Pulmonary Disease and Critical Care Medicine Unit

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Preface

The Pulmonary and Critical Care Medicine division is proud to welcome you into our fellowship training program. The University of Vermont has a long tradition of training outstanding academic and clinical pulmonary physicians and intensivists. Our alumni are spread throughout the country in academia, private practice, and industry.

Today marks the real beginning of your career. You can anticipate that your training will be exciting, mentally stimulating, intriguing and challenging. We hope that you will find it to be as personally and professionally rewarding as we have. Stretch your mind and body with us, and you will be well served for your future. The faculty is committed to your education and to you as an individual.

Anne E. Dixon, M.D  
Professor of Medicine  
Director, Pulmonary and Critical Care Medicine Unit

David A. Kaminsky, MD  
Professor of Medicine  
Director, Pulmonary and Critical Care Medicine Fellowship Program

Benjamin T. Suratt, MD  
Professor of Medicine  
Associate Director, Pulmonary and Critical Care Medicine Fellowship Program
Pulmonary Disease and Critical Care Medicine Unit

Introduction

Enclosed in this notebook you will find the outline of your 3-year curriculum and general guidelines for your entire fellowship program. Details of the educational program are located in Section Four. This book should serve as a reference point and as a place to keep your personal documentation.

It is expected that each fellow attend all conferences that are listed on the monthly-published calendar. Twice yearly individual evaluations of fellow performance will be conducted by the program director. You will also be expected to evaluate the faculty and the training program. Over the three-year period of training, fellows will be expected to have increasing responsibility for patient care and involvement in administrative tasks.

Pulmonary/Critical Care Fellows are expected to exhibit the highest level of professionalism at all times.

Research is a core component to the training program. Each fellow must identify a research mentor early in the program and develop a substantive research project. A careful evaluation process will also guide the research aspect of the program.

Please review the entire contents of this notebook and refer to it as needed throughout your training.
Interdepartmental Relationships

1. Relationship with Department of Medicine

The director of the Pulmonary and Critical Care Medicine Unit, Dr. Anne Dixon, reports to the physician Leader of the Medicine Health Care Service/Chairman of the Department of Medicine. The status of clinical services, research programs, faculty development including promotion and educational activities are reviewed on a regular basis.

The level of performance of the trainees in Pulmonary and critical Care Medicine is reported to the Chair of the Department of Medicine on an annual basis. She is required to sign all forms indicating satisfactory performance, completion of training, and eligibility for subspecialty certification. All offers of appointment for new trainees are issued jointly by the Chair of Medicine as well the Pulmonary and Critical Care Medicine program director. The Chair of Medicine is directly involved in faculty performance evaluations, advancement and assignment of responsibilities.

2. Relationship with Internal Medicine Training Program

The Director of the Internal Medicine Residency Program, Mark A. Pasanen, MD is directly involved in planning Pulmonary and Critical Care Medicine training activities, preparing for periodic review and recertification of the training program, and developing a coordinated educational program with residents in Internal Medicine. The Director of the Pulmonary and Critical Care Medicine Unit, Dr. Anne Dixon, and the fellowship training program, Drs. Kaminsky and Suratt work closely with Dr. Pasanen to coordinate teaching and learning opportunities for trainees, including organizing core curriculum lectures for the Internal Medicine residents provided by the Pulmonary and Critical Care Medicine faculty and trainees and key didactic lectures on Pulmonary and Critical Care Medicine topics. An example of the success of this close working relationship between the two program directors is the revised MICU rotation which includes a defined rounding schedule, scheduled didactic lectures, and a weekly conference with representatives from Ethics, Psychiatry, social work and nursing focused on Psycho-social issues in the ICU.

The Director of the Pulmonary and Critical Care Medicine training program also establishes guidelines for trainees when they are in supervisory roles, such as supervising residents in technical procedures in the ICU.
Pulmonary Disease and Critical Care Medicine Unit

Supervision

I. Inpatient Services:

On both of the inpatient services (MICU and Pulmonary Consult), an attending physician rounds with the trainees seven days a week and is available on call 24 hours a day, 7 days a week to supervise the trainees. The trainees notify the attending of all admissions and consults. Each patient seen by a trainee is seen by the PCCM attending. This oversight includes the presentation of the patient by the trainee including past medical records, history, physical and laboratory data, and review of all pertinent radiographs. The data are then corroborated at the bedside with the trainee including key historical and physical exam items. The differential diagnosis and approach to diagnostic testing and treatment are reviewed. All active patients are reviewed in detail regarding clinical course, new problems, results of diagnostic testing, and response to therapy on daily follow-up rounds.

II. Clinic

Each Fellows clinic is staffed by an attending physician from the faculty. To allow the trainees to be supervised by a number of attendings to maximize their learning experience while balancing the patients need for continuity of care, 3 attendings are assigned to each of the fellows’ clinics and those 3 attendings alternate weeks. Fellow trainees attend their clinic independent of their other service activities. Faculty do not attend clinic when they are assigned to the MICU. This allows fellow attention to be focused on their clinic patients while providing adequate ICU oversight.

<table>
<thead>
<tr>
<th>Clinic Attendings</th>
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<tbody>
<tr>
<td>Tuesday</td>
</tr>
<tr>
<td>1st Year Fellows</td>
</tr>
<tr>
<td>Charlotte Teneback, MD</td>
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<tr>
<td>Haitham Nsour, MD</td>
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<tr>
<td>Garth Garrison, MD</td>
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<tr>
<td>Wednesday</td>
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<tr>
<td>2nd Year Fellows</td>
</tr>
<tr>
<td>Gilman Allen, MD</td>
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<tr>
<td>Anne Dixon, MD</td>
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<tr>
<td>Benjamin Suratt, MD</td>
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<tr>
<td>Thursday</td>
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<tr>
<td>3rd Year Fellows</td>
</tr>
<tr>
<td>David Kaminsky, MD</td>
</tr>
<tr>
<td>Prema Menon, MD</td>
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<tr>
<td>Renee Stapleton, MD</td>
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</tbody>
</table>

III. Mentors:

Each fellow is assigned a faculty member from the Pulmonary and Critical Care Medicine Unit to be their mentor at the beginning of the first year of fellowship. These mentors are responsible, in conjunction with all the faculty, for the well-being of their assigned fellow. In addition, a faculty member involved in research will also be assigned during the first year in order facilitate the fellow choosing a faculty mentor for research and a research project during their 2nd and 3rd years. The fellow will choose a research mentor at the beginning of the second year of fellowship. These mentors are responsible for guiding the research careers of their fellows.
An important part of the training program is the development of skills that will be important in the practice of medicine after fellowship. These include developing professional relations with colleagues and staff, refining teaching and presentation skills, fostering independent decision making, and understanding administrative aspects of Pulmonary and Critical Care Medicine. To develop those skills, graded levels of responsibility have been designed into the curriculum. In general, they encompass the following areas:

**Teaching:**
Fellows will develop skills in teaching. In the first year of training, this will include active participation in teaching rounds and didactic lectures. In the second year, fellows will be expected to give one major teaching conference to attendings and housestaff. In the third year, fellows will be expected to assist in the teaching curriculum for first and second year fellows including organizing lectures and conferences.

**Patient Care:**
Fellows will develop practice skills and independent decision making in two areas of patient care:

- **Procedures** – Trainees will assume graded levels of responsibility in performing invasive procedures based on faculty evaluations. Fellows will observe the proper technique for a specific procedure. Fellows will then perform the procedure under direct supervision. Based on faculty approval, fellows will be permitted to instruct and supervise other trainees under the direct supervision of a faculty member.

- **Medical Intensive Care Unit (MICU) Service** – Fellows develop increased autonomy during the 2nd and 3rd years and will play a leading role in running rounds.

**Management:**
Fellows will participate in the MICU Quality Assurance process as outlined in the critical care curriculum. Additional opportunities to gain knowledge in managerial aspects of Pulmonary and Critical Care Medicine can be provided and may include participation on other hospital QA committees, the nutrition services committee, and the hospital pharmacy committee. Fellows may also participate in the management of aspects of the pulmonary division including bronchoscopy services, outpatient services, and sleep clinic.

**Research:**
Research is a major portion of the curriculum and the specific guidelines for graded responsibility are outlined beginning on page 88.
Duty Hours

Duty hours are defined as all clinical and academic activities related to the residency program, i.e., patient care (both inpatient and outpatient), administrative duties related to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled academic activities such as conferences. Duty hours do not include reading and preparation time spent away from the duty site.

- Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.
- In-house call must occur no more frequently than every third night, averaged over a four-week period. Continuous on-site duty, including in-house call, must not exceed 24 consecutive hours. Residents may remain on duty for up to 4 additional hours to participate in didactic activities, transfer care of patients, conduct outpatient clinics, and maintain continuity of medical and surgical care as defined in Specialty and Subspecialty Program Requirements. No new patients, as defined in Specialty and Subspecialty Program Requirements, may be accepted after 24 hours of continuous duty.
- Residents must be provided with 1 day in 7 free from all educational and clinical responsibilities, averaged over a 4-week period, inclusive of call. One day is defined as one continuous 24-hour period free from all clinical, educational, and administrative activities.
- Adequate time for rest and personal activities must be provided. This should consist of a 10 hour time period provided between all daily duty periods and after in-house call.

On-Call Activities

All fellows take in-house call, typically taking over at 5 pm and finishing by 7 am the next morning. During the week, all fellows are required to leave by 11 am (24+4 hr ACGME rule). On weekends, call is from 7 am to 7 am the next day. On-call fellows cover both the MICU and the inpatient pulmonary consult service, including inpatients with CF, and handle any outpatient telephone messages. An attending physician is available in-house at all times 24 hrs per day. Attendings take overnight call from 7pm to 7am. The fellow and attending and on-call resident handle all patient care matters overnight, including admissions, procedures and any other duties. The fellow is given as much autonomy as possible to work closely with the resident and nursing staff, but always has the attending available for either immediate hands-on help or consultation, as needed. The attending supervises all procedures and sees all new admissions overnight with the fellow. The fellow handles all new admissions or consultations from within the hospital, including the ED and the floors, while the attending takes all phone calls from outside institutions that need consultation or need to transfer a patient to UVMMC for medical care.

The program director and the faculty continuously monitor the demands of at-home call in their programs and make scheduling adjustments as necessary to mitigate excessive service demands and/or fatigue.

The Program Evaluation Committee meets 2-4 times per year to review issues related to evening and weekend call for the fellows and also issues related to the consult service. Part of the committee's goal is to ensure compliance with ACGME regulations. This includes adherence to ACGME standards regarding taking in-house call and consecutive hours worked. The committee meetings are open to all faculty and fellows and all fellows, in particular, are strongly encouraged to participate.
Night Call Schedule

Pulmonary and Critical Care Fellows are expected to take night call as part of the training program. When a fellow is “On call”, a faculty member is always assigned to the trainee as well. Night call for the Pulmonary and Critical Care division involves the coverage of the Inpatient and Outpatient Pulmonary Medicine services and the Medical Intensive Care Unit. Fellows will be expected to see and evaluate all patients admitted to either service and present the patient to the attending physician on call. Fellows are expected to have developed a differential diagnosis and treatment plan prior to case presentation. In the second and third year of training, fellows will be given more autonomy in decision making but still are expected to inform the attending physician on call of any admissions or significant changes in a patient’s status. Specific admitting guidelines for each service are contained under the goals and objectives for MICU and Inpatient Pulmonary rotations.

Approximate call expectations will be:

Year 1 –
1 night in 5 with 1 weekend per month.

Year 2 –
1 night in 6 with 1 weekend per month.

Year 3 –
1 night in 8 with variable weekends per year based on holidays etc.

Fatigue Management/Duty Hour Backup Policy

The Pulmonary and Critical Care Medicine Unit follows the “Fatigue Management Policy and Duty Hour Policy” provided by the Office of Graduate Medical Education. The Fellow call schedules are specifically designed to adhere to duty hours requirements. However, in the event that a fellow become overly fatigued or needs relief from their current duties on the basis of duty-hours, the Fellow will receive backup coverage from either the Resource Attending or another Fellow.

Monitoring of the duty hours will be conducted by monthly review by the rotation attending and semi-annual review by the Program Director.
Pulmonary Disease and Critical Care Medicine Unit

Moonlighting Policy

The PCCM Unit follows the Moonlighting Policy Outlined by the UVMMC GME Policy and Procedure Manual. In general, moonlighting is discouraged. A proposal for moonlighting must be approved by the Program Director and the Research Mentor. It is the individual fellow’s responsibility to ensure proper licensing, work authorization and malpractice coverage for such activities. All moonlighting hours must be included in the ACGME duty hour limits. Moonlighting may only be performed during the 2nd and 3rd years of fellowship during non-clinical rotations. Moonlighting may not interfere with any clinical, didactic or research responsibilities. All moonlighting hours must be reported in writing to the Program Administrator (Christine Farnham). The fellow’s performance will be monitored during moonlighting periods and permission to moonlight may be withdrawn if such activity is interfering with the fellow’s responsibilities and performance in the fellowship training program.

Dispute Resolution

The process for dealing with fellow issues and concerns shall involve a direct meeting with the fellow by the Program Director. This may or may not also include the Associate Program Director, the fellow’s mentor, and any other involved faculty or persons. The goal of the meeting will be to openly discuss and clarify issues, and discuss resolution of disputes and solutions to problems. An action plan will be documented to enable the fellow and Program Director to work towards satisfactory resolution. If such a process is unsuccessful, then the Program Director will seek the counsel of the Division Chair, the Department Chair and/or the GME office and follow the Dispute Resolution procedures outlined in the UVMMC GME Policy and Procedure Manual available on their website.

Discipline and Dismissal of Fellows (including due process)

The PCCM Unit follows the Discipline and Dismissal policies outlined by the UVMMC GME Policy and Procedure Manual which is available on their website. (Process for Resolution of Residents/Fellows Issues)

UVMMC GME Policy on Non-Teaching Patients

VI. Fellow Duty Hours in the Learning and Working Environment
H. Service Versus Education
1. A sponsoring institution must not place excessive reliance on residents to meet the service needs of the participating training sites. 
   a) Fellows must not be required to provide routine intravenous, phlebotomy, or messenger/transporter services.
   b) Fellows' service responsibilities must be limited to patients for whom the teaching service has diagnostic and therapeutic responsibility
   c) The admission and continuing care of patients by fellows must be limited to those patients on the teaching service.

Specifically with regard to our division, we are working to define categories of patients that will be non-teaching in order to relieve the fellows of some of their clinical responsibilities. At the present time, a full time physician's assistant will resume weekday responsibility of all patients with cystic fibrosis admitted for routine inpatient care.
PULMONARY AND CRITICAL CARE FELLOWS
ON-CALL POLICY

1) Number of Calls per month

<table>
<thead>
<tr>
<th>Year</th>
<th>Calls</th>
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<tbody>
<tr>
<td>1st</td>
<td>6</td>
</tr>
<tr>
<td>2nd</td>
<td>5</td>
</tr>
<tr>
<td>3rd</td>
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</table>

Holidays

<table>
<thead>
<tr>
<th>Year</th>
<th>Holidays</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Xmas, New Years</td>
</tr>
<tr>
<td>2nd</td>
<td>Thanksgiving, July 4th</td>
</tr>
<tr>
<td>3rd</td>
<td>Labor, Memorial</td>
</tr>
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</table>

2) When on call: No call on pre-clinic day

3) Post call issues:
   a. All fellows must leave by 11 am the next day after taking call (24+4 ACGME rule), with the 4 hours the next day used to transition care to the day-time attending or team. Ideally no new patients should be seen during the 4 hour transition period, and only non-elective procedures may be performed. The attending will work closely with the fellow during the transition period to make sure the fellow is able to provide acceptable care to patients and may ask the fellow to leave work early if they are too fatigued to provide safe and effective patient care.
   b. If consult fellow post call, 2nd fellow from unit pulled for NEW CONSULTS or BRONCHS only (rounding done in AM). If consult attending not available to round, patients will have already been seen, notes, etc by fellow and attending can round by self/with remaining team (residents/med students).
   c. If no 2nd fellow from unit, on-call fellow should cover consults OR MICU as needed. To minimize time away from research, 1st year fellows on rotation in the PFT lab, Sleep lab, or on surgical ICU may also be called to cover these periods.
   d. In-Service Exams – Every May there is an in-service exam for the 2nd and 3rd year fellows. A 1st year fellow should be on-call the night before.

4) Back-up Fellows:

Back-up fellow is extra fellow in the Unit 6 out of the 12 months. The other 6 months of the year the back-up fellow will be the fellow on PFT, or Sleep rotation. Otherwise, back-up fellow will be fellow on Research rotation.
Pulmonary Disease and Critical Care Medicine Unit

Pulmonary Division and Critical Care Medicine
Vacation /Conference Policy

The following guidelines govern vacation time for Pulmonary Disease and Critical Care Fellows.

- Requests for vacation and conferences must be submitted, in writing, using the detachable form below. All requests must be approved by the attending physician on the rotation during which vacation will be taken along with final approval from the Program Director.

- Requests for vacation must be submitted two months in advance.

- In addition to 3 weeks of vacation per year, the program offers 5 conference days per year. Conference days are used for any conference that you are attending. If you are presenting at a conference you do not have to use your conference days.

- Vacation may not be taken during Consult or SICU months. For 1st year fellow’s vacation may be taken during Sleep and PFT rotation and for 2nd and 3rd year fellows vacation may be taken during their research months. Fellows on rotation in the MICU may not take vacation during July or August, however, after the 2 months the 1st year fellows may take vacation during MICU rotations if there are two fellows assigned to the service.

- We prefer that 1st year fellows only take vacation time in one week blocks in order to preserve the continuity of care in the clinical services.

- For 2nd and 3rd year fellows, vacation time should not exceed two consecutive weeks unless approved by the program director.

- We prefer that no vacation be taken in the last 2 weeks in the month of June.

- Arrangements for adjustment of clinic schedules, procedures, and conferences are the responsibility of the Fellow taking vacation. Outpatient continuity clinics may be cancelled if scheduled more than 2 months in advance. Otherwise, it is the responsibility of the fellow to reschedule patients with an available attending.

