

**WAYNE STATE
UNIVERSITY**
SCHOOL OF MEDICINE

**PULMONARY AND CRITICAL CARE
TRAINING PROGRAMS**

**DIVISION OF PULMONARY, CRITICAL CARE
& SLEEP MEDICINE**

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Introduction

The Division of Pulmonary, Critical Care and Sleep Medicine at Wayne State University School of Medicine offers formal fellowship training in Pulmonary and Critical Care Medicine. The Fellowships are balanced and integrated programs designed to develop excellence in both clinical sciences and research.

Full-time Pulmonary and Critical Care Medicine Faculty, as well as members of Nephrology, Cardiology, Infectious Disease, Allergy, and other Divisions within the Department of Internal Medicine and the Departments of Surgery, Neurology, Neurosurgery, Cardiothoracic Surgery, and Anesthesiology provide clinical supervision and teaching.

Five (5) Pulmonary/Critical Care Fellowship positions are available each year to physicians with Board Eligibility or Certification in Internal Medicine. These positions are filled through participation in the National Residency Matching Program.

In addition, up to two additional fellowship positions are available in Critical Care Medicine on an annual basis. These positions are 1-2 year commitments to physicians with Board Eligibility or Certification in Internal Medicine or who have completed ACGME approved training in an Internal Medicine subspecialty or another specialty.

Training rotations are located in the various hospitals which constitute the Detroit Medical Center, including Harper University Hospital, Detroit Receiving Hospital, Hutzel Hospital, and Sinai-Grace Hospital. In addition, several rotations are located in the affiliated John D. Dingell VAMC.

Components of The Program

Pulmonary Medicine

The purpose of this component of the training program is to provide the Fellow with comprehensive training in various aspects of Pulmonary Medicine. The Fellow will undertake pulmonary rotations at each of the four major affiliated medical centers, Detroit Receiving Hospital, Harper University Hospital, Sinai-Grace Hospital and John D. Dingell Veterans Affairs Medical Center (VAMC). These rotations will provide experience in the practice of both primary care of pulmonary patients and consultative care. During this period the Fellow will learn the basic procedures required for the practice of pulmonary medicine. These rotations occur throughout the fellowship. During the first year, fellows have a multi-specialty outpatient rotation designed to offer fellows exposure to several specialized components of Pulmonary Medicine. These include the basics of pulmonary function testing, pulmonary rehabilitation, sleep medicine, pulmonary hypertension, sarcoidosis/interstitial lung diseases, lung cancer and cystic fibrosis. Other months are set aside for specific electives and for the development of a research project.

Critical Care Medicine

Fellows will experience state-of-the-art Critical Care with rotations through Intensive Care Units in various hospitals of the Detroit Medical Center and the John D. Dingell VAMC. Fellows will have opportunities for primary management as well as supervisory experience. A pathophysiologic approach to management is emphasized. Procedural skills, broad-based clinical opportunities, ICU administration, and experience in all areas required to meet Board certification requirements are provided each of our fellows. Fellows also rotate on

non-medical ICU services, including surgical intensive care, trauma, neurosurgery, neurology, and cardiothoracic surgery.

Research

Fellows must select a mentor from the Faculty to supervise their research. While Fellows could "slot" into existing research studies, they are encouraged to develop their own protocols and experiments. The Program Director will assist Fellows in selecting mentors and may assign one, if necessary. The Fellows will be required to complete a curriculum related to human investigation mandated by the WSU Human Investigation Committee. They are encouraged to write a HIC proposal. It is expected that the Fellow will have given a scientific presentation of the previous year's research at a Research seminar, present his/her findings at a national meeting and have written a scientific paper by the time of graduation.

Training Tracks

A. Combined Pulmonary and Critical Care Training Track

The usual duration of training in this track is three years. The exact curriculum for each year may vary. However, by the end of the three year Pulmonary/Critical Care combined training experience, each Fellow would have completed the following rotations:

1. Pulmonary Consult Service: 6 months
2. PFTs/Multi-specialty rotation: 3 months
3. MICU: 6 months
4. Other Critical Care rotations: 5 months
5. Elective and Pulmonary Research: 13 months

B. Critical Care Training Track

Fellows in the Multidisciplinary Critical Care Program will have a curriculum created to maximize their development as intensivists and future ICU Directors. The duration of training will be 2 years. The exact distribution of rotations may vary slightly, based on program or individual need, and Program Director discretion. Those rotations for a 2-year program are as follows:

1. MICU: 6 months
2. Other Critical Care rotations: 5 months
3. Pulmonary Consult: 1 months
4. Elective/Research: 10 months

Clinical Rotations

Pulmonary Medicine

A. Pulmonary Consultation Service

This experience is available at all hospitals affiliated with the Wayne State University Pulmonary/Critical Care Program. It is intended to provide the trainee with an opportunity to develop the skills required to be an effective consultant in pulmonary medicine. We provide a complete and wide range of clinical experiences in pulmonary medicine. During the rotations the trainee, either personally or in conjunction with residents assigned to the service, is responsible for assessment of all new consults referred to the service as well as continuing care of those already being followed by the service. The trainee is expected to see the patient, ascertain the problems, and review pertinent records and tests. He/she should establish a differential diagnosis and plan an appropriate course of action including

investigations and/or management. The case will then be presented in a logical and coherent manner to the Attending Faculty member for review.

The main referral sources at each of the hospitals will be from the general medicine floors. The DMC team is also responsible for all consults at the Karmanos Cancer Institute (including bone marrow transplantation service) and at Hutzel Hospital, the DMC obstetrics (including high risk obstetrics) and gynecology hospital.

The rotations include supervised teaching and experience in all the procedural skills required to be a competent pulmonologist, including.

