staff that will complete a composite evaluation.

XI. Miscellaneous (please see "Policies" for more detailed information)

A. Vacation Policy
Pulmonary fellows are allowed up to three weeks (15 days) of paid vacation annually. This vacation should be taken either during elective rotations, OSU MICU rotations, or while the fellow is on a research month. Vacations that are taken on elective rotations should not last more than two weeks, written permission from the Fellowship Director is required for any vacation period longer than 2 weeks.

B. Travel Policy/Educational Fund
Pulmonary fellows are encouraged to submit abstracts for presentation at national meetings**. The Pulmonary Division will pay travel expenses (up to $1200/trip) for fellows to attend one national meeting per year whether they are presenting or not. Fellows can attend a second meeting if they have a presentation (pending available funds).** When the fellow is making a presentation at a national meeting it is expected that the fellow's research mentor will pay for the fellow's travel to this meeting. The pulmonary division may pay for these expenses as requested by the mentor and the fellow in writing to the Division Chief. **Fellows assigned to clinical rotations must have coverage for the service in order to attend a national meeting.** Coverage arrangements are the responsibility of the fellow and must be approved by the Chief Fellow and the attending of the service must be informed of any changes. Fellows are limited to a maximum of two meetings per academic year unless approved by the Division Chief.

Depending upon available funds, fellows will receive an educational fund. This is the fund where travel monies will be housed and there may be additional monies available for other educational resources such as books, etc. Each year this account's value will be revised pending divisional resources.

C. ACLS/ATLS

All pulmonary fellows must have a current certification in ACLS. ACLS classes are offered several times per year at OSU. All first year fellows must obtain certification in ATLS. The Pulmonary Division will pay for these classes (all costs must be approved by the Fellowship Director prior to course enrollment).

D. Moonlighting

Fellows are not to undertake moonlighting responsibilities while on clinical service or while cross-covering during the weekends. Any exceptions to these restrictions must be pre-approved by the program director and the supervising staff must be notified. Violations of this policy may result in suspension or termination.

Moonlighting must conform to the Moonlighting policy of the Ohio State University and the fellows must submit in writing their plans for moonlighting. All moonlighting must be approved by the fellowship director. Unauthorized moonlighting may result in suspension or termination.

E. Internal Medicine Board Certification

All fellows are required to have taken and successfully completed internal medicine boards by the completion of the third year of fellowship. Failure to successfully pass internal medicine board examination will result in the fellow being ineligible to sit for board certification in pulmonary or critical care medicine.

Attachments available on-line

Primary Research Mentor Statement
Research Training Schedule
Research Training Goals
Individual Rotation Curriculum Outline
Individual Rotation Fellow Responsibilities Outline
Basic Bronchoscopy competency protocol
Interventional Bronchscopy competency protocol

Revised 12/07 jgm