VACATION/CONFERENCE REQUEST FORM

Please check one: ☐ Vacation ☐ Conference

NAME………………………………………………………………………………………………………………………………… DATE…….……….……

DATES REQUESTED ……………………………………………………………………………………………………………… # OF DAYS TAKEN………..

NAME OF CONFERENCE ……………………………………………………………………………………………………………

ROTATION………………………………………………………………………………………………………………..

ROTATION ATTENDING ………………………………………………………………………………………………………

APPROVED BY ROTATION ATTENDING ………………………………………………………………………………….

APPROVED BY PROGRAM DIRECTOR ………………………………………………………………………………….

Outpatient continuity clinics may be cancelled if scheduled more than 2 months in advance. Otherwise, it is the responsibility of the fellow to reschedule patients with an available attending.
# Pulmonary and Critical Care Medicine Faculty

## Administrative Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Tasks</th>
<th>Areas of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gilman Allen, MD</td>
<td>Fellowship Admissions Committee, Director, Adult Critical Care Services, Director, MICU, Chair, Patient and Family Centered Care Committee, Chair, Hospital Committee on Interdisciplinary Rounding, Councilor, UVM chapter AOA</td>
<td>Respiratory Mechanics, Acute Lung Injury, Ventilator-Induced Lung Injury, ICU Quality-based Research</td>
</tr>
<tr>
<td>Jason Bates, PhD</td>
<td>Bioengineering core of Vermont Lung Center</td>
<td>Monitoring of lung function in patients and animals, Automatic control of ventilatory support, Mechanical determinants of bronchial responsiveness</td>
</tr>
<tr>
<td>Ryan Clouser, DO</td>
<td>Associate MICU director, Critical Care Quality Committee, MICU Core workgroup, Resident Eval Committee, Medicine Residency Program Evaluation Committee, Infectious Disease committee</td>
<td>Critical Care Medicine, Neurocritical Care, Shock/Resuscitation, Airway Management</td>
</tr>
<tr>
<td>Anne Dixon, MD</td>
<td>Director of Division, Director of Clinical Research, Board member, UVMMC, Member, UVMMG patient care and ops committee</td>
<td>Asthma, Obesity and Lung Disease, Chronic Obstructive Pulmonary Disease, General Pulmonary and Critical Care Medicine</td>
</tr>
<tr>
<td>Susan Dunning, MD</td>
<td>Associate Director, Vermont Regional Sleep Center</td>
<td>Sleep Apnea, Sleep Disorders, Chronic Respiratory Failure</td>
</tr>
<tr>
<td>Joshua Farkas, MD</td>
<td></td>
<td>Critical Care, Clinical ultrasonography, Mechanical ventilation</td>
</tr>
<tr>
<td>Garth Garrison, MD</td>
<td>Lung Cancer Screening Program co-director, Cardio-Respiratory-Renal course co-director, Fellows Summer Lecture Series Coordinator, Clinical Competency Committee, Clinical Operations Committee, Program Evaluation Committee, Research Committee, Department of Medicine Faculty Development Committee</td>
<td>General Pulmonary and Critical Care Medicine, Lung Cancer</td>
</tr>
<tr>
<td>Charles Irvin, PhD</td>
<td>Research Committee, Vermont Lung Center</td>
<td>Asthma, Pulmonary Physiology, Animal Models of Lung Disease</td>
</tr>
<tr>
<td>Name</td>
<td>Roles and Positions</td>
<td>Research Interests</td>
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</tr>
<tr>
<td>David Kaminsky, MD</td>
<td>Program Director, Clinical Competency Committee, Program Evaluation Committee, PFT Lab Clinical Director, Research Committee, Quality Committee, Associate Chair, IRB</td>
<td>Pulmonary Physiology, General Pulmonary and Critical Care Medicine, Asthma, Small Airways, Physiology</td>
</tr>
<tr>
<td>Matt Kinsey, MD</td>
<td></td>
<td>Pulmonary Disease, Critical Care Medicine</td>
</tr>
<tr>
<td>Laurie Leclair, MD</td>
<td>Adult CF Program Director, UVMMC CF Center, Director- Cardiovascular, Respiratory and Renal Course, Medical Student-Year 2, Member-College of Medicine Faculty Development Committee</td>
<td>Adult Cystic Fibrosis (CF), Medical Student Education, Resident/Fellow Education, Faculty Development, Curriculum Development utilizing cutting edge educational techniques</td>
</tr>
<tr>
<td>Yolanda Mageto, MD</td>
<td>Program Evaluation Committee, Clinical Operations Committee, Dept of Med Clinical Operations, Efficiency Committee</td>
<td>Epidemiology of Interstitial Lung Diseases, Idiopathic pulmonary fibrosis and other interstitial lung disease, Asthma community outreach and outcomes</td>
</tr>
<tr>
<td>Prema Menon, MD</td>
<td>Program Evaluation Committee, Faculty Engagement Committee</td>
<td>General Pulmonary and Critical Care Medicine, End of Life Care, Communication in the ICU</td>
</tr>
<tr>
<td>Haitham Nsour, MD</td>
<td></td>
<td>General Pulmonary and Critical Care Medicine, Sarcoïdosis, Sleep Medicine</td>
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<tr>
<td>Polly Parsons, MD</td>
<td>Division Head, Chair of Medicine</td>
<td>General Pulmonary and Critical Care Medicine, Acute Lung Injury</td>
</tr>
<tr>
<td>Matthew Poynter, PhD</td>
<td>Associate Director, Vermont Lung Center, Co-Director, Multidisciplinary Training in Lung Biology T32</td>
<td>Pulmonary Innate and Adaptive Immunity, Molecular Biology Methodology, Immunoassay Methodology, Animal Models of (Lung) Disease, Impact of Nutritional Interventions on Immune Function</td>
</tr>
<tr>
<td>Lily Sender, PA</td>
<td>Fellowship Research Committee, Clinical Competency Committee, Resident Research Committee Chair</td>
<td>Nutrition in Critical Care, Acute Lung Injury, End of Life Care, General Pulmonary and Critical Care Medicine</td>
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<tr>
<td>Renee Stapleton, MD</td>
<td></td>
<td>Cliniical interests: General Pulmonary and Critical Care Medicine, Cancer Survivorship, ARDS, Research Interests: Pulmonary inflammatory response to infection and injury, Obesity and the metabolic syndrome, Cancer Survivorship</td>
</tr>
<tr>
<td>Benjamin Suratt, MD</td>
<td>Associate Chief of PCCM, Associate Program Director, PCCM Vice Chair of Medicine for Academic Affairs, Clinical Competency Committee, PCCM Education Committee, PCCM Faculty Development Committee, DOM Faculty Development Committee, COM Research Committee, DOM Research Committee, COM RPT Committee, DOM RPT Committee, COM</td>
<td>Pulmonary Disease, General Pulmonary and Critical Care Medicine, Cancer Survivorship, ARDS, Research Interests: Pulmonary inflammatory response to infection and injury, Obesity and the metabolic syndrome, Cancer Survivorship</td>
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<td>Name</td>
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<tr>
<td>Charlotte Teneback, MD</td>
<td>Clinical Operations Committee Medical director, pulmonary rehabilitation</td>
<td>Adult Cystic Fibrosis (CF) Pulmonary rehabilitation General Pulmonary and Critical Care</td>
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<tr>
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<td>Associate director, adult CF program</td>
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<tr>
<td>Daniel Weiss, MD, PhD</td>
<td>Fellowship selection committee</td>
<td>General Pulmonary and Critical Care Medicine Acute Lung Injury Gene and Cell Therapies for acute and chronic lung disease Methods of gene and cell delivery to lung Ex vivo lung bioengineering</td>
</tr>
</tbody>
</table>
Pulmonary Disease and Critical Care Medicine Unit

Faculty Development

The Pulmonary and Critical Care division is committed to ongoing faculty development in order to ensure that our faculty remain expert and up to date on all matters of pulmonary and critical care medicine related to patient care, teaching and research. The following is a list of some of the most important activities that all or some of the faculty participate in for faculty development. Overall faculty development activities and progress is reviewed annually at our Annual Program Review meeting.

- UVM/UVMMC teaching with student feedback and evaluation
- UVM/UVMMC faculty development workshops
- ACCP leadership conference
- Formal competency education by Program Director
- Mentorship course given by Vermont Lung Center
- PCCM Program Directors meeting at ATS, ACCP meetings each year, plus annual PCCM Program Directors meeting in March
- Adherence to UVM promotion policies
- Individual faculty attending CME and other training courses

Fellowship Selection

The Pulmonary and Critical Care Medicine Division participates in the National Resident Matching Program (NRMP). Applications are submitted through Electronic Residency Application Service (ERAS). All applications are reviewed by the Fellowship Committee. Selected applicants are invited for on-site interviews. Both faculty and current fellows participate in the interview process. All interviewed candidates are reviewed at a meeting by the entire Pulmonary and Critical Care Medicine faculty. At that meeting the applicants are chosen and ranked for the NRMP.

Promotion Policy

Fellows will be formally promoted to their next level of training based on satisfactory completion of all required rotations and responsibilities. Satisfactory performance in these areas will be determined by the faculty and the program director based on review of all fellow rotation evaluation forms.
ACGME Program Requirements for Pulmonary & Critical Care Training

1. Clinical Requirements
   - at least 9 Months Pulmonary Inpatient Clinic
   - at least 9 Months Critical Care
   - at least 6 months MICU
   - at least 3 months non-MICU (SICU)
   - 3 Year continuity care clinic – ½ per week

2. Research Requirements
   - Active participation resulting in publication or abstracts presented at national meetings.

3. Didactics Requirements
   - One Clinical Conference per week - (Thursday noon conference)
   - One Journal Club per month - (4th Thursday or Friday at noon)
   - One Research Conference per month - (VLC Tuesday 8:15 seminars)
   - One Core Curriculum Conference per week. - (Friday noon conferences)
## Pulmonary Disease and Critical Care Medicine Unit

### Training Program Rotation Schedule

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Fellows will be assigned each month for exercise test and back-up.

**Breakdown: (Months)**

- **Pulmonary:**
  - Consults - 6
  - PFT - 1
  - Sleep - 1

- **Pulmonary & Critical Care:**
  - MICU - 4

- **Critical Care:**
  - MICU - 5
  - SICU - 2

**Administrative Tasks:**

- **3rd Year Fellows:** Call Schedules/Conference and Journal Club Schedules
- **2nd Year Fellows:** Quality Assurance Projects
- **1st Year Fellows:** Rad-Path Conferences/Thursday Pulmonary Conferences/MICU M&M
Pulmonary Disease and Critical Care Medicine Unit

Teaching Conferences: Pulmonary and Critical Medicine

**Goal:**
To provide learning opportunities for trainees in Pulmonary and Critical Care Medicine. Attendance at all conferences is **Mandatory**. Faculty will be asked to hold clinical fellows pagers for Thursday and Friday Conferences.

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<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
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<td>07:45 AM to 8:45 AM</td>
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<td>08:15 AM to 9:15 AM</td>
<td>VLC Basic Research Conference (When not in MICU)</td>
<td>VLC Clinical Research Conference (When not in MICU)</td>
<td>Medicine Grand Rounds (8:00 am – 9:00 AM)</td>
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<td>11:30 AM to 12:00 PM</td>
<td>ICU Didactic (When in MICU)</td>
<td>ICU Didactic (When in MICU)</td>
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<tr>
<td>12:00 PM to 1:00 PM</td>
<td>Psychosocial Rounds (When in MICU)</td>
<td>Dept of Medicine Fellows Lecture Series (intermittently)</td>
<td>(PCCM Grand Rounds) 1st Wk – Rad/Path 2nd Wk – MICU Cases 3rd Wk – Consult 4th Wk – Outpatient Pulmonary Cases (All Services)</td>
<td>(PCCM Didactic Series) 1st Wk – Pulmonary/Critical Care Lecture 2nd Wk – Same 3rd Wk – Same 4th Wk – Journal Club (All Services)</td>
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<tr>
<td>1:00 PM to 2 PM</td>
<td>Multidisciplinary Lung Cancer Conf</td>
<td>MICU / SICU combined rounds (when in MICU)</td>
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</table>

**Summary of Conferences:**
Psycho-social ICU Rounds
VLC Basic Research Conference
MDL Cancer Conference
ICU Housestaff Didactic Series
Inpatient Pulmonary and Critical Care Case Conference
Outpatient Pulmonary Case Conference
Pulmonary Pathology with Radiographic Correlation
Pulmonary and Critical Care Didactic Teaching Conference
Pulmonary and Critical Care Journal Club
Department of Medicine Fellows Lecture Series

**Northern New England Fellows Conference each Spring.** The Fellows’ Conference is attended by fellows and faculty from Maine Medical Center, Dartmouth Medical Center, UVM, Albany Medical Center and Bay State Medical Center. Fellows from each of the institutions present cases with formal didactic discussions and selected fellows present their research.

**National Meetings:** Fellows are encouraged to submit abstracts for presentation at national meetings. Individual research mentors are responsible for supervising this activity (e.g., ACCP each Fall and ATS each Spring).
OVERVIEW OF CLINICAL CURRICULUM AND EDUCATIONAL PROCESS

These are the general, overall goals and objectives of the educational process. The specific, competency-based goals and objectives of each rotation are found in the next section.

GOAL ONE
Fellows will demonstrate knowledge of physiology, pathophysiology, diagnosis, and therapy of problems pertinent to Pulmonary and Critical Care Medicine.

Objective 1: (Pulmonary Medicine knowledge areas)
Fellows will learn pathophysiology and how to diagnose and manage patients with obstructive lung diseases, including:
• Asthma
• Emphysema
• Chronic bronchitis
• Bronchiectasis
• Cystic fibrosis

Fellows will learn pathophysiology and how to diagnose and manage patients with interstitial and inflammatory lung diseases, including:
• Sarcoidosis
• Idiopathic pulmonary fibrosis
• Pneumoconiosis, including:
  ▪ Asbestosis
  ▪ Silicosis
• Pulmonary hemorrhagic disorders, including:
  ▪ Wegener's granulomatosis and other vasculitides
  ▪ Goodpasture's Syndrome
• Collagen-vascular diseases
• Cryptogenic Organizing Pneumonia (COP)
• Eosinophilic granuloma
• Allergic bronchopulmonary mycosis (ABPM)
• Hypersensitivity pneumonitis
• Drug-induced lung disease
• Alveolar proteinosis

Fellows will learn pathophysiology and how to diagnose and manage patients with occupational and environmental lung diseases.

Fellows will learn pathophysiology and how to diagnose and manage patients with pulmonarv vascular diseases, including:
• Deep venous thrombosis (DVT)
• Acute pulmonary embolism
• Recurrent pulmonary embolism
• Chronic thromboembolic disease
• Primary pulmonary hypertension
• Secondary pulmonary hypertension

Fellows will learn pathophysiology and how to diagnose and manage patients with lung infections, including:
• Community-acquired pneumonia
• Nosocomial pneumonia
• Lung abscess
• Aspiration pneumonitis
- Tuberculosis, including tuberculous infection and active tuberculosis
- Nontuberculous mycobacterial infections
- Fungal infections of the lung

Fellows will learn pathophysiology and how to diagnose and manage patients with pulmonary manifestations of Acquired Immune Deficiency Syndrome (AIDS) and other immunodeficiency diseases.

Fellows will learn physiology, pathophysiology, and how to manage patients who have undergone lung transplantation.

Fellows will learn pathophysiology and how to diagnose and manage patients with pulmonary neoplasms, including:
- Benign neoplasms of lung
- Small cell cancer of lung
- Non-small cell cancer of lung
- Paraneoplastic syndromes of lung cancer
- Malignancies metastatic to lung

Fellows will learn pathophysiology and how to diagnose and manage patients with disorders of the pleura, including:
- Pleuritis
- Pleural effusion
- Empyema
- Fibrothorax
- Mesothelioma, benign and malignant

Fellows will learn pathophysiology and how to diagnose and manage patients with disorders of the mediastinum, including:
- Mediastinitis
- Mediastinal tumor

Fellows will learn pathophysiology and how to diagnose and manage patients with chest trauma, including:
- Rib fracture
- Flail chest
- Pneumothorax, simple and tension
- Pulmonary contusion
- Foreign body aspiration

Fellows will learn pathophysiology and how to diagnose and manage patients with acute lung injury due to inhalation and radiation, including:
- Chemical pneumonitis
- Radiation pneumonitis

Fellows will learn pathophysiology and how to diagnose and manage patients with developmental abnormalities and congenital disorders, including:
- Azygous fissure
- Pulmonary sequestration

Fellows will learn pathophysiology and how to diagnose and manage patients with genetic disorders, including:
- Cystic fibrosis
- Alpha-1-proteinase inhibitor deficiency

Fellows will learn pathophysiology and how to diagnose and manage patients with respiratory failure, including:
- Acute respiratory distress syndrome (ARDS)
- Acute and chronic respiratory failure in obstructive or restrictive lung disease
- Neuromuscular respiratory drive disorders
Fellows will learn pathophysiology and how to diagnose and manage patients with hypersomnia and sleep disorders, including:

- Sleep disordered breathing
- Obstructive sleep apnea syndrome
- Nocturnal hypoxemia secondary to COPD
- Nocturnal hypoxemia secondary to CHF
- Periodic leg movement syndrome (PLMS)
- Narcolepsy
- Insomnia

Objective 2: (Critical Care Medicine knowledge areas)
Fellows will learn pathophysiology and how to diagnose and manage patients with disorders which can cause patients to become critically ill, including:

- Cardiovascular disorders
- Respiratory disorders
- Renal disorders
- Gastrointestinal disorders
- Genitourinary disorders
- Neurologic disorders
- Endocrine disorders
- Hematologic disorders
- Musculoskeletal disorders
- Disorders of the immune system
- Infectious diseases
- Obstetric and gynecological disorders
- Anaphylaxis and acute allergic reactions
- Trauma

Fellows will learn pathophysiology and how to diagnose and manage patients with disorders secondary to critical illness, including:

- Electrolyte and acid-base disorders secondary to critical illness
- Metabolic, nutritional, and endocrine effects of critical illnesses
- Hematologic and coagulation disorders secondary to critical illness
- Pharmacokinetics, pharmacodynamics, drug metabolism, and drug excretion in critical illness

Fellows will learn pharmacology and clinical use of paralytic agents.

GOAL TWO:
Fellows will demonstrate practice skills necessary to diagnose and manage problems pertinent to Pulmonary and Critical Care Medicine.

Objective 1: (Pulmonary Medicine practice skills)
Fellows will learn how to obtain a thorough and orderly history relevant to pulmonary problems, including:

- Dyspnea, on exertion and at rest
- Cough and expectoration
- Wheezing and stridor
- History of known pulmonary diseases
- Occupational history and history of exposures
- History of past TB skin tests
- History of past chest roentgenograms
- History of previous surgical procedures
Pulmonary Disease and Critical Care Medicine Unit

Fellows will learn how to perform a thorough and systematic physical examination relevant to pulmonary problems, and will learn to recognize and understand the significance of pulmonary and extrapulmonary signs of pulmonary diseases, including:

- Abnormal patterns of breathing, including:
  - Kussmaul breathing
  - Cheyne-Stokes breathing
  - Thoracic-diaphragmatic dyscoordination
  - Abnormal chest and diaphragm movement
  - Use of accessory respiratory muscles
  - Chest wall abnormalities, including:
    - Kyphosis
    - Scoliosis
    - Pectus excavatum
    - Pectus carniatum
    - Straight back
    - Barrel chest
    - Ankylosis
    - Adventitious lung sounds

Fellows will learn how to interpret laboratory data relevant to pulmonary problems, including:

- Sputum cultures and microscopic examination for bacteria, mycobacteria, fungi, and Legionella
- Sputum cytology
- Oxygen saturation (by pulse oximeter)
- Arterial blood gas (ABG)
- TB skin test
- Skin test for delayed hypersensitivity
- Sweat chloride test
- Pleural fluid analysis, including cytology, chemistry, Gram’s stain, and culture for bacteria, fungi, and mycobacteria
- Transthoracic needle aspirate and biopsy
- Lung biopsy

Fellows will learn how to interpret physiologic data relevant to pulmonary problems, including:

- Pulmonary function tests
- Simple spirometry
- Spirometry before and after bronchodilator
- Inhalation challenge studies
- Lung volumes
- Diffusing capacity
- Exercise tests
- Sleep studies

Fellows will learn how to interpret radiologic imaging studies relevant to pulmonary problems including:

- Chest roentgenogram
- Fluoroscopy of the chest
- Bronchogram
- Computerized axial tomography (CT) of chest
- Radionuclide lung (V/Q) scan
- Non-invasive leg studies
- Compression ultrasonography
- Impedance plethysmography (IPG)
- Pulmonary arteriogram
Pulmonary Disease and Critical Care Medicine Unit

Objective 2: (Critical Care Medicine practice skills)
- Fellows will learn how to obtain a thorough and orderly history on critically ill patients in an efficient and expedient manner.
- Fellows will learn how to perform a thorough and systematic physical examination on critically ill patients in an efficient and expedient manner.
- Fellows will learn how to interpret laboratory data relevant to critically ill patients.
- Fellows will learn how to interpret radiologic data relevant to critically ill patients.

GOAL THREE:
Fellows will demonstrate technical skill necessary to use specialized equipment and perform specialized procedures used to diagnose and manage problems pertinent to Pulmonary and Critical Care Medicine.

Objective 1: (Technical skills with specialized equipment)
Fellows will learn the indications, contraindications, complications, and proper use of specialized equipment for managing patients with pulmonary and critical care problems, including:
- Management of airway
  - Conscious Sedation
- Establishment of airway
- Maintenance of open airway in nonintubated, unconscious, paralyzed patients
- Oral and nasotracheal intubation
- Management of breathing and ventilation
- Ventilation by bag or mask
- Mechanical ventilation using pressure-cycled, volume-cycled, and negative pressure mechanical ventilators
- Use of reservoir masks and CPAP masks for delivery of supplemental oxygen, humidifiers, nebulizers, and incentive spirometry
- Weaning from mechanical ventilation
- Respiratory care techniques
- Management of pneumothorax
- Maintenance of circulation
- Oxygen saturation by pulse oximeter
- Arterial blood gas analysis
- Basic and advanced cardiopulmonary resuscitation
- Cardioversion
- Pulmonary function tests
- Simple spirometry
- Spirometry before and after bronchodilators
- Inhalation challenge studies
- Lung volumes
- Diffusing capacity
- Exercise tests
- Calibration and operation of hemodynamic monitoring and recording systems, including utilization, zeroing, and calibration of transducers, and use of amplifiers and recorders.
- Parenteral nutrition

Fellows will learn to analyze specialized data pertaining to Pulmonary and Critical Care problems, including:
- Cardiac output determinations by thermodilution and/or other techniques
- Evaluation of oliguria
- Management of massive transfusions
- Management of hemostatic defects
- Interpretation of antibiotic levels and sensitivities
- Monitoring and assessment of metabolism and nutrition
- Calculation of oxygen content, intrapulmonary shunt, and alveolar-arterial gradients
Pulmonary Disease and Critical Care Medicine Unit

Objective 2: (Technical skills performing specialized procedures)
Fellows will learn the indications, contraindications, complications, and proper technique for performing procedures relevant to pulmonary and critical care problems, including:
• Sputum induction
• Sputum Gram’s stain
• TB skin tests
• Skin tests for delayed hypersensitivity
• Arterial puncture for arterial blood gas (ABG)
• Insertion of arterial catheter
• Insertion of central venous catheter
• Insertion of pulmonary artery balloon floatation catheter
• Thoracentesis
• Pleural biopsy
• Bronchoscopy, including:
  • Bronchial washing
  • Bronchial brushing
• Collection of samples with protected bronchial brush
  • Bronchoalveolar lavage
• Bronchial biopsy
• Transbronchial biopsy
• Transbronchial needle aspiration
• Insertion of thoracostomy (chest) tube
• Pleural sclerosis
• Use of ultrasound in central line placement and thoracentesis

Fellows will learn the indications, contraindications, and complications of, and may gain practical experience in performing, other procedures relevant to Pulmonary and Critical Care problems, including:
• Pericardiocentesis
• Transvenous pacemaker insertion
• Peritoneal dialysis
• Peritoneal lavage
• Aspiration of major joints
• Percutaneous needle aspiration and/or cutting lung biopsy
• Use of ultrasound in bedside echo
• Endobronchial laser therapy
• Intracranial pressure monitoring

GOAL FOUR:
Fellows will demonstrate ability to apply knowledge, practice skills, and technical skills to diagnose and manage patients with problems pertinent to Pulmonary and Critical Care Medicine.

Objectives (Clinical application of knowledge and skill)
Fellows will learn how to diagnose and manage patients with symptoms and signs of pulmonary disease, including:
• Dyspnea
• Cough
• Hemoptysis
• Solitary pulmonary nodule
• Lung mass
• Localized pulmonary infiltrate
Pulmonary Disease and Critical Care Medicine Unit

• Diffuse pulmonary infiltrates
• Atelectasis
• Pleural effusion
• Pneumothorax

GOAL FIVE:
Fellows will demonstrate ability to provide cognitive and technical advice and expertise as a consulting Pulmonary and Critical Care Physician.

Objectives (Providing consultation, use of consultation)
Fellows will learn the basic constructs of the referral-consultant relationship for managing or co-managing the care of patients with pulmonary problems or patients who are critically ill.

Fellows will learn when to refer patients for procedures to be performed by a thoracic surgeon or other specialist, including:
• Thoracoscopy
• Open lung biopsy
• Scalene node biopsy
• Mediastinoscopy
• Mediastinotomy
• Lung resection
• Lung transplant
• Pleural decortication
• Rib resection and open pleural drainage
• Tracheostomy
• Radiation therapy of lung

GOAL SIX:
Fellows will demonstrate knowledge of how the care of problems pertinent to Pulmonary and Critical Care Medicine fit into patients' overall health plan.

Objectives: (Attitudes, values, and habits about long-term care)
Fellows will learn the importance of preventive medicine techniques in the long-term management of patients with pulmonary problems, including:
• Smoking cessation
• Influenza vaccine
• Pneumococcal vaccine

Fellows will learn the long-term impact of treating patients who are severely and critically ill.

Educational Process
Primary Learning Experiences
• Pulmonary Ambulatory Center (on page 26)
• Pulmonary Rehabilitation Program (on page 29)
Supplemental Learning Areas
• Northwestern Medical Center (on page 28)
• Pulmonary/Critical Care Department Teaching Conferences (on page 47)
• Outpatient Pulmonary Case Conference (on page 48)
GOAL SEVEN:
Fellows will demonstrate attitudes, values, and habits of a dedicated academic subspecialist in Pulmonary and Critical Care Medicine.

Objectives: (Life-long attitudes, values, habits and contributions)
• Teaching: Fellows will learn to take an active role in teaching common problems pertinent to Pulmonary and Critical Care Medicine to medical students, residents, and practicing physicians in CME programs.
• Management of resources and services: Fellows will learn to monitor and supervise special services relevant to Pulmonary and Critical Care Medicine, including:
  • Pulmonary function laboratories
  • Respiratory care services
  • Respiratory physical therapy and rehabilitation services
• Intensive Care Units
• Societal considerations: Fellows will learn the impact of pulmonary and critical care illnesses on society, including:
  • The ethical, economic, and legal aspects of pulmonary and critical illnesses, including:
    ▪ Smoking
    ▪ Asthma
    ▪ Chronic obstructive pulmonary disease (COPD)
    ▪ Occupational lung diseases
    ▪ Sleep disorders
    ▪ Occupational Safety and Health Administration (OSHA) regulations and universal precautions, and
    ▪ protection of
    ▪ health care workers.
  • Personal impact of pulmonary and critical illnesses on patients and patients' families.
• Coping skills: Fellows will learn constructive coping skills for physicians and other health care professionals who care for chronically ill pulmonary patients and for critically ill patients.

Educational Process
Primary Learning Experiences
• Pulmonary Ambulatory Center (on page 26)
• Medical Intensive Care Unit (on page 36)
• Pulmonary/Critical Care Department Teaching Conferences (on page 47)
  ▪ Anesthesia
  ▪ Pulmonary Physiology and Pulmonary Function Testing
  ▪ Pulmonary Medicine Consultation Service
  ▪ Radiology-Pathology Conference
  ▪ Northwestern Medical Center
  ▪ Surgical Intensive Care
  ▪ Cystic Fibrosis Clinic
  ▪ Multidisciplinary Chest Tumor Conference

Learning Areas to Achieve Goals and Objectives:
• Northwestern Medical Center (on page 28)
• Pulmonary Rehabilitation Program (on page 29)
• Sleep Disorders Clinic (on page 32)
• Department of Medicine – Fellows Lecture Series
• Pulmonary Physiology and Pulmonary Function Testing
  ▪ Outpatient Pulmonary Conference
Pulmonary Disease and Critical Care Medicine Unit

EDUCATIONAL PROGRAMS

This section contains specific goals, objectives, teaching methods and evaluation processes for each training experience in the Pulmonary and Critical Care Medicine fellowship program. Fellows are expected to assume increasing levels of responsibility in patient care with advances in training and as outlined in the curriculum. Within each section you will also find the general guidelines and expectations for fellows rotating on those services. These educational programs are referenced in the following section (Curriculum and Educational Process) and individually contribute to achieving the goals and objectives for the entire training program.

The goals and objectives of each of the following rotations are designed to meet the 6 ACGME Competencies:

- Patient Care
- Medical Knowledge
- Interpersonal & Communication Skills
- Professionalism
- Practice-Based Learning
- System-Based Practice

The tools outlined in the Competency Table of Tools below are applied to assess the competencies within each rotation, as appropriate. Each competency is specifically assessed for each fellow at the end of each rotation by use of the written evaluation.

<table>
<thead>
<tr>
<th>GENERAL COMPETENCIES</th>
<th>List Evaluation Tools Used or In Development by the Program</th>
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<tbody>
<tr>
<td><strong>Patient Care</strong></td>
<td>PT Satisfaction Surveys-Clinic</td>
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<td>Procedure Logs</td>
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<td>Bronchoscopy Evaluation Forms</td>
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<td>OCE (Observe Clinical Exam)</td>
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<td>360° Evaluations - Clinic</td>
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<td>Chart Review</td>
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<td>Monthly Evaluation of Clinical Competence</td>
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<td>Monthly Evaluation of Clinical Competence</td>
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<td><strong>Interpersonal &amp; Communication Skills</strong></td>
<td>Patient Satisfaction Surveys-Clinic</td>
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<td>360° Evaluations - Clinic</td>
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<td>Portfolios (dictations from clinic OCE, Conference Presentations)</td>
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<td>Record Reviews: Asthma Guidelines (PFT Rotation) low tidal volume ventilation second year project</td>
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<td>Chart Review</td>
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Overall Educational Goals and Objectives of the
Pulmonary and Critical Care Medicine Fellowship Training Program

The Pulmonary and Critical Care Medicine (PCCM) Fellowship Training Program is designed to provide advanced training to fellows to allow them to obtain competency in the specialty of PCCM with sufficient expertise to act as specialist consultants. This training is provided by both didactic instruction and direct patient care under the direct supervision of expert faculty in the division of PCCM. Didactic instruction is provided in all areas of PCCM as outlined in the specific topic areas required by the ACGME. Direct patient care is provided in a facility that allows state of the art care of both inpatients and outpatients and in a community with a broad range of medical conditions. Through these activities, the fellowship training program provides the environment and resources to allow trainees to obtain competence in the six areas of Patient Care, Medical Knowledge, Professionalism, Interpersonal Communication, Practice-Based Learning and Systems-Based Practice, as specified by the ACGME. In addition, the faculty also provides an environment of inquiry and scholarship that involves research, writing and teaching. Critical to the success of the program is a formal structure for frequent feedback and evaluation of performance. At the completion of training, trainees will be prepared to take their board certification exams in both Pulmonary Medicine and Critical Care Medicine, and to practice PCCM in either academic or community settings.
Pulmonary Disease and Critical Care Medicine Unit

Outpatient Education

1. Allergy and Immunology Clinic
2. Cystic Fibrosis Clinic
3. Pulmonary Ambulatory Center
4. Pulmonary Hypertension Clinic
5. Pulmonary Physiology and Pulmonary Function Testing
6. Pulmonary Rehabilitation Program
7. Lung Cancer Multidisciplinary Clinic
8. Sleep Disorders Clinic

Inpatient Education

1. Anesthesia
2. Critical Care Ultrasound
3. Infectious Disease Rotation
4. Medical Intensive Care Unit
5. Pulmonary Medicine Consultation Service
6. Surgical Intensive Care Unit
7. Thoracic Radiology

Teaching Conferences

1. Pulmonary/Critical Care Departmental Teaching Conferences
2. Critical Care Teaching Conferences
3. Multidisciplinary Chest Tumor Conference
4. Pulmonary and Critical Care Journal Club
5. Outpatient Pulmonary Case Conference
6. Curriculum – Department of Medicine Subspecialty (Fellowship) Training Programs
7. Department of Medicine – Fellows Lecture Series

Quality Assessment and Improvement

Research
Outpatient Education

Allergy and Immunology Clinic

Goal
To provide trainees educational experience in the evaluation and management of patient with allergic diseases.

Objectives
To learn the pathophysiology, natural history, diagnostic test and treatment options of outpatients referred for allergy evaluation. To learn the longitudinal management of patients with allergies. To gain experience and understanding of testing procedures in allergy management.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. Fellows may participate at any time during the 2nd or 3rd year as part of their 6 additional months of half-day per week ambulatory care experience.

Patient Care: Fellows will learn how to take care of patients with allergy, including, but not limited to, those with asthma and allergic bronchopulmonary mycosis. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a basic knowledge of the pathophysiology of allergy as related to pulmonary disease, with special attention to anaphylaxis and asthma. They will learn about the method and interpretation of skin testing and RAST. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary allergy-related medicine that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the clinic support staff in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients and clinic support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients.

Practice-Based Learning: Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their
learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.

*System-based Practice:* Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM), and radiology systems, and ultimately the electronic medical record (PRISM) as it comes online in the outpatient setting. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, and home oxygen companies. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients with allergic disease.

**Educational Experience**

Allergy Clinic – Fellows who elect to do so will have the opportunity to have a concentrated clinic effort in allergy. Fellows will see patients with allergic complaints or disorders under the guidance of Dr. Edward Kent at the Timberlane Allergy Center in So. Burlington, VT. In the second year of training, fellows will have a one-month experience in which they have a concentrated effort in allergy immunology. They will approximately spend half of their outpatient time in the allergy clinic learning the care and management and testing associated with management of allergy patients with allergic diseases. This will include history and physical examination, participation in skin testing and development of management plans in consultation with the attending allergist.

Didactic Teaching - During their rotation, fellows will attend a didactic session on the basic science related to allergy. Additionally, one journal club per year will be designated for current allergy and immunology literature review overseen by one of the attending allergists.

**Evaluation and Feedback**

Fellow presentations will be critiqued informally by the attending allergist at the time of presentation. This will include feedback on content and presentation. Written evaluation will be submitted at the end of the one month experience. Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the Allergy Clinic, as shown in the table of tools.

Trainees will submit a separate evaluation form for this rotation at the end of their clinical rotation through this service. The program director will review all evaluations and monitor the quality of the educational experience. The program director will formally review the educational program semi-annually with the fellows and the faculty.

Fellows should keep an outpatient log of patients seen with a variety of allergy diseases.

**General Guidelines**

Timberlane Allergy is located in the Timberlane medical facility in So. Burlington, VT. Fellows are responsible for making specific schedule arrangements with Dr. Edward Kent, two-months prior to their scheduled rotation.
Many patients with CF are surviving into adulthood with the current median survival 32 years old. With the aging CF population, it has become increasingly important for physicians trained in Adult Pulmonary Medicine to know how to care for these patients.

**Goal**
To provide trainees education in the care and management of patients with CF.

**Objectives**
To learn the pathophysiology, natural history, diagnostic test and treatment options of patients with CF. To learn the outpatient and inpatient longitudinal management of patients with CF. To gain experience in the care and management of patients pre and post lung transplantation.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. Fellows may participate at any time during the 2nd or 3rd year as part of their 6 additional months of half-day per week ambulatory care experience.

*Patient Care:* Fellows will learn how to take care of patients with CF, including its many pulmonary and non-pulmonary manifestations. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

*Medical Knowledge:* Fellows will develop a basic knowledge of the pathophysiology of CF, as well as transplant medicine as it relates to the assessment of patients for and care of patients after lung transplant. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary and critical care medicine related to CF that they may be prepared to sit for their board examinations.

*Professionalism:* Fellows will interact with their patients and with the clinic support staff in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

*Communication and Interpersonal Skills:* Fellows will communicate clearly and completely with patients and clinic support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients.

*Practice-Based Learning:* Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance
projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs, especially as this pertains to the care of patients with CF.

**System-based Practice:** Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM), and radiology systems, and ultimately the electronic medical record (PRISM) as it comes online in the clinic. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, nutrition services, home oxygen companies and hospice services, when appropriate. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients, especially as this pertains to the care of patients with CF.

**Educational Experience**

Clinic- Fellows may elect to attend adult CF clinic during their second and third years. This clinic is led by Dr. Laurie Leclair, the adult CF program director and is attended by a multidisciplinary team including a nutritionist, respiratory therapist and social worker. Fellows will independently evaluate patients under the supervision of Dr. Leclair and report back to the team at the end of clinic. One clinic a month also has an adult endocrinologist present to facilitate management of CF related diabetes.

Inpatient service- The pulmonary consult service is responsible for admitting and caring for the adult CF inpatients. Dr. Leclair is available for additional consultation when necessary.

Didactic Teaching- Dr. Leclair will give an annual didactic session on the clinical feathers and management of CF and will give at least biannual didactics on basic science and clinical research relating to CF.

Conferences- Interested fellows will have the opportunity to attend the North American CF Foundation meeting at least once during their fellowship.

Research- Interested fellows will have the opportunity to participate in multi-center national clinical research trails.

**Evaluation and Feedback**

Fellow presentations and management plans will be critiqued verbally by Dr. Leclair on this rotation.

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the CF clinic, as shown in the table of tools. Dr. Laurie Leclair will meet with fellows at the end of the rotation to review the evaluation.

**General Guidelines**

Ambulatory experience in CF is provided through the Vermont State CF Center, of which Dr. Laurie Whittaker is the acting adult program director. Clinic is held weekly in the same setting as the general pulmonary clinics as part of the Ambulatory Care Center on the MCHV campus.
Goal
To provide education and training in the care of ambulatory patients with pulmonary diseases.

Objectives
To learn the evaluation and management of new outpatient consults. This will include learning the longitudinal management of patients with a variety of pulmonary diseases as the patient’s primary pulmonary physician. In addition, fellows will learn skills in communication with referring physicians as a subspecialty consultant.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below:

Patient Care: Fellows will learn how to take care of ambulatory patients with a wide variety of pulmonary disorders, especially in the outpatient setting. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a basic knowledge of the pathophysiology of pulmonary diseases and the current treatment approaches to these diseases. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary medicine, especially as it pertains to outpatient medicine, that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the clinic support staff in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients and clinic support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients, especially as this pertains to outpatient medicine.

Practice-Based Learning: Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.
System-based Practice: Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM), and radiology systems, and ultimately the electronic medical record (PRISM) as it becomes implemented in the clinic. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, home oxygen companies and hospice services, when appropriate. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients in the outpatient setting.

Educational Experience
Fellows will attend a weekly “Fellow’s Clinic” during their entire fellowship. This clinic provides the fellow with the opportunity to evaluate new outpatient consults, to see patients following discharge from the hospital, and to see patients who require continued follow-up over an extended period of time as their primary pulmonary physician.

Each patient will be discussed with the assigned pulmonary teaching attending. The discussion will provide direction in developing differential diagnoses, directing patient management, and illustrating educational points. In addition, it is expected that fellows will do outside reading relevant to the patient’s problems. A prepared log of the patients each fellow sees will be kept by the fellow and organized by problem category.

Fellows will be expected to present cases at the monthly outpatient case conference as assigned.

Fellows will assume increasing responsibility as they progress from the first to the second to the third year of fellowship for decision making and follow-up regarding the care of their patients in clinic, under attending supervision. First year fellows will only dictate follow-up notes for the first 6 months, but by the second 6 months they will be dictating all notes.

Evaluation and Feedback
Fellow presentations will be critiqued informally by faculty members present at the time of presentation. This will include feedback on content and presentation.

Written evaluation will occur biannually, in January and June, by the faculty members assigned to the clinics. Also on an annual basis, the trainees will provide written evaluation of faculty assigned to their clinic.

Annually, the program director will formally review this educational program with the fellows and the faculty. Fellows will be expected to submit outpatient logs at this evaluation.

Fellows will be formally evaluated for Pulmonary Consultation Skills (see Section 3 - Evaluation Process) at the end of the first year of training in the outpatient clinic. This will be conducted by a designated faculty member.

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the clinic, as shown in the table of tools. Attendings will meet with fellows at the end of January and June to review the evaluation.
General Guidelines

The fellows’ clinic occurs one half day per week at the Ambulatory Care Center, 5th Floor, University of Vermont Medical Center. Fellows are expected to attend this clinic above all other responsibilities unless on vacation, attending a meeting or the clinic has been cancelled. It is the fellows’ responsibility to coordinate their clinic and communicate with the office staff. Each fellow will see 1-2 new patients and 3-5 follow-up patients per clinic. The assigned teaching attending will review history and physical exam findings with the fellow. The fellow will then finalize testing and treatment plans with the patient. Internal action sheets provided with each patient will coordinate plans with the clinic staff. The fellows are expected to follow up on all aspects of patient care including tests and communication with referring physicians in a timely fashion, and to communicate the results and care plan decisions with the teaching attending.

One fellow will be assigned to read the daily PFT’s for the outpatient clinic. This will be reviewed with an assigned attending. All of the fellows are encouraged to participate in the PFT review exercise.

Forms for documenting new patient and follow-up visits will be attached to each chart. Fellows are responsible for documentation as it applies to their patients. Current institutional documentation requirements necessitate that the attending physician dictates a note to the referring physician as well as the chart record.

Some patients will require diagnostic bronchoscopies or thoracenteses/pleural biopsies. These must be scheduled in advance and performed with an attending physician. The secretarial staff can assist fellows in scheduling these procedures. It is the responsibility of the fellow to assist in coordinating these procedures.
Pulmonary Disease and Critical Care Medicine Unit

Pulmonary Hypertension Clinic

The Pulmonary Hypertension Clinic is directed by Dr. Bill Hopkins of the Division of Cardiology. Dr. Hopkins sees patients weekly with pulmonary hypertension who are referred specifically to receive his expert consultation in this disease. The clinic meets at Tilley Drive in South Burlington and is staffed by nurses, tech and other relevant health care providers. Services include direct access to ECG and echocardiography. Patients may undergo cardiac catheterization, which takes place at the main campus of University of Vermont Medical Center in Burlington. Pulmonary fellows attend the clinic and see patients under the direct supervision of Dr. Hopkins.

Goals

To provide an overview of the pathophysiology, diagnosis and treatment of patients with pulmonary hypertension.

Objectives

To provide experience in the care of patients with pulmonary hypertension. To provide experience in the diagnostic evaluation of pulmonary hypertension. To provide experience in treating patients with pulmonary hypertension.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. Fellows may participate at any time during the 2nd or 3rd year as part of their 6 additional months of half-day per week ambulatory care experience.

Patient Care: Fellows will provide compassionate and appropriate care of patients with pulmonary hypertension. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a sound knowledge of the basic physiological principles that underlie pulmonary hypertension. They will become familiar with the WHO classification of pulmonary hypertension and with the recommended steps in diagnosis, evaluation and management. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary hypertension that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the clinic support staff in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.
Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients and clinic support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients, especially as this pertains to patients with pulmonary hypertension.

Practice-Based Learning: Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs, especially as this pertains to patients with pulmonary hypertension.

System-based Practice: Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM), and radiology systems, and ultimately the electronic medical record as it comes online in the clinic setting. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, home oxygen companies and hospice services, when appropriate. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients with pulmonary hypertension.

Educational Experience

Fellow will evaluate both new patients as well as patients returning for follow-up care under the direct supervision of Dr. Hopkins. All aspects of the pathophysiology, diagnosis and treatment of patients with pulmonary hypertension will be discussed. Special emphasis will be given to how to choose among the many agents now available to treat pulmonary hypertension. Fellows have the opportunity to participate in the cardiac catheterization lab evaluation of patients, as well as observe echo testing and evaluation.

Evaluation and Feedback

In addition to day to day feedback, fellows will be formally evaluated by Dr. Hopkins in their overall performance and with respect to the 6 competency areas outlined by the ACGME. The program director will receive and review these evaluations and share them with the fellows on an ongoing basis, as well as during the formal semiannual meetings between the fellow and the program director.
Pulmonary Disease and Critical Care Medicine Unit

Pulmonary Physiology and Pulmonary Function Testing

Goal
To educate trainees in pulmonary physiology and pulmonary function testing.

Objectives
To provide a physiological basis for the understanding and performance of pulmonary function testing and interpretation. To provide a working knowledge of the techniques involved in pulmonary function testing. To provide direct, hands-on experience in performing and supervising pulmonary function testing.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. This is a mandatory rotation during the first year, and fellows continue to read PFTs throughout their 3 years of training.

Patient Care: Fellows will provide compassionate and appropriate care of patients undergoing pulmonary function testing, including guiding them through the testing procedure as well as helping them understand the results. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of lung function testing, and communication with patients, their families and other health care professionals involved in the care of the patient. By year 3, fellows will be knowledgeable in all aspects of pulmonary function testing performance and interpretation, as well as in decision making based on results.

Medical Knowledge: Fellows will develop a sound knowledge of the basic physiological principles that determine pulmonary function. This will include knowledge of airflow, lung mechanics, gas diffusion, muscle function, drive to breathe, airways hyperresponsiveness, and exercise physiology. They will also learn about the principles of pulmonary function instrumentation and measurement, as well as interpretation. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary function testing that they may be prepared to sit for their board examinations. They will especially be prepared to interpret complex tests such as cardiopulmonary exercise tests.

Professionalism: Fellows will interact with the pulmonary function lab technologists and support staff in a professional, polite manner. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with the pulmonary function lab technologists and support staff when ordering and interpreting tests as well as assessing quality control. Fellows will also learn to communicate effectively with referring physicians to convey the results of pulmonary function testing in a manner that is clinically helpful to those physicians. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients regarding the results and interpretation or pulmonary function tests.

Practice-Based Learning: Fellows will develop a working knowledge of the ATS/ERS guidelines on all aspects of pulmonary function testing, as well as become familiar with other authoritative sources including the
Pulmonary Disease and Critical Care Medicine Unit

AARC guidelines and classic papers and book chapters. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs related to the PFT lab.

System-based Practice: Fellows will learn to use the PFT system and learn about resources to help them with lab-based mechanical or procedural issues, such as working with local technical support and company tech support. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients receiving PFT testing.

Educational Experience

Didactic Seminars - All pulmonary/critical care fellows will attend a series of monthly hour-long seminars given by Dr. Kaminsky during their rotation through the PFT lab that will address the physiological basis of each of the following aspects of pulmonary function:

• Flow-volume loops and spirometry
• Lung volumes
• Pressure-volume relationships
• Bronchial challenge testing
• Gas exchange and lung diffusing capacity
• Symptom-limited exercise challenge testing
• Research topics in pulmonary physiology

A set of reading on each of the above topics, including all up-to-date ATS guidelines, will be provided for each fellow.

Pulmonary Function Testing Interpretations - Each pulmonary fellow will interpret all non-clinic PFT’s performed at the hospital while on-service for the pulmonary consultation service. These PFT interpretations will be supervised by the attending on-service that month. In addition, each fellow will interpret the outpatient PFT’s performed during their weekly clinic day, again under the supervision of an attending physician. The total number of tests expected to be interpreted is approximately 1500 in the 1st year and 600 in each of the 2nd and 3rd year.

Practical Experience in the PFT Lab - Each pulmonary fellow will observe the performance of at least 6 of each of the pulmonary function tests conducted in the PFT lab, including relevant calibration and set-up. In particular, fellows will participate in the supervision required during all exercise testing. Each fellow will also be asked to have their own pulmonary function measured, which will allow them to directly experience each test.

Evaluation and Feedback

Each faculty member will be asked to comment in their routine quarterly reports on the performance of the fellows in the area of pulmonary function testing interpretation. In addition, Dr. Kaminsky will directly address
the performance of each fellow not only in the area of PFT interpretation, but also in the area of PFT testing, based on his direct observation of each fellow in the lab as well as feedback from the PFT technologists. Dr. Kaminsky will provide direct feedback to the fellows regarding their performance in these areas, and will invite the comments and criticism of each fellow regarding the curriculum in this area.

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the PFT lab experience, as shown in the table of tools. Dr. David Kaminsky will meet with fellows at the end of the rotation to review the evaluation.
Goals and Objectives

To provide the trainee experience and knowledge in the assessment of patients for participation in a pulmonary rehabilitation program. To provide the trainee experience and knowledge regarding the components of a pulmonary rehabilitation program, and how patients respond to these interventions. To provide the trainee some knowledge about the administration of a pulmonary rehabilitation program including information about reimbursement and expenses.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. Fellows may participate at any time during the 2nd or 3rd year as part of their 6 additional months of half-day per week ambulatory care experience.

Patient Care: Fellows will learn how to take care of patients referred to pulmonary rehab with a wide variety of pulmonary disorders. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a basic knowledge of the pathophysiology of pulmonary diseases and the current treatment approaches to these diseases. They will also develop a working knowledge of the background and techniques used in pulmonary rehab medicine. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary rehab medicine that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the pulmonary rehab support staff in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients and pulmonary rehab support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients.

Practice-Based Learning: Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-
effectiveness of care through participation in quality assurance programs, especially as this pertains to the pulmonary rehab program.

System-based Practice: Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM), and radiology systems. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, physical therapy, home oxygen companies and hospice services, when appropriate. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients, especially as this pertains to the pulmonary rehab program.

Educational Experience

The Pulmonary Rehabilitation Program at Tilley Drive Campus, South Burlington is run by Charlotte Teneback, MD and Deb Hunton, CRT, CPFT. The Pulmonary Disease and Critical Care Medicine Unit and the Respiratory Care Department provide a series of comprehensive six-week outpatient pulmonary rehabilitation programs for patients with disabling COPD and other chronic lung diseases. Fellows will be expected to participate in these programs in their first year during their Pulmonary Function rotation. Second or third year fellows will have the opportunity to take an elective in Pulmonary Rehabilitation. Experience with evaluating patients for possible enrollment will occur in the fellow’s continuity clinic throughout their training. The resident will attend at least three of the twelve sessions of education and supervised exercise during the six-week program. The fellow will lead one of the educational sessions and is expected to observe and supervise at least one of the exercise sessions. The trainee will work with the medical director and the program coordinator of the program to review the educational program and exercise prescriptions for each participant. The trainee will also work with the program coordinator on selecting appropriate candidates and participating in the pre-course evaluation of the participants.

Evaluation and Feedback

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the rehab rotation, as shown in the table of tools. Dr. Charlotte Teneback will meet with fellows at the end of the rotation to review the evaluation.
Pulmonary Disease and Critical Care Medicine Unit

Lung Cancer Multidisciplinary Clinic

Goal
To provide education and training in the care of patients with lung cancer and other pulmonary involvement in malignant diseases.

Objectives
To learn the evaluation and management of lung cancer patients. This will involve working closely with specialists from other disciplines involved in the care of such patients, such as thoracic radiology, oncology, radiation-oncology, pathology and thoracic surgery. In addition, nursing and social work services are involved as well. The fellow will see patients under the supervision of one of the Pulmonary attendings. Fellows may attend the clinic at anytime during their 2nd and 3rd years as part of their 6 additional months of half-day per week ambulatory care experience.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below:

Patient Care: Fellows will learn how to take care of patients with lung cancer, as well as other malignancies that may involve the lungs and thorax. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a basic knowledge of the pathophysiology of lung cancer, including the evaluation, staging and treatment of disease. In addition, the fellow will become familiar with the specific types of pathologic features associated with each type of cancer. In year 2 of training, fellows will acquire more advanced knowledge of diagnostic and staging modalities, as well as treatment protocols, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary malignancy that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the clinic support staff in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients and clinic support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients, especially as this pertains to lung cancer.

Practice-Based Learning: Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance
projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.

System-based Practice: Fellows will learn to use the medical information systems available to them in clinic, including electronic medical record (PRISM), and radiology systems, and ultimately the electronic medical record as it comes online in the clinic. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, home oxygen companies and hospice services, when appropriate. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients with lung cancer and other pulmonary malignancies.

Educational Experience

Fellows will attend the Multidisciplinary Lung Tumor meeting that is held immediately before the start of the clinic. Fellows will then see patients in the clinic under the supervision of the faculty. Each patient will be discussed with the assigned pulmonary teaching attending. The discussion will provide direction in developing differential diagnoses, directing patient management, and illustrating educational points. In addition, it is expected that fellows will do outside reading relevant to the patient’s problems.

Fellows will be expected to present cases at the monthly outpatient case conference as assigned.

Evaluation and Feedback

Fellow presentations will be critiqued by faculty members present at the time of presentation. This will include feedback on content and presentation.

Written evaluation will occur monthly by the faculty members assigned to the clinics. Also on an annual basis, the trainees will provide written evaluation of faculty.

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the clinic, as shown in the table of tools. Drs. Garrison and Kinsey will meet with fellows at the end of the rotation to review the evaluation.
Sleep Disorders Clinic

The Vermont Regional Sleep Disorders Center (VRSDC) is a regional referral area for patients with sleep disorders from Vermont and upstate New York. The Center is composed of neurologists, ENT surgeons, oral surgeons, general dentists, and clinical psychologists. The Center operates a testing facility which carries out a full range of diagnostic testing for patients with sleep disorders including laboratory polysomnograms, home sleep tests, overnight oximetry, and multiple sleep latency tests. Other laboratory and physiologic testing is available through the University of Vermont Medical Center laboratories and through the Pulmonary Function Laboratory. The core physicians in the Center oversee the management of the patients.

Goals
Trainees will learn the physiology of sleep and ventilatory control during sleep, and the pathophysiology of the common sleep disorders. Trainees will become familiar with the diagnostic tests available for evaluating sleep, sleep-disordered breathing, and other sleep disorders. Trainees will learn to diagnose and manage patients with sleep disorders.

Objectives
Provide trainees with education in the physiology and pathophysiology of sleep and sleep disorders. Provide trainees with experience in carrying out and interpreting the diagnostic tests used to evaluate patients with sleep disorders. Provide trainees with clinical experience in the recognition, diagnosis, and treatment of sleep disorders.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. This is a mandatory month-long rotation during the 1st year, and fellows may elect to spend additional time in the sleep clinic during the 2nd or 3rd year as part of their 6 additional months of half-day per week ambulatory care experience.

Patient Care: Fellows will learn how to take care of patients with sleep disorder breathing, with special attention to obstructive and central sleep apnea. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a basic knowledge of the pathophysiology and treatment of sleep and sleep disordered breathing. They will learn how to acquire and read polysomnograms, as well as become familiar with the sleep latency test and other diagnostic modalities. They will learn about non-invasive ventilation with CPAP and BiPAP. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary sleep medicine that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the clinic support staff in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time
management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

**Communication and Interpersonal Skills:** Fellows will communicate clearly and completely with patients and clinic support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients, especially as this relates to the care of patients with sleep related breathing disorders.

**Practice-Based Learning:** Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.

**System-based Practice:** Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM), and radiology systems, and ultimately the electronic medical record as it comes online in the outpatient setting. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, and home oxygen companies. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients with sleep related breathing disorders.

**Educational Experience**

Pulmonary Fellows Seminars – Didactic Seminars will be conducted by the director the Sleep Laboratory, and will focus on the physiology of sleep, the physiology of ventilatory control during sleep, and the pathophysiology of various sleep disorders. Attendance is mandatory for all trainees.

Sleep Laboratory Experience - Trainees will gain experience with the following diagnostic tests: laboratory polysomnogram, home sleep tests, overnight oximetry, and multiple sleep latency tests. The Sleep Laboratory director will oversee this experience. Trainees will observe a minimum of two of each of the diagnostic tests as they are carried out. This includes participating in the scoring of the laboratory polysomnograms. Trainees will participate in the interpretation of a minimum of five of each of the diagnostic tests.

Sleep Disorders Clinic - Trainees will begin their experience with sleep disorders with a concentrated experience for one month in the first year in order to familiarize them with the management of patients with sleep disorders.
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Evaluation and Feedback

Evaluation of the level of preparedness of the fellows for the seminars and discussions will occur as part of the established quarterly evaluation by the faculty members. The Sleep Laboratory director will evaluate trainees on their knowledge base and clinical progress as part of the established quarterly evaluation of trainees. Trainees will document the tests that they observed and interpret, and report this to the program director at a semiannual evaluation in the first year.

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the Sleep clinic, as shown in the table of tools. Dr. Susan Dunning will meet with fellows at the end of the rotation to review the evaluation.

General Guidelines

Sleep Disorders training is coordinated by the Fellowship Program director and the Sleep Laboratory director. Fellows should contact the Sleep Laboratory director prior to beginning the rotation for specific details as to the time and location of the clinic.
INPATIENT EDUCATION

Anesthesia Elective Rotation

Goals

To acquire knowledge of and competence in airway management and conscious sedation. To acquire knowledge in the physiology and pharmacology related to managing patients undergoing general anesthesia.

Objectives

Understand the indications, contraindications, and complications of general, regional, and local anesthesia. Obtain competence in: establishment of the airway; maintenance of the airway in the non-intubated, unconscious, paralyzed patient; oral and nasotracheal intubation; use of the laryngeal mask airway (LMA); and ventilation by bag or mask. Acquire knowledge of and experience in the use of paralytic agents. To acquire knowledge of double lumen endotracheal tube placement and management, and observe the use of intraoperative cardiac monitoring with transesophageal echo.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below.

Patient Care: Fellows will provide compassionate and appropriate care of patients undergoing anesthesia and in need of airway management. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a sound knowledge of the basic physiological principles that underlie the principles of anesthesia and airway management. In particular, they will learn about the pharmacological principles that govern the use of sedatives, hypnotics, anesthetics, pressors, inotropes, paralytics and the like. They will also learn about hemodynamic monitoring and monitoring of respiratory status on mechanical ventilation. They will become familiar with the use of the laryngeal mask airway and other adjunct devices used in airway management. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of anesthesia in relation to pulmonary and critical care medicine that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the hospital support staff and other colleagues in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients, families and hospital support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment
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and advice regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients, especially as this pertains to anesthesia related care of patients.

*Practice-Based Learning:* Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.

*System-based Practice:* Fellows will learn to use the medical information systems available to them in the hospital, including the EMR (Prism), and radiology systems. They will learn how to effectively use their subspecialty colleagues who provide consultation services. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, home oxygen companies and hospice services, when appropriate. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients.

**Educational Experience**

Fellows will 1) spend time in the OR to learn more about airway management, pharmacology and monitoring of patients undergoing surgery; 2) spend time in the outpatient setting and OB to learn more specifically about the use of conscious sedation and airway management using the LMA; 3) observe the use of TEE in the OR for assessment of intraoperative cardiac function; 4) observe and gain some experience with placement of a double lumen endotracheal tube; 5) observe and gain some experience with management of the difficult airway.

The members of the anesthesia department will provide direct supervision and instruction in airway management techniques. Special attention will be focused on the use of conscious sedation and the use of the LMA and other adjunct devices for airway management.

Didactic teaching in anesthesia pharmacology and specifically paralytic agents will be provided as part of the critical care lecture series.

Fellows will be expected to do additional text and journal reading as assigned by Department of Anesthesia.

Fellows will keep a log of all procedures performed as part of this rotation.
Evaluation and Feedback

Trainees will be evaluated for cognitive and technical skills by the supervising anesthesia physician(s). Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the Anesthesia rotation, as shown in the table of tools. Attendings will meet with fellows at the end of the rotation to review the evaluation.

Trainees will evaluate the rotation and supervising physicians following the month rotation using the standard evaluation form (see section 3).

The program director will review these evaluations at the semi-annual evaluation.
Infectious Disease Rotation

Goals and Objectives

Learn to recognize, diagnose, and manage common Infectious Disease syndromes. Gain knowledge of the antimicrobial agents available and their appropriate use. Learn how to interpret gram stain and culture results and how to use the microbiology lab appropriately.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. This elective may be taken at any time during the 2\textsuperscript{nd} or 3\textsuperscript{rd} year.

Patient Care: Fellows will provide compassionate and appropriate care of patients with infectious disease. They will become familiar with diagnostic evaluation of sputum for cells and organisms. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a sound knowledge of the basic pathophysiology of infections that involve the lungs, as well as sepsis and other infections related to critical illness. In particular, the fellows will become familiar with community-acquired pneumonia, ventilator associated pneumonia, pleural space infections, lung abscesses, and opportunistic infections of the lungs, and their relevant treatment. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of infectious disease in relation to pulmonary and critical care medicine that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the hospital support staff and other colleagues in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients, families and hospital support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients, especially as this pertains to infectious disease related care of patients.

Practice-Based Learning: Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3,
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fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.

System-based Practice: Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM) and radiology systems. They will learn how to effectively use their subspecialty colleagues who provide consultation services. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, and home oxygen companies. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients.

Teaching Methods

Didactic lectures
Housestaff noon lectures
Infectious Disease Conferences
Oral Case presentation and discussion (inpatient and outpatient)
Bedside teaching
Self-directed learning

Curriculum

Urinary Tract Infections
Pneumonia
Central Nervous System Infections
Endocarditis and Intravascular Infections
Skin and Soft Tissue Infections
Bone and Joint Infections
Intra-abdominal Infections
Sexually Transmitted Diseases
Tuberculosis
Management of HIV
Travel Medicine
Adult Vaccination
Sepsis
Fever and Rash
Interpretation of Culture Results
Infections in Immunocompromised Patients
Neutropenia
Transplantation
Hematologic malignancies
Immune suppressive therapy
Antimicrobials (mechanisms of action and resistance, spectrum of activity, toxicities)
Considerations in choice of antimicrobial agent
Penicillins
Cephalosporins, monobactams, carbapenems
Quinolones, aminoglycosides, metronidazole, and clindamycin
Macrolides, sulfonamides, tetracyclines, vancomycin, streptogramins, oxazolidinones
Antifungals and Antivirals

Activities (see calendar)

Core lectures given at 9 am Mon - Thurs.
Daily clinical rounds each afternoon
Infectious Disease Conference or Journal Club each Thurs at 8 am
Attend outpatient clinic one morning per week
Attend Travel clinic one morning per month
Work up at least one new consultation each day
Follow 3 - 5 consult patients on a daily basis
Formal 15 minute presentation on a topic of his/her choice

Criteria for Evaluation

Fund of knowledge
Understanding of the role of the consultant
Quality of data collection and assessment
Quality of notes and flow sheets
Quality of interactions with patients and all members of the health care team.

Readings

Principles and Practice of Infectious Diseases, Mandell, Bennett, and Dolin. Fifth Edition.

A Practical Approach to Infectious Diseases, Reese and Betts, Fourth Edition

Selected Papers in the Infectious Disease Core Reading File

Evaluation and Feedback

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the ID rotation, as shown in the table of tools. Attendings will meet with fellows at the end of the rotation to review the evaluation
Medical Intensive Care Unit

Goal
To provide training and education in the care and management of critically ill medical patients.

Objectives
To provide direct, hands-on experience in caring for critically ill patients. To provide education and experience in performing and supervising procedures necessary for the practice of critical care medicine. To provide experience and knowledge in managing an intensive care unit.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below:

Patient Care: Fellows will provide compassionate and appropriate care of patients with critical illness or consulted upon because of acute deterioration in clinical stability or status. They will become adept at all basic invasive procedures required in the care of the critically ill patient, including, but not limited to central venous access, arterial blood monitoring, pulmonary artery catheter placement and data interpretation, intracranial pressure monitoring, mechanical ventilation, thoracentesis, paracentesis, lumbar puncture and chest tube insertion. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, running rounds, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a sound knowledge of the basic physiological principles that underlie critical illness. They will understand the appropriate work-up and management of a wide variety of diseases that result in critical illness. They will learn about diagnostic testing, critical care monitoring, including troubleshooting of mechanical ventilatory and pressure monitoring systems, and critical care therapeutics, both pharmaceutical and non-pharmaceutical (e.g., mechanical ventilation, IABP and other devices). They will understand, in particular, the appropriate role of subspecialty consultation. Fellows will also learn about end of life issues and gain experience in working with psychiatrists, social workers, palliative care specialists and the hospice team. Fellows will learn about caring not only for the critically ill patient but also supporting their family at the time of illness. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary and critical care medicine that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the hospital support staff and other colleagues in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. They will be particularly sensitive to the needs of their patients’ family and loved ones. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients, families and hospital support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment.
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and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients, especially as this pertains to in-hospital care of patients.

Practice-Based Learning: Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.

System-based Practice: Fellows will learn to use the medical information systems available to them in the hospital, including the electronic medical record system (PRISM) and radiology systems. They will learn how to effectively use their subspecialty colleagues who provide consultation services. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, home oxygen companies and hospice services, when appropriate. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients in the hospital setting.

Educational Experience

Fellows will rotate on the MICU service as outlined in the general schedule. Fellows will actively participate in all aspects of the care of patients on the medical ICU service. This should include but is not limited to medical management, procedures, family meetings, communication with referring physicians, and bed management issues. All admissions will be seen by the fellow and subsequently discussed with the attending physician. Fellows will document a complete history and physical examination in the hospital chart for each new admission. As training advances, fellows will take on increasing responsibilities for patient care in the MICU.

Fellows in their first year of training will attend 2 MICU Quality Assurance Committee meetings. In the second year, fellows will develop a QA project to be completed by the third year of training. Fellows will present the results to the MICU QA committee and to the Pulmonary/Critical Care Faculty.

In the third year of training, fellows will complete a one month rotation as the “Acting Attending” for the MICU service. The fellow will have complete responsibility for the MICU management under the guidance of an attending physician. This will serve the specific goal of preparing fellows for their final step beyond fellowship training and into a practicing physician.
Evaluation and Feedback

Fellows will be informally critiqued on case management and performance of invasive procedures while rotating on the MICU service.

Fellows will be formally evaluated each month. Fellows will evaluate their educational experience on the MICU rotation and the attending faculty each month.

The program director will formally review this educational program semiannually with the fellows and the faculty.

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the MICU rotation, as shown in the table of tools. Attendings will meet with fellows at the end of the rotation to review the evaluation.

General Guidelines

McClure 4 intensive care is a combined medical and cardiac intensive care unit. The 21-bed unit is under the joint direction of a cardiology and a pulmonary/critical care faculty member. The key components to the health care team is the staff of nurses, respiratory therapists and others who are highly trained and experienced in ICU care. The unit is committed to the team approach to ICU care. Communication is of utmost importance.

Admission Policy – MICU - All admissions to the MICU (regardless of origin) must be approved by the MICU attending physician. Emergency admissions from the regular floor should be seen by the senior resident prior to transfer. A call schedule for the MICU service is listed on the unit and is known to the hospital operator. The charge nurse must be informed by the senior resident or fellow of all patient admissions and transfers.

Daily Rounds, Responsibilities, and Codes - Formal rounds begin at 9 AM. All Fellows are expected to have evaluated their patients and collected pertinent data prior to the beginning of rounds. Fellows are expected to attend morning check-in rounds at 7:00 AM and to have done the same pre-round evaluation and to supervise the residents in initiating daily care plans and weaning from mechanical ventilation. X-rays will be reviewed in the Radiology Department as part of attending rounds from 9 – 11:30 AM. Daily progress notes should be completed in a timely fashion. Fellows will round with the social work team at 8:30 am.

Afternoon rounds are conducted at 4PM daily. Evening sign out will occur at 7:00 pm daily. Follow up on daily progress and diagnostic tests are reported at this time. These rounds are an important part of effective ICU communication and planning for the on-call team.

Residents and fellows are expected to attend all critical care conferences. Residents and fellows are excused for any continuity clinic duties related to the training program.

The MICU team also is responsible for directing in house code-calls. The senior resident should be in charge of running the code with the assistance of the fellow. Fellows should assume responsibility for airway management at all codes.

The resident physicians write all orders. Transfer and discharge orders are written by the MICU service and should be written before 9 AM. Transfer notes (admission and discharge) for MICU patients are the responsibility of the respective services.
Procedures - Procedures will be performed and documented as outlined in the Procedure Training and Documentation section. Fellows are expected to actively supervise and teach residents in procedure training. (See Section: Evaluation Process: Procedures - Evaluation and Documentation of Competency)

Psycho-social rounds – Fellows are expected to attend these rounds weekly when they are on the MICU rotation. These rounds are attended by the Director of Medical Ethics, Psychiatry, Social Services, Nursing, and MICU physician staff. Discussion is centered on clinical ethics, patient and family communication, and the impact of psychiatric illness in the ICU.

Conferences - Fellows are expected to attend the weekly critical care conference. This conference provides the didactic teaching curriculum as outlined above. In addition fellows will be expected to attend and participate in the monthly Pulmonary and Critical Care Journal Club. Fellows will also be expected to assist with didactic teaching conferences for residents rotating on the critical care service. Fellows are expected to attend the Department of Medicine Morbidity and Mortality conferences one Friday a month at 9AM when MICU patients are presented. The Chief Medical Resident will notify the Fellows of the date of this conference.
# MICU Daily Schedule

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Pulmonary Disease and Critical Care Medicine Unit

Pulmonary Medicine Consultation Service

Goal
To teach fellows basic and advanced skills in diagnosing and managing hospitalized patients with simple and complex pulmonary illnesses.

Objectives
To assist fellows in improving their ability to examine inpatients with pulmonary disorders at the bedside. To teach fellows to effectively communicate clinical and administrative information to colleagues, nurses, and students. To teach fellows to coordinate and integrate information derived from pulmonary function testing, radiographic studies, bronchoscopy, and other pulmonary and non-pulmonary tests in assessing individual pulmonary inpatients. To assist fellows in enhancing skills in communicating with medical professionals, and with patients and their families through verbal and written communication. To teach fellows to administer an inpatient consultation service that provides effective, appropriate and timely service in a teaching hospital setting.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below:

Patient Care: Fellows will provide compassionate and appropriate care of inpatients with pulmonary disease or referred for consultation because of respiratory related disorders. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a sound knowledge of the basic physiological principles that underlie pulmonary disease. They will learn the appropriate work-up and management of a wide variety of pulmonary disorders, especially in the inpatient setting. This includes specialized knowledge and exposure in the areas of history taking, physical exam, imaging and pathologic analysis of cells and tissues. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of pulmonary and critical care medicine that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the hospital support staff and other colleagues in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients and hospital support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training,
fellows will be adept at efficient and complete communication with colleagues and patients, especially as this pertains to in-hospital care of patients.

**Practice-Based Learning:** Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.

**System-based Practice:** Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM), and radiology systems, and ultimately the electronic medical record as it becomes available in the clinic. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, home oxygen companies and hospice services, when appropriate. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients in the hospital setting.

**Educational Experience**

**Bedside Teaching** - Fellows will attend rounds daily with the attending teaching physician and visit selected patients.

Fellows will visit inpatients in a timely fashion for new consultation and daily (or as frequently as appropriate) thereafter. At each visit, fellows will carry out an appropriately focused bedside exam and review relevant laboratory data, consultations, and radiographic information.

**Didactic Sessions** - The fellow assigned to the pulmonary consultation service will attend routinely scheduled didactic session including case conferences, VLC meetings, grand rounds, journal club, and textbook review sessions. Fellows will complete appropriate readings regarding key inpatients in textbooks, journals, and other scholarly sources.

It can be anticipated that each fellow will consult on at least 20-40 new patients during each month on the clinical consultation service.

Fellows will assume increasing responsibility for patient care as they become more senior in their training. By their third year, fellows will be functioning independently as a consultant, interacting directly with housestaff and attendings, performing procedures, and being involved in interdisciplinary care of their patients.

**Evaluation and Feedback**

Written evaluation will be completed by the attending physician(s) at the end of each rotation on the consult service. The fellowship program director will provide feedback to the fellows regarding their performances in the scheduled semi-annual meeting.
The trainees will provide written evaluation of the attending and the rotation at the end of each month’s rotation.

Concerns or issues regarding fellows' performance that are raised by medical staff outside the pulmonary training program will be brought to the attention of the program director who will address them individually with the fellow.

Areas for improvement can be addition of additional evaluation session with fellows at 2 weeks into the inpatient rotation to allow feedback and time for change, if needed.

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the Consult rotation, as shown in the table of tools. Attendings will meet with fellows at the end of the rotation to review the evaluation.
**Goals**
To gain knowledge skills in the care of patients with a variety of surgical problems. To gain knowledge and skills in procedures unique to the care of SICU patients. To gain knowledge of the unique management needs of surgical patients.

**Objectives**
The surgical intensive care unit cares for all critically ill surgical patients. This provides the trainee with an opportunity to become familiar with the care of a wide variety of surgical problems. Trainees will become experienced in the care and management of patients in the following areas: trauma, neurosurgery, general surgery, vascular surgery, and cardiothoracic surgery.

These goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. This rotation is required during the 1st, 2nd and 3rd years of training for a total of 2 months experience.

**Patient Care:** Fellows will provide compassionate and appropriate care of patients with critical illness or consulted upon because of acute deterioration in clinical stability or status. In the SICU, this will particularly pertain to patients with surgical issues, such as post-operative state, trauma. They will become adept at all basic invasive procedures required in the care of the critically ill patient, including, but not limited to central venous access, arterial blood monitoring, pulmonary artery catheter placement and data interpretation, intracranial pressure monitoring, mechanical ventilation, thoracentesis, paracentesis, lumbar puncture and chest tube insertion. In year 3 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, running rounds, teaching, and communication with patients, their families and other health care professionals involved in the care of the patient.

**Medical Knowledge:** Fellows will develop a sound knowledge of the basic physiological principles that underlie critical illness. They will understand the appropriate work-up and management of a wide variety of surgical conditions or diseases that result in critical illness. They will understand, in particular, the appropriate role of additional diagnostic testing (e.g. imaging) and subspecialty consultation. Fellows will also learn about end of life issues and gain experience in working with psychiatrists, social workers, palliative care specialists and the hospice team. Fellows will learn about caring not only for the critically ill patient but also supporting their family at the time of illness. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of surgical critical care in relation to pulmonary and critical care medicine that they may be prepared to sit for their board examinations.

**Professionalism:** Fellows will interact with their patients and with the hospital support staff and other colleagues in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. They will be particularly sensitive to the needs of their patients family and loved ones. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

**Communication and Interpersonal Skills:** Fellows will communicate clearly and completely with patients, families and hospital support staff regarding all aspects of patient care. They will also learn how to
appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment
and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at
teaching colleagues through effective communication and delivery of useful information. In the third year of
training, fellows will be adept at efficient and complete communication with colleagues and patients, especially
as this pertains to in-hospital care of patients.

**Practice-Based Learning:** Fellows will develop a working knowledge of the current standards of care of
patients based on guidelines and review of the medical literature. They will participate in Quality Assurance
projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and
acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3,
fellows will continue to hone their skills in reading and interpreting the medical literature, advance their
learning through participating in seminars and conferences, and improve the quality, efficiency and cost-
effectiveness of care through participation in quality assurance programs.

**System-based Practice:** Fellows will learn to use the medical information systems available to them in clinic,
including the electronic medical record (PRISM) and radiology systems. They will learn how to effectively use
their subspecialty colleagues who provide consultation services. They will also learn about other systems
available to assist and participate the care of their patients, such as social work services, respiratory therapy,
visiting nurses, home oxygen companies and hospice services, when appropriate. In year 2, fellows will
improve their skills at use of consultative services, as well as awareness and implementation of cost-effective
health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health
care related services and resources available to them to provide the most cost-effective and high quality care of
their patients in the hospital setting.

**Educational Experience**

Experience will be accomplished by caring for SICU patients as a member of the Surgical Critical Care Service.
Care of patients in the surgical intensive care unit is a collaborative effort between the surgical team and the
critical care team. Pulmonary Critical Care Fellows will rotate as a member of the SICU team. The team is
comprised of one senior and one junior surgical resident and an attending physician. Fellows will rotate on the
service for one month in each of their first, second and third years of training. Bedside teaching and procedure
training will occur as part of the daily work rounds. Fellows should document all procedures performed in the
SICU.

An informational packet regarding SICU policies and procedures will be distributed to each fellow prior to their
first SICU rotation. Fellows are expected to follow these guidelines.

Fellows will assume increasing roles in teaching and supervising the surgical housestaff about critical care
medicine as they progress from their second to third years.

**General Guidelines**

Fellows will attend all SICU teaching conferences as part of the SICU team. Fellows are expected to attend the
½ day Pulmonary continuity clinic as scheduled and the Thursday and Friday Pulmonary and Critical Care
conferences. Night call will be taken as part of the regular Pulmonary and Critical Care Medicine call schedule.
Fellows are encouraged to participate in the care of SICU patients as much as possible when on call for the
Pulmonary and Critical Care Medicine division.
Evaluation and Feedback

Fellows will be informally critiqued on case management and performance of invasive procedures while rotating on the SICU service.

Fellows will be formally evaluated on a rotation basis by the surgical ICU attending physician. Fellows will evaluate their educational experience on the SICU rotation and the SICU attending(s) at the end of each rotation.

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the SICU rotation, as shown in the table of tools. Attendings will meet with fellows at the end of the rotation to review the evaluation.
Goals:

After completion of the rotation in thoracic radiology, the fellow will be able to:
1. Define the role of the radiologist as a consultant to the pulmonary/critical care physician
2. Detail the relative utility of the various thoracic imaging techniques in the evaluation of the patient with chest disease
3. Define the use of imaging studies in guiding invasive diagnostic procedures including bronchoscopy, pleural biopsy, and pleural aspiration and drainage procedures
4. Understand the complementary role of thoracic imaging with clinical and physiologic measurements of chest disease
5. Recognize the knowledge-based objectives listed below

The goals and objectives will be based on the 6 ACGME competencies, as specified for each competency below. Fellows may participate at any time during the 2nd or 3rd year.

Patient Care: Fellows will provide compassionate and appropriate care of patients undergoing diagnostic imaging. In year 2 of training, fellows will develop increasing responsibility for patient care, as evidenced by more independent interpretation of data, performance of procedures, decision making, and communication with patients, their families and other health care professionals involved in the care of the patient. In year 3 of training, fellows will be functioning near or at the level of the attending in terms of overall care of the patient, while still under the supervision of the faculty.

Medical Knowledge: Fellows will develop a sound knowledge of the basic physiological principles that underlie plain x-ray, CT scan, PET scan, MRI, nuclear medicine, ultrasound and other diagnostic imaging modalities. They will also become familiar with invasive radiological approaches and techniques such as CT guided and ultrasound guided aspiration and biopsies. In year 2 of training, fellows will acquire more advanced knowledge of pathophysiology and disease states, and understand and utilize resources to gain additional knowledge. In year 3, fellows will be fully versed in sufficient knowledge of thoracic imaging in relation to pulmonary and critical care medicine that they may be prepared to sit for their board examinations.

Professionalism: Fellows will interact with their patients and with the hospital support staff and other colleagues in a professional and polite manner. They will respect patient privacy and autonomy and be sensitive to the diversity of patients’ backgrounds. In the second year of training, fellows will be expected to improve their professionalism by acquiring team leadership skills and the ability to manage conflict resolution. They will also develop time management skills, especially to assist them in balancing their clinical duties and their research activities. By the third year the fellows will have developed an independent professional style.

Communication and Interpersonal Skills: Fellows will communicate clearly and completely with patients, families and hospital support staff regarding all aspects of patient care. They will also learn how to appropriately communicate by dictated letter and telephone with referring physicians regarding their assessment and advise regarding the patient. In the second year, fellows will develop increasing experience and skill at teaching colleagues through effective communication and delivery of useful information. In the third year of training, fellows will be adept at efficient and complete communication with colleagues and patients, especially as this pertains to thoracic imaging and related procedures involved in the care of patients.
Pulmonary Disease and Critical Care Medicine Unit

Practice-Based Learning: Fellows will develop a working knowledge of the current standards of care of patients based on guidelines and review of the medical literature. They will participate in Quality Assurance projects that seek to optimize and improve patient care. In year 2, fellows will increasingly identify and acknowledge their own limitations in knowledge and skills and work towards improving them. In year 3, fellows will continue to hone their skills in reading and interpreting the medical literature, advance their learning through participating in seminars and conferences, and improve the quality, efficiency and cost-effectiveness of care through participation in quality assurance programs.

System-based Practice: Fellows will learn to use the medical information systems available to them in clinic, including the electronic medical record (PRISM), and radiology systems. They will learn how to effectively use their subspecialty colleagues who provide consultation services. They will also learn about other systems available to assist and participate the care of their patients, such as social work services, respiratory therapy, visiting nurses, and home oxygen companies. In year 2, fellows will improve their skills at use of consultative services, as well as awareness and implementation of cost-effective health care strategies. In year 3, fellows will be fully aware of and gain further experience in utilizing the health care related services and resources available to them to provide the most cost-effective and high quality care of their patients.

Objectives:

Interstitial lung disease

1. List and identify on a chest radiograph and chest CT four patterns of interstitial lung disease (ILD)
2. Make a specific diagnosis of ILD when supportive findings are present in the history or on radiologic imaging (e.g. dilated esophagus and ILD in scleroderma, enlarged heart and a pacemaker or defibrillator in a patient with prior sternotomy and ILD suggesting amiodarone drug toxicity)
3. Identify Kerley A and B lines on a chest radiograph and explain their etiology
4. Recognize the changes of congestive heart failure on a chest radiograph – enlarged cardiac silhouette, pleural effusions, vascular redistribution, interstitial and/or alveolar edema, Kerley lines
5. Define the terms “asbestos-related pleural disease” and “asbestosis;” identify each on a chest radiograph and chest CT
6. Describe what a “B” reader is as related to the evaluation of pneumoconiosis
7. Identify honeycombing on a radiograph and high resolution chest CT (HRCT), state the significance of this finding (end-stage lung disease), and list the common causes of honeycomb lung
8. State the radiographic classification of sarcoidosis
9. Recognize progressive massive fibrosis/conglomerate masses secondary to silicosis or coal worker’s pneumoconiosis on radiography and chest CT
10. Recognize the typical appearance of irregular lung cysts and/or nodules on chest CT of a patient with Langerhan’s cell histiocytosis
11. List four causes of unilateral ILD
12. List three causes of lower lobe predominant ILD
13. List two causes of upper lobe predominant ILD
14. Identify a secondary pulmonary lobule on HRCT
Pulmonary Disease and Critical Care Medicine Unit

15. Identify lymphangioleiomyomatosis on a chest radiograph and HRCT
16. Identify and give appropriate differential diagnoses when the patterns of septal thickening, perilymphatic nodules, bronchiolar opacities ("tree-in-bud"), air trapping, cysts, and ground glass opacities are seen on HRCT

Alveolar lung disease

1. List four broad categories of acute alveolar lung disease (ALD)
2. List five broad categories of chronic ALD
3. Name three pulmonary-renal syndromes
4. List five of the most common causes of adult respiratory distress syndrome
5. Name four predisposing causes of bronchiolitis obliterans organizing pneumonia (BOOP)
6. Suggest a specific diagnosis of ALD when supportive findings are present in the history or on the chest radiograph (e.g. broken femur and ALD in fat embolization syndrome, ALD and renal failure in a pulmonary-renal syndrome, ALD treated with bronchoalveolar lavage in alveolar proteinosis)
7. Recognize a pattern of peripheral alveolar lung disease on radiography or chest CT and give an appropriate differential diagnosis, including a single most likely diagnosis when supported by associated radiologic findings or clinical information (e.g. peripheral lung disease associated with paratracheal and bilateral hilar adenopathy in an asymptomatic patient with "alveolar" sarcoidosis, peripheral lung disease associated with a markedly elevated blood eosinophil count in a patient with eosinophilic pneumonia, peripheral opacities associated with multiple rib fractures and pneumothorax in a patient with acute chest trauma and pulmonary contusions)

Atelectasis, Airways and Obstructive Lung Disease

1. Recognize partial or complete atelectasis of the following on a chest radiograph: right upper lobe, right middle lobe, right lower lobe, right upper and middle lobe, right middle and lower lobe, left upper lobe, left lower lobe
2. Recognize complete collapse of the right or left lung on a chest radiograph and list an appropriate differential diagnosis for the etiology of the collapse
3. Distinguish lung collapse from massive pleural effusion on a frontal chest radiograph
4. Name the 4 types of bronchiectasis and identify each type on a chest CT
5. Name 5 common causes of bronchiectasis
6. Recognize the typical appearance of cystic fibrosis on a radiograph and chest CT
7. Name the important things to look for on a chest radiograph when the patient history is “asthma”
8. Define tracheomegaly
9. Recognize tracheal and bronchial stenosis on chest CT and name the most common causes
10. Name the 3 types of pulmonary emphysema and identify each type on a chest CT
11. Recognize alpha-1-antitrypsin deficiency on a chest radiograph and chest CT
12. Recognize Kartagener’s syndrome on a chest radiograph and name the 3 components of the syndrome
13. Define the term giant bulla, differentiate giant bulla from pulmonary emphysema and state the role of imaging in patient selection for bullectomy
14. State the imaging findings used to identify surgical candidates for giant bullectomy and for lung volume reduction surgery

Solitary and Multiple Pulmonary Nodules

1. State the definition of a solitary pulmonary nodule and a pulmonary mass
2. Name the three most common causes of a solitary pulmonary nodule
3. Name four important considerations in the evaluation of a solitary pulmonary nodule
4. Name six causes of cavitary pulmonary nodules
5. Name four causes of multiple pulmonary nodules
6. State the indications for percutaneous biopsy of a solitary pulmonary nodule
7. State the indications for percutaneous biopsy when there are multiple pulmonary nodules
8. State the complications and the frequency with which complications occur due to percutaneous lung biopsy using CT or fluoroscopic guidance
9. State the indications for chest tube placement as a treatment for pneumothorax nrelated to percutaneous lung biopsy
10. State the role of positron emission tomography (PET) in the evaluation of a solitary pulmonary nodule

Benign and Malignant Neoplasms of the Lung and Esophagus

1. Name the four major histologic types of bronchogenic carcinoma, and state the difference between non-small cell and small cell lung cancer
2. Name the type of non-small cell lung cancer that most commonly cavitates
3. Name the types of bronchogenic carcinoma that are usually central
4. Describe the TNM classification for staging non-small cell lung cancer, including the components of each stage (I, II, III, IV, and substages), and the definition of each component (T1-4, N0-3, M0-1)
5. State the staging of small cell lung cancer
6. Name the four most common extrathoracic sites for non-small cell lung cancer and small cell lung cancer to metastasize
7. State which stages of non-small cell lung cancer are potentially resectable
8. Recognize abnormal contralateral mediastinal shift on a post-pneumonectomy chest radiograph and state five possible etiologies for the abnormal shift
9. Name the most common location for adenoid cystic and carcinoid tumors to occur
10. Suggest the possibility of radiation change as a cause of new apical opacification on a chest radiograph of a patient with evidence of mastectomy and/or axillary node dissection
11. Describe the acute and chronic radiographic and CT appearance of radiation injury in the thorax (lung, pleura, pericardium, esophagus) and the temporal relationship to radiation therapy
12. State the role of MR in lung cancer staging (e.g. chest wall invasion, superior sulcus or Pancoast tumor)
13. State the role of positron emission tomography (PET) in lung cancer staging
14. Describe the TNM classification for staging esophageal carcinoma, including the components of each stage (I, II, III, IV) and the definition of each component (T, N and M)
15. State the role of imaging in the staging of esophageal carcinoma
16. State which stages of esophageal carcinoma are potentially resectable
17. State the classification of lymphoma, the role of imaging in the staging of lymphoma, and the typical and atypical manifestations of thoracic lymphoma
18. Define primary pulmonary lymphoma
19. Describe the typical chest radiograph and chest CT appearances of Kaposi sarcoma

**Evaluation and Feedback**

Fellows will be evaluated with respect to the 6 competencies using tools appropriate to the Thoracic Radiology rotation, as shown in the table of tools. Attendings will meet with fellows at the end of the rotation to review the evaluation.
Critical Care Medicine and Inpatient Pulmonary Case Conference (on Thursdays)

Objectives
To provide trainees opportunity to present pulmonary and critical care hospital consultations for peer review. To provide trainees the opportunity to learn presentation skills. To learn the pathophysiology, diagnosis and management of patients hospitalized with pulmonary disease and critical illnesses. To review historic and current literature relevant to the cases presented for discussion.

Educational Experience

This once monthly conference will focus on inpatient pulmonary and critical care medicine consultations. The educational objectives will be obtained by the following methods:
1. The inpatient consultation service will select 2-3 cases for presentation.
2. Cases will be presented and relevant laboratory and radiographic material will be available for review.
3. Following each case presentation, a discussion of the relevant literature will take place
4. A reference list or copies of relevant articles should be available for distribution at the conference for all participants.

Evaluation and Feedback

Fellow presentations will be critiqued by faculty members present at the time of presentation. This will include feedback on content and presentation.

General Guidelines

The trainees and/or faculty members responsible for the inpatient pulmonary consultation service are expected to prepare and present this conference. It is expected that trainees will present a minimum of six conferences in the course of the training program.
Pulmonary Disease and Critical Care Medicine Unit

Outpatient Pulmonary Case Conference (on Thursdays)

**Goal**
To provide additional training in the management of outpatients with pulmonary disease

**Objective**
To learn management issues specific to outpatients with pulmonary diseases. To enhance skills in case presentations to peers. To review relevant literature to the management of outpatients with pulmonary disease.

**Educational Experience**
This conference is held once per month in the MICU conference room. Two to three cases will be presented. The format will be a five-minute presentation followed by a 10-minute discussion. Each presenter will provide a review of the journal articles relevant to the presented case. Second and third year fellows will manage and present this conference under the guidance of a faculty member.

**Evaluation and Feedback**
Fellow presentations will be critiqued by faculty members present at the time of presentation. This will include feedback on content and presentation.

The program director will review all evaluations and monitor the quality of the conference series. The program director will formally review this educational program semiannually with the fellows and the faculty.

**General Guidelines**
A senior fellow will be assigned to coordinate this conference for the academic year. Requests for radiographs should be submitted to the radiology file room no later than 2 days prior to the conference. It is each presenter’s responsibility to obtain all relevant materials for the conference.
Pulmonary Disease and Critical Care Medicine Unit

**Pulmonary Pathology with Radiographic Correlation (on Thursdays)**

**Objectives**

To provide trainees didactic training in lung pathology. To understand the radiographic correlates in lung pathology

**Educational Experience**

This once monthly conference is a multidisciplinary conference directed at learning lung pathology and the radiographic correlates. The pulmonary division will present three cases and a chest radiologist will discuss the radiographic features. The pathologist will then show the corresponding pathology and discuss the pathologic features as well as relevant diagnostic techniques such as special stains. Trainees are encouraged to bring journal articles relevant to their cases for group discussion.

**General Guidelines**

A designated trainee will coordinate the pathology/radiology conference.
Pulmonary Disease and Critical Care Medicine Unit

Pulmonary and Critical Care Teaching Conferences (Fridays Noon)

Goal
To provide specific, detailed knowledge of critical care medicine topics.

Objectives
To provide education in the basic science and the physiology of critical care medicine. To provide instruction in specific multidisciplinary critical care medicine topics. To provide education in the indications, contraindications, and complications of common ICU procedures.

Educational Experience
All pulmonary/critical care fellows will attend a series of weekly hour-long seminars given by faculty members of the Pulmonary/Critical Care Division as well as by faculty in other related disciplines such as Medicine subspecialties, Surgery, Anesthesia and Obstetrics/Gynecology. The outline for these topics, to be completed over 2 years, is as follows (~75 lectures):

Critical Care Topics:

<table>
<thead>
<tr>
<th>Cardiovascular Disease</th>
<th>Endocrine/Dermatologic Diseases</th>
<th>Gastrointestinal Diseases</th>
<th>Ethical, administrative issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>cardiopulmonary resuscitation</td>
<td>thyroid – myxedema, storm, sick euthyroid</td>
<td>upper and lower GI bleeding</td>
<td>ethical and legal considerations</td>
</tr>
<tr>
<td>cardiogenic shock</td>
<td>adrenal crisis, pheochromocytoma</td>
<td>acute pancreatitis</td>
<td>psychosocial aspects of critical illness</td>
</tr>
<tr>
<td>myocardial infarction</td>
<td>diabetes: DKA, HNK</td>
<td>acute hepatic failure</td>
<td>JCAHO guidelines</td>
</tr>
<tr>
<td>pericardial and valvular diseases</td>
<td>nutrition</td>
<td>acute biliary disease</td>
<td></td>
</tr>
<tr>
<td>cardiomyopathy</td>
<td>TEN, Stevens-Johnson</td>
<td>acute inflammatory bowel disease</td>
<td></td>
</tr>
<tr>
<td>hypertensive crisis</td>
<td></td>
<td>acute vascular bowel disease</td>
<td></td>
</tr>
<tr>
<td>vascular emergencies</td>
<td></td>
<td>toxic megacolon</td>
<td></td>
</tr>
<tr>
<td>hemodynamic monitoring/temporary pacers</td>
<td></td>
<td>acute perforations, ruptures</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Respiratory Disease</th>
<th>Infectious Diseases</th>
<th>Gastrointestinal Diseases</th>
<th>Ethical, administrative issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>acute respiratory failure</td>
<td>sepsis, septic shock</td>
<td>obstructive uropathy</td>
<td>ethical and legal considerations</td>
</tr>
<tr>
<td>status asthmaticus</td>
<td>antimicrobials</td>
<td>urinary tract bleeding complications of pregnancy (toxemia, etc.)</td>
<td>psychosocial aspects of critical illness</td>
</tr>
<tr>
<td>pneumonia</td>
<td>immunocompromised hosts (including AIDS)</td>
<td></td>
<td>JCAHO guidelines</td>
</tr>
<tr>
<td>pulmonary, air embolism</td>
<td>nosocomial infections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aspiration, chemical pneumonia, drowning, smoke inhalation/burns</td>
<td>community-acquired (toxic shock, meningococcus, SBE)</td>
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<tr>
<td>hemoptysis</td>
<td></td>
<td></td>
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<tr>
<td>mechanical ventilation and monitoring</td>
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<tr>
<td>upper airway obstruction</td>
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<td></td>
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<tr>
<td>pulmonary hypertension</td>
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<table>
<thead>
<tr>
<th>Renal Disease</th>
<th>Hematologic Diseases</th>
<th>Surgical issues</th>
<th>Poisonings</th>
</tr>
</thead>
<tbody>
<tr>
<td>acute renal failure</td>
<td>acute coagulation defects</td>
<td>head trauma</td>
<td>acetaminophen, aspirin, alcohol, cocaine TCA, MAO, neuroleptic, opiates</td>
</tr>
<tr>
<td>acid-base disorders</td>
<td>anticoagulation, fibrinolytic therapy</td>
<td>chest trauma</td>
<td>other – carbon monoxide</td>
</tr>
<tr>
<td>metabolic derangements (Ca++, Mg++, etc.)</td>
<td>acute hemolytic disorders (including sickle cell)</td>
<td>abdominal trauma</td>
<td></td>
</tr>
<tr>
<td>dialysis</td>
<td>acute neoplastic crisis</td>
<td>skeletal trauma</td>
<td></td>
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<tr>
<td></td>
<td>blood component therapy</td>
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</tbody>
</table>

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<thead>
<tr>
<th>Neurologic Disease</th>
<th>Rheumatologic</th>
<th>Anesthesia issues</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>coma</td>
<td>vasculitis</td>
<td>airway maintenance</td>
<td>hemodynamic</td>
</tr>
<tr>
<td>seizures</td>
<td></td>
<td>paralytics</td>
<td>cerebral</td>
</tr>
<tr>
<td>Myasthenia, Guillaine-Barre</td>
<td></td>
<td></td>
<td>respiratory</td>
</tr>
<tr>
<td>cerebral vascular disease</td>
<td></td>
<td></td>
<td>metabolic</td>
</tr>
<tr>
<td>crush injury</td>
<td></td>
<td></td>
<td>imaging</td>
</tr>
<tr>
<td>burns</td>
<td></td>
<td></td>
<td>biomechanics</td>
</tr>
<tr>
<td>necrotizing fasciitis, soft-tissue infections</td>
<td></td>
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</tbody>
</table>
### Pulmonary Disease and Critical Care Medicine Unit

#### Pulmonary Topics

<table>
<thead>
<tr>
<th>Airway diseases</th>
<th>Malignancy</th>
<th>Pleural disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Asthma</td>
<td>• Bronchogenic carcinoma</td>
<td>• Empyema</td>
</tr>
<tr>
<td>• COPD</td>
<td>• Metastatic disease</td>
<td>• Malignancy</td>
</tr>
<tr>
<td>• Bronchiolitis</td>
<td>• Carcinoid, tracheal tumors, etc</td>
<td>• Other etiologies: asbestos, collagen</td>
</tr>
<tr>
<td>• Cystic fibrosis</td>
<td></td>
<td>vascular disease, Dressler’s</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parenchymal diseases</th>
<th>Infections</th>
<th>Occupational/environmental disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>• IPF</td>
<td>• Pneumonia</td>
<td>• Occupational disease</td>
</tr>
<tr>
<td>ILD – occupational/environment, collagen vascular, other (sacoid, LAM, EG, HSP, etc.)</td>
<td>• Immunocompromised hosts</td>
<td>• Drug-induced lung disease</td>
</tr>
<tr>
<td></td>
<td>• TB, atypical mycobacterial disease</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Vascular diseases</th>
<th>Lung Injury</th>
<th>Mediastinal disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pulmonary hypertension</td>
<td>• ARDS</td>
<td></td>
</tr>
<tr>
<td>• Vasculitis, alveolar hemorrhage</td>
<td>• Radiation, inhalation, trauma</td>
<td></td>
</tr>
<tr>
<td>• Pulmonary embolism</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Pulmonary physiology</th>
<th>Pulmonary radiology</th>
<th>Pulmonary pathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PFT’s</td>
<td>• CXR</td>
<td></td>
</tr>
<tr>
<td>• Exercise testing</td>
<td>• CT</td>
<td></td>
</tr>
<tr>
<td>Pulmonary rehabilitation</td>
<td>• Nuclear</td>
<td></td>
</tr>
<tr>
<td>Other: Angio, PET, MRI</td>
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</table>

<table>
<thead>
<tr>
<th>Pulmonary radiology</th>
<th>Pulmonary procedures</th>
<th>Respiratory care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sleep medicine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Physiology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sleep-testing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinical disorders</td>
</tr>
</tbody>
</table>
Pulmonary Disease and Critical Care Medicine Unit

Lung Cancer Multidisciplinary Clinic (Mondays 1-2 pm)

Goal
To understand the evaluation and management of chest tumors from a multidisciplinary perspective

Objectives
To understand the diagnostic evaluation of patients with chest tumors. To understand the indications for and limitations of diagnostic studies in the evaluation of chest tumors. To understand lung cancer staging and implications for treatment. To develop professional skills in working with colleagues in other disciplines.

Educational Experience
This conference is held weekly in the radiology department. The multidisciplinary team comprises chest radiologists, thoracic surgeons, medical oncologists, radiation oncologists and pulmonologists. The physician submits cases in advance for presentation. The diagnostic strategy and management is discussed. Further diagnostic studies or treatment is then planned based on the group consensus. Time for follow-up reports on patient progress is provided. Patients with lung cancer are staged and entered into the tumor registry based the recommendations of this conference. Fellows are expected to present pertinent cases and follow-up on the recommendations made at the conference. The Multidisciplinary Lung Tumor Clinic immediately follows from 2-5 pm.
Pulmonary Disease and Critical Care Medicine Unit

Pulmonary and Critical Care Journal Club (4th Thursday or Friday noon)

Goal
To provide an educational experience in literature review relevant to pulmonary medicine.

Objective
To provide trainees a review of current literature in Pulmonary and Critical Care Medicine. To provide trainees an understanding of statistical methodology used in research articles. To develop skills in evaluating the quality of published pulmonary and critical care literature.

Educational Experience

This conference will be held once per month. Fellows are expected to present 1 or 2 articles for detailed review.Assigned trainees will select the article(s) at least 2 weeks prior to the scheduled conference. A faculty member must be assigned to review the article with the trainee prior to the conference presentation. The trainee will present the journal article(s) at the conference and lead the discussion. Each trainee will present at this conference 2 times per year. Faculty and Fellow attendance is mandatory.

Evaluation and Feedback

Fellow presentations will be critiqued informally by faculty members present at the time of presentation. This will include feedback on content and presentation.

The program director will monitor the quality of the conference series. The program director will formally review this educational program semiannually with the fellows and the faculty.

General Guidelines

Journal club is held on the 5th Friday of each month with 5 Fridays, or Thursdays at noon during months with only 4 Fridays, in the MICU conference room. Fellows should submit articles to the unit secretary for distribution 2 weeks prior to the conference. The MICU and SICU teams also have a quarterly journal club that will count toward the monthly journal club requirement during those relevant months.
Fellow Quality Assessment and Improvement Program

SECTION 1: OVERVIEW

Purpose of Program: To involve the Fellow in the monitoring, assessment and improvement of the quality and safety of health care services provided by University of Vermont Medical Center. This is accomplished by including the fellow in the review, evaluation and continuous improvement of the care delivered by the Pulmonary and Critical Care Medicine Unit and the Department of Medicine.

SECTION 2: LEARNING OBJECTIVES

1. Utilize evidence-based medicine to support decision making and diagnostic and treatment plans.
2. Learn to critically analyze the literature to determine its relevance to patient care.
3. Understand how practice patterns reflect evidence-based medicine and how practice guidelines can improve clinical outcome.
4. Learn to develop and implement quality assessment tools.
5. Learn to assess effectiveness of quality assessment tools.

SECTION 3: METHODS

Mechanisms for participation of Fellows in the organizations Performance Improvement process include but are not limited to the following:

1. Department of Medicine Morbidity and Mortality Conference
2. Participation in service specific or organizational performance improvement initiatives.
3. Involvement in Root Cause Analysis
4. Completion of performance improvement and patient safety module of the mandatory competency inservice.
5. Involvement in review of performance improvement indicators such as:
   - Patient Satisfaction
   - Medical record review
   - Sedation for Procedure
   - Bronchoscopy complications
6. Didactic Lectures
7. Journal Club
<table>
<thead>
<tr>
<th>Name of Fellow</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Fellows</td>
<td>ICU Initiatives:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Head of bed elevation in mechanically ventilated patients</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low tidal volume ventilation in ARDS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tight glucose control in sepsis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reducing central line infections</td>
<td></td>
</tr>
<tr>
<td>Sivajothi Kanagalingam</td>
<td>Choosing wisely: use of ABG in the intensive care unit</td>
<td>2016</td>
</tr>
<tr>
<td>Lucas Mikulic</td>
<td>Communication and patient family satisfaction in the Intensive Care Unit</td>
<td>2015</td>
</tr>
<tr>
<td>Jad Harb</td>
<td>Exhaled nitric oxide, a snapshot of our practice.</td>
<td></td>
</tr>
<tr>
<td>MaryEllen Antkowiak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binh Nguyen</td>
<td>Glycemic Control in our MICU Quality Assurance Project</td>
<td>2013</td>
</tr>
<tr>
<td>Sanjiva Lutchmedial</td>
<td>Use of FeNO</td>
<td>2014</td>
</tr>
<tr>
<td>Alan Lee</td>
<td>ECHO</td>
<td></td>
</tr>
<tr>
<td>Ali Al-Alwan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jenny Martino</td>
<td>Cost associated with evaluation and treatment of lung cancer</td>
<td>2011</td>
</tr>
<tr>
<td>Krishnendu Bhadra</td>
<td>Echo training for Fellows</td>
<td>2010</td>
</tr>
<tr>
<td>John Morrison</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erik Riesenfeld</td>
<td>Communication in the ICU related to invasive procedures at the bedside.</td>
<td>2008</td>
</tr>
<tr>
<td>Dustin Engelken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kapil Patel</td>
<td>Bronchoscopy complications/eligibility?</td>
<td>2007</td>
</tr>
<tr>
<td>Laeeq Shamsuddin</td>
<td>The effects of obesity on tracheostomy</td>
<td></td>
</tr>
<tr>
<td>Viranuj Sueblinvong</td>
<td>Diagnostic efficacy of different type of needles from transbronchial fine needles aspiration</td>
<td>2006</td>
</tr>
</tbody>
</table>
Pulmonary Disease and Critical Care Medicine Unit

Research

Overview

Substantive experience in research is a key element in the education of a sub-specialist in Pulmonary Disease and Critical Care Medicine (PCCM). The research experience linked with didactic teaching and independent learning activities will prepare the Trainee to meet the challenges of rapidly changing technology and new bodies of knowledge. For some Trainees, the research experience will become the catalyst for career development and life-long pursuits as an investigator. For Trainees primarily directed towards clinical practice and teaching, the research experience will serve as foundation for a critical appreciation of how new knowledge becomes a part of medical practice. For all Trainees, our collective experience is that research, whether basic or clinic, is a stimulating and rewarding experience.

Training Goals

The overall goals of research experience as part of the Training Program are:
• To enhance understanding of the process through which new biomedical knowledge is acquired.
• To prepare the Trainee to critically evaluate new research developments and to be prepared to implement them into clinical practice.
• To prepare the Trainee for further career development in academic medicine and biomedical research.

Specific Objectives

All Trainees will devote a substantial portion of their three-year program to research, and each will participate in one or more research projects during the course of training. All Trainees will become familiar with and gain direct experience in:

• Essential research concepts which form the foundation of a research career, including:
  • Formulation of a research question
  • Formulation of a testable hypothesis
  • Study design
  • Selection and development of appropriate methods
  • Performance of experiments and / or data collection
  • Research ethics
  • Analysis of data
  • Organization of results
  • Formulation of conclusions
  • Peer review with presentation & publication of research findings
  • Basic statistical concepts and methods as related to experimental design and data analysis.
  • Modern concepts of molecular biology, cell biology, immunology, and related fields as they relate to new developments in medical diagnosis and therapy.
  • Participation in a research project designed and executed with the Trainee.
  • Presentation and publication of research results through the peer review process.

Individual Trainees will become familiar with specific concepts, research methodology, and procedures, depending on their particular research project. These may include:
• Ethical, legal, and practical issues in research with human subjects, including:
  • Principals of ethical study design
  • Principals of informed consent
  • Obligations and interactions with an Institutional Review Board (IRB) (Human Studies Committee).
  • Fair compensation for human research subjects.
  • Recruiting human subjects for biomedical research.
  • Reporting, record keeping, and confidentiality issues in human research.
  • Techniques of humane anesthesia and restraint

• Ethical and practical issues in research utilizing living animals, including:
  • Principals of ethical study design
  • Obligations and interactions with an Institutional Animal Care and Use Committee (IACUC).
  • Reporting and record keeping in animal research.

• Acquisition of specific skills related to human studies research, such as:
  • Development and application of questionnaires and study instruments.
  • Performance of specialized procedures (e.g. bronchoalveolar lavage, lung physiology measurements, metabolic observations, etc.)
  • Population-based data collection and survey methodology

• Acquisition of specific skills related to animal research, such as:
  • Maintenance and monitoring of rodents for laboratory research.
  • Development and breeding of genetically modified mouse strains.
  • Interventions to create animal models of disease (e.g. acute and chronic drug administration, inhalation toxicology, immunization and sensitization, etc.).
  • Physiologic measurements in laboratory animals (e.g. metabolic parameters, immune responses, pulmonary physiology).
  • Recovery of organs and tissues from experimental animals (e.g. small animal surgery and dissection, bronchoalveolar lavage, blood sampling, harvest of spleen or lymph node immune cells, etc.)
  • Histological or immunocytochemical techniques and quantitative histological analysis
  • Acquisition of general and specific laboratory skills, such as:
    • Basic techniques in cell culture and propagation.
    • Common techniques in molecular biology (nucleic acid extraction, Northern analysis, PCR expansion, etc.)
    • Basic methods in laboratory immunology (antibody purification and measurement, lymphocyte proliferative responses, cell surface antigen phenotype expression, flow cytometry, etc.).
    • Approaches to tissue pathology (conventional histologic staining, immunohistochemistry, in situ hybridization, simple morphometry).
    • Fundamentals of biomedical laboratory procedures (solutions and buffers, sterile technique, weights and measures, centrifugation, spectrophotometry, etc.).
  • Acquisition of specific skills related to epidemiology, public health, and the promotion of healthy behaviors, such as:
    • Development and implementation of survey instruments.
    • Development of intervention tools to influence skills, knowledge, attitudes or resources and thus change behavior and outcome as related to health risks (smoking prevention, smoking cessation, air pollution, etc.).
    • Analysis of large group and public health statistical information.
    • Analysis of health outcomes data.
Activities

Preparation for the research training portion of the Fellowship begins during the first year of Fellowship, when fellows and their faculty mentors work together to identify an appropriate Research Mentor.

Selection of a Research Mentor from the faculty: It is essential that fellows work under the supervision and mentorship of one identified faculty member for the 24 months of their research training. This promotes a strong relationship between the mentor and mentee, and allows for a focused and effective use of the research training time. Any willing faculty member who is actively performing research, and who has sufficient time and space to devote to a fellow may be selected as a research mentor pending approval of the Research Committee (below). The process of mentor selection should begin early in the first year of fellowship, and includes (mandatory) attendance at the Vermont Lung Center Conference (Tuesdays at 8:15AM, HSRF 400), at which faculty and fellows present their research. This forum gives first year fellows an opportunity not only to learn a great deal about both bench and clinical pulmonary and critical care research, but also to discover the many projects that are available to them in the coming research years. Other resources that are useful in this process include the VLC web site (www.VermontLung.org) and the Cell and Molecular Biology web site (www.uvm.edu/cmb/). During the first year, fellows should make arrangements to meet with individual faculty members to discuss their work and explore the research opportunities that may exist. Although the fellow’s faculty mentor is a great resource in this process, it is imperative that fellows be proactive in exploring these options themselves. Fellows should identify a Research Mentor by April 1st of first year.

Development of a Research Training Plan: Once a Research Mentor has been identified, a Research Training Plan must be developed in conjunction with this mentor, and according to the guidelines of the Research Committee. The plan should include a summary of the research proposed, a basic 2 year timeline of the project, and, most importantly, a description of the research training to occur. Included in this should be details of planned coursework, conferences, and collaborations that will complement the mentored research experience. It is recognized that many details of these research plans may change during the 2 years of training. The first year fellow’s Research Training Plan is presented to the Research Committee by the fellow and mentor in May of first year. The Research Committee will evaluate the Training Plan to ensure that the proposed training will meet both the requirements of the various governing bodies (such as the Residency Review Committee) and the expectations of the PCCM Division.

Expectations of the fellow during the Research Training Years: The research years present an invaluable opportunity for fellows to experience medical research first hand, and to develop skills that will serve them in their careers whether or not they choose to pursue research following training. To ensure such an experience, the following requirements apply to research fellows:

All fellows participating in clinical research will be required to take the free, online course “Introduction to the Principles and Practice of Clinical Research” offered by NIH (http://clinicalcenter.nih.gov/training/training/ippcr1.html). This course is offered in weekly units from October to March and culminates in a test that leads to a Certificate of Completion. This course will form the foundation of the didactic clinical research training that all clinical research fellows will be required to obtain during their research experience.
A wide variety of lectures, seminars, and conferences relevant to lung research occur on a regular basis within the UVM College of Medicine and University of Vermont Medical Center. Trainee attendance at several of these conferences is required (*), while at other conferences attendance would be based on personal interest. Regular scheduled conferences include:

**Vermont Lung Center Research in Progress Seminar *(Required)*

(Tuesdays HSRF 400 Conference Room, UVM, 8:15 - 9:30 AM)

This conference is scheduled as one of our weekly Division conference series. Each Trainee is expected to present their personal research plans or results twice a year in the 2nd and 3rd years of training. This research conference encompasses:

- Presentation of recent research findings by PCCM faculty members.
- Presentation of relevant research by other UVMMC / UVM faculty.
- Presentation of personal research by visiting scientists.
- Presentation of research project planning and results by Trainees.

**Other Conferences:**

- Individual lab meetings
- Cell Biology Seminars (Mon. 11am)

- VT Lung Center Clinical Trials Meeting
  HSRF 300 8:30-9:30 AM
  (Wednesdays)
Timetable for Research Activities

Year 01
• The Trainee will meet with members of the PCCM faculty, faculty in other Units, and investigators in other Departments of the University to learn about ongoing topics of research related to lung disease and critical illness.
• The Trainee and faculty will identify a research mentor with whom the Trainee will primarily work. The mentor will be a senior faculty member with substantial research experience. The mentor may be a member of PCCM faculty, but may also be a basic scientist and/or a member of another department. The Trainee and the mentor will develop a research topic, and will plan study design, and will begin methods development. A total of two months elective time during the first year will be reserved for the process of planning a research project to begin at the start of the second year.
• The Trainee will attend the weekly VLC Research Conferences of the PCCM Unit.
• The Trainee will present one VLC Research Conference during the second half of the year to explain the research problem and the study design that has been selected.
• The Trainee will attend the bi-weekly conferences of the Department of Medicine Training Series.
• The Trainee will attend research conferences related to his / her chosen area of research after the initial planning and selection of topic are underway.
• The Trainee may, if appropriate, attend one or two day-long courses in research methodology (transgenic mice, basics of molecular biology, lung physiology in small animals, etc.) put on each spring at the Annual Meeting of the American Thoracic Society.

Year 02
• The Trainee will begin in the second year to carry out the laboratory or clinical research project designed during the first year. The Trainee will devote a minimum of four months, and up to eight months if needed, to this project. During these months the Trainee will not be assigned in-patient responsibilities except for night and weekend call. The Trainee will participate in ambulatory patient care up to two half-days per week.
• The Trainee and the mentor will meet on a regularly scheduled basis to review progress and plan activities (typically, this is in the form of a weekly laboratory group meeting).
• The Trainee will attend the weekly VLC Research Conferences of the PCCM Unit.
• The Trainee will present two Research Conferences during the year to provide progress reports on research accomplishments and planned activities.
• The Trainee will attend the bi-weekly conferences of the Department of Medicine Training Series.
• The Trainee will attend University research conferences related to his / her chosen area of research.
• The Trainee will attend one national or regional conference focused specifically on their topic of research.

Year 03
• The Trainee will continue in the third year to carry out their laboratory or clinical research project. When appropriate, the Trainee may choose to pursue an additional research project in the same or another discipline. For example, a Trainee involved primarily with laboratory research might participate in a limited clinical research project in order to gain experience with human studies. The Trainee will devote a minimum of four months, and up to eight months if needed, to research projects. During these months the Trainee will not be assigned in-patient responsibilities except for night and weekend call. The Trainee will participate in ambulatory patient care up to two half-days per week.
• The Trainee and the mentor will meet on a regularly scheduled basis to review progress and plan activities.
• The Trainee will attend the weekly VLC Research Conferences of the PCCM Unit.
• The Trainee will present one Research Conference during the first half of the year to provide a progress report on research accomplishments and planned activities, and will during the second half of the year will provide a final summary of results and conclusions.
• The Trainee will attend the bi-weekly conferences of the Department of Medicine Training Series.
• The Trainee will attend University research conferences related to his / her chosen area of research.
• The Trainee will be encouraged to submit and present their research findings at a national scientific meeting.
• The Trainee will be encouraged to submit their research findings for peer review and publication.
• The third year Trainee will assist with research training and supervision of graduate students, and first or second year Trainees engaged in similar research activities.
• The third year Trainee will assist with seminar and didactic research teaching through the activities of the mentor and through the regular conference schedule of the division.

Year 04
• A fourth year of intensive research training is highly desirable for physicians planning an academic career with research activities. This fourth year is not part of the accredited training program, but may be available through our T32 training grant in Lung Biology. Trainees with a research career goal will be encouraged to remain at the institution for an additional year, and to devote 80% of their time to research. During their third year they will be encouraged to apply for national career development awards through the National Institutes of Health and through private agencies and foundations. The activities during the fourth year will be similar to those listed for the third year.

Evaluation
Trainees will be evaluated semi-annually in regards to their research activities to assure that they are making progress towards the goals and objectives listed above. The results of these evaluations will be provided to both the Trainee and the Program Director in writing. The means and criteria for evaluation will be appropriate for the specific activities of each year of training, and will include:
• Progress towards identifying, planning, and performing a research project as judged by the direct observation of the research mentor and the training faculty.
• Effective presentation of research progress reports at the scheduled Research Conferences.
• Attendance and diligence in the research project.
• Attendance at research conferences.
• Submission of grant requests.
• Submission of research results for presentation at scientific meetings.
• Submission of research results for publication.

Research mentors will be evaluated in writing semi-annually. The results of these evaluations will be provided to the Faculty and Program Director.
Pulmonary Disease and Critical Care Medicine Unit

Procedure Training, Documentation, and Evaluation In Pulmonary and Critical Care Medicine

The Accreditation Council for Graduate Medical Education (ACGME) requires that trainees develop a comprehensive understanding of the technical procedures integral to your training. This includes cognitive as well as technical competence as determined by the faculty. Documentation of your experience in procedural training and competence is required. The following guidelines outlined below have been established to achieve those goals.

**Procedural Training**

Instructions in specific procedures pertinent to the discipline of Pulmonary and Critical Care medicine are outlined in the curriculum for each specific training experience. Trainees should understand the indications, contraindications, limitations, complications, techniques, and interpretation of results for each of those procedures.

**Documentation of Procedure Experience**

Documentation of procedure performance is required for all procedures and is the responsibility of the trainee. The training program provides a procedure documentation form. These should be kept in a personal logbook. The logbook should be photocopied periodically and the copies submitted to the training program director.

**Technical Evaluation**

After completing a procedure, attestation of technical competence should be obtained from the supervising attending physician.

**Method of Evaluation**

We use New Innovations for evaluation on-line.
Evaluation and Documentation of Competency in Procedures

Goals:
Fellows in Pulmonary and Critical Care Medicine are expected to be competent to do the following procedures independently without the supervising physician being physically present at the time the procedure is done:

- Lumbar Puncture
- Thoracentesis (This will include proper use of ultrasound for guidance)
- Paracentesis
- Arterial Line Placement
- Central Line Placement (This will include proper use of ultrasound for guidance of catheters placed in the IJ position)
- Pulmonary Artery Catheter Insertion
- Intubation of the airway

Objectives:
Documentation of competency from the Director of the Internal Medicine Residency Program that the fellow graduated from will be accepted for the following procedures:

- Lumbar Puncture
- Thoracentesis (This will include proper use of ultrasound for guidance)
- Paracentesis

For the following procedures, five of each procedures will need to be supervised and evaluated to be performed competently before the fellow can perform them independently:

- Arterial Line Placement
- Central Line Placement (This will include proper use of ultrasound for guidance of catheters placed in the IJ position)
- PA Catheter Insertion
- Intubation of the Airway

The following procedures will generally always require supervision:

- Fiberoptic Bronchoscopies and Biopsies
- Tube Thoracostomy

Evaluation and Feedback:
Procedure evaluation forms for all supervised procedures will be kept on file. Fellows are responsible for maintaining procedure logs that document all procedures. These documents will be reviewed in annual meetings with the Program Director.
Pulmonary Disease and Critical Care Medicine Unit

**Training Program Evaluation Process**

Formal evaluation and feedback are essential to insure that both fellows and faculty are meeting the expected training requirements. It also provides an opportunity to identify specific areas of concern to fellows and staff. Finally, it gives the trainee feedback as to areas that may need change or improvement. Below outlines the process of evaluation and feedback for the Pulmonary and Critical Care Medicine training program.

• Trainees will be evaluated each month they are on a clinical service by the attending physician. These evaluations will be based on clinical performance, including inpatient and outpatient clinical care, conference presentations, and journal club presentations. This will be a written evaluation (see enclosed “Form for Evaluation of Clinical Competence“) by individual faculty members. These evaluations will kept on file in the department as part of your permanent record.

• Trainees will meet semi-annually with the program director to review the evaluations. Fellows will be given a written composite of the faculty reviews that will be kept on file as part of the permanent record.

• Trainees will evaluate the attending staff for each month of clinical service. The trainees will use written forms provided by the training program for their evaluation (see enclosed “Form for Evaluation of Faculty“). The program director will review these evaluations with the faculty on a semi-annual basis.

• Trainees will evaluate each monthly rotation using the “Rotation Evaluation Form.” This will be used to evaluate each rotation as to it meeting the written goals and objectives. These will be reviewed semi-annually by the faculty.

• The Department of Medicine conducts an annual, confidential intra-departmental review, which allows trainees to bring concerns to an independent group for confidential critique and review. Trainees will meet with Julian Sprague, M.D. (or his designee) at least once yearly to critique the Pulmonary and Critical Care training program. This is done in a confidential manner. This critique will be reviewed with the fellowship program director.

• Trainees will undergo an annual observed clinical evaluation exercise at the end of each year of training.

• Trainees will undergo a specific evaluation of research project progress by their faculty mentor. (see enclosed “Evaluation of Research Progress”). The program director will review these evaluations with the trainees on a semi-annual basis. The program director will review these evaluations with the faculty on a semi-annual basis.

The program director will provide each fellow with a summative evaluation at the completion of the program. This evaluation will document the fellow’s performance during the final period of education, as well as document competency to enter practice without supervision. This process will include the specific degree to which the fellow has achieved the level of performance in each of the 6 ACGME competencies.

The entire division will participate in an annual Program Evaluation (“Division Retreat”) at the end of each academic year. During this meeting, the fellow will critique the program with regard to overall quality, with specific attention to each rotation, the curriculum, and the teaching, mentoring and research experiences. Other topics to be reviewed will include faculty evaluation of fellow performance, faculty development, and graduate performance.
These guidelines and form are recommended for use by attending physicians in conducting and documenting the OSCE of pulmonary trainees.

Trainee’s Name ____________________________________________________________
Evaluator’s Name ___________________________________________________________
Date of Evaluation ___________________________________________________________

- The exercise is conducted by a staff physician, preferably an attending supervising the fellow’s clinic. Sufficient time should be designated for the evaluator to observe the trainee interview the patient and perform a focused physical examination. During this time, the evaluator should remain inconspicuous. However, when necessary, the evaluator should go to the patient to demonstrate proper techniques to the trainee or elicit findings that the trainee omitted.

- After leaving the patient, the trainee will present to the evaluator the history and physical examination, initial diagnostic impression, review of X-rays, ECGs, lab data, and other diagnostic information and plans for diagnostic studies and medical care. At this juncture, the evaluator’s questions should be addressed.

- At the conclusion of the exercise, the evaluator and the trainee should discuss in detail the strengths and weaknesses observed in his/her clinical performance.

- The standard expected must be that of a well-trained internist who has now undertaken clinical training as a subspecialist. The performance should clearly exceed that expected of a third-year resident in internal medicine.

- Circle the category which best describes the trainee’s skills and abilities for each component of clinical competence.

1. CLINICAL SKILLS - HISTORY-

   Demonstrates consideration for the patient during the interview. Quickly recognizes and interprets nonverbal clues. Allows the patient adequate time to tell about the illness in his/her own words, yet directs smoothly and effectively to obtain pertinent and necessary information. Develops in chronological sequence an accurate description of the pertinent symptoms and events in the present illness. Obtains appropriately complete information about the past history, family history, and occupational and social history. Exhibits sophistication in the specificity, relevance, and clarity of questions. Avoids unnecessary repetitions. Focuses on the subspecialty issues presented by the patient.
2. CLINICAL SKILLS - PHYSICAL EXAMINATION

Demonstrates concern for the patient's comfort and modesty. Enlists the patient's cooperation. Positions patient properly, applies skillfully the fundamental techniques of examination to each region. Follows a selective and logical sequence of examination from one region to another, emphasizing those areas of importance suggested by the interview. Applies special techniques to help gather complete information about an abnormality. Modifies the examination to adapt to patient limitations imposed by illness. Records relevant physical findings in the consultation note in a well-organized, thorough manner.

Unsatisfactory Marginal Satisfactory Very Good Superior

Comments: __________________________________________
___________________________
___________________________

3. CLINICAL JUDGMENT AND SYNTHESIS (as elicited by case presentation)

Spends appropriate time for the complexity of the problem. Uses terminology that is meaningful and unambiguous. Presents information concisely in logical sequence. Reports accurately the information related by the patient and the observations made during the physical examination. Relates information about major problems in adequate detail without significant omissions or digressions.

Unsatisfactory Marginal Satisfactory Very Good Superior

Comments: __________________________________________
___________________________
___________________________

4. HUMANISTIC QUALITIES

Demonstrates the necessary humanistic qualities and professionalism which allow the development of appropriate patient physician relationships. Demonstrates personal integrity, respect, compassion, and empathy for the patient's wishes, opinions, and need for information. Exemplifies that the primary concern is for the patient's welfare.

Appreciates the patient's perception of illness. Is careful to place the patient's problems in the context of the patient's life and history. Displays sensitivity to the patient's needs for comfort and encouragement.

Unsatisfactory Marginal Satisfactory Very Good Superior

Comments: __________________________________________
___________________________
5. MEDICAL CARE (including utilization of laboratory tests and procedures)

Understands in physiologic terms, the meaning of the patient's abnormal findings and interrelates them to explain logically the patient's illness. Is able to develop a differential diagnosis with an appreciation for priorities in each of the diagnoses considered. Identifies all of the patient's major problems.

Validates and incorporates known diagnostic information into plans. Uses a logical sequence in planning further diagnostic tests and procedures. Integrates diagnostic studies with the diagnostic impression, proceeding from simpler tests to more complex ones.

Demonstrates clinical judgment in selecting the most effective care with the least risk to the patient. Plans treatment to deal with all of the patient's major problems. Designs a succinct and explicit consultation note with specific recommendations to the referring physician.

Unsatisfactory Marginal Satisfactory Very Good Superior

Comments: ____________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

6. OVERALL CLINICAL COMPETENCE AS A CONSULTANT SUBSPECIALIST IN PULMONARY DISEASE (as demonstrated in this exercise)

Unsatisfactory Marginal Satisfactory Very Good Superior

Comments: ____________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Signature: _____________________________________________ Date: _____________________