B. Pulmonary Function Testing/Subspecialty Programs

This rotation offers fellows brief exposure to the several programs. Fellows may utilize elective time to acquire additional in-depth exposure to one or more of these programs. The rotation includes:

1. *Pulmonary Function Testing and Rehabilitation:* During this rotation the trainee is expected to learn the principles of pulmonary function testing, its application and uses, the physiology underlying the tests and methods, and the interpretation of the results. The Pulmonary Fellow will learn the principles of measurements of lung mechanics, volumes, flows, diffusion, closing volume, oximetry and mass spectroscopy, use of the body box, calculation of airway resistance and conductance, compliance and other procedures including exercise testing and bronchial provocation. Skilled technicians as well as faculty members will assist the Fellow during this rotation.
2. *Sleep Medicine:* the fellow will attend two sleep practice sessions per week, attend the weekly conference and sit in with the sleep fellows for sleep interpretation.
3. *Cystic Fibrosis:* Harper University Hospital has an excellent adult cystic fibrosis program. Fellow will learn the basic pathophysiology of CF and gain an understanding of the care of adult patients with CF.
4. *Pulmonary Hypertension:* the fellow will attend the weekly Pulmonary Hypertension clinic. Fellow will learn the classification, diagnosis, and management of pulmonary hypertension, including the use of new drug modalities.
5. *Sarcoidosis:* fellow will attend the weekly sarcoidosis clinic. Fellow will learn about the diagnosis and management of sarcoidosis and other interstitial lung diseases.
6. *Lung Cancer:* fellow will attend a weekly lung cancer clinic to understand the role of the pulmonologist in the diagnosis and management of lung cancer. This clinic also evaluates patients with complications of oncologic care.

B. Continuity Practice

All pulmonary/critical care track trainees will have a weekly continuity practice in conjunction with one of the faculty members. These sessions are held at the University Health Center at Detroit Receiving Hospital or the John D. Dingell VAMC. The outpatient experience will span the three-year training period. Pulmonary Fellows are assigned to a Faculty member. They are required to interview all new outpatients, assess them, and discuss with the Faculty member appropriate diagnostic approaches and management. Returning outpatients are seen either by the Faculty or Fellow and the cases discussed.

C. Elective Pulmonary Rotations

Rotations in areas related to Pulmonary/Critical Care Medicine may be undertaken by Fellows during their elective month. The following is a partial list of electives provided in the past few years.

1. Sleep Medicine
2. Radiology
3. Lung transplantation (at Henry Ford Hospital)

Critical Care

Required Medical ICU rotations

A. MICU-Detroit Receiving Hospital

This is the primary critical care teaching site for the first year fellows. The Medical Intensive Care Unit at Detroit Receiving Hospital provides a comprehensive exposure to medical problems encountered in the surrounding areas of Detroit. Common medical problems encountered in this unit are acute respiratory failure secondary to both cardiac and pulmonary disease and pneumonia, sepsis/septic shock, toxicologic emergencies (including alcohol withdrawal syndromes), hypertensive emergencies, and metabolic emergencies. Fellows are exposed to end-of-life/palliative care medicine through exposure to a full time nurse practitioner who works closely with the team on these issues. The rapid turnover of patients in the unit ensures repeated exposure to critical disorders and allows the acquisition of skills in procedures such as vascular cannulation and acute airway management, including intubation and bronchoscopy.

Patient care in these areas is provided by a physician team, directed by full-time faculty, and includes fellows, residents and students. Critical care and pulmonary fellows serve as supervisors and will be responsible for the care delivered by the resident. Teaching responsibilities in the Unit will be geared toward assuring that the residents understand the complex derangements affecting their patients. In addition, fellows will oversee and/or perform the necessary invasive procedures (catheterization, intubation, etc.) by residents. The fellows will have administrative roles, and will assist the staff physicians in making decisions about admissions to the Unit, and discharges and transfers between the Medical Intensive Care Unit and Intermediate Care Unit. This rotation does have required night call responsibility (one night per week).

B. MICU-Harper University Hospital

Harper University Hospital is the University tertiary referral center of The Detroit Medical Center. More complex critical care medicine is practiced in this ICU, primarily because of the complex patient population at Harper University Hospital. The 20 bed MICU service handles more than 1,000 admissions per year; these admissions include patients from the oncology and bone marrow transplant programs at the Karmanos Cancer Institute, an active nephrology service, and the general medicine floors. The MICU team also provides clinical care for the neurosurgical and obstetrics services. The team, consisting of a full-time faculty member, two fellows and 4-5 residents, co-manages every patient in the ICU. The Fellows receive more than ample training/experience in invasive hemodynamics, state-of-the-art invasive and non-invasive ventilation, bronchoscopy, airway management, chest tubes, etc. This rotation offers opportunity for moonlighting.

C. MICU-John D. Dingell VAMC

The Fellow works with a VA faculty member, and physician assistants and assumes a leadership role in the management of patients admitted to this 8 bed Unit. Night

coverage is provided by contracted fee basis physicians; however, fellows remain on-call from home. This rotation provides opportunity for moonlighting.

D. SICU-Harper Hospital

A multi-disciplinary team that provides critical care support to patients from general surgery (including bariatrics), ENT, vascular surgery and cardiovascular surgery. Team consists of an attending from either Internal Medicine, Surgery or Anesthesia, PCCM fellow, and residents from anesthesia, surgery and emergency medicine.

Examples of non-MICU services (3 must be completed for board-eligibility)

A. SICU/Trauma – Sinai-Grace Hospital

Primary management of trauma surgical critical care patients under the supervision of the Director of Trauma/SICU at SGH, as well as other trauma surgeons. This rotation has required night call responsibility. One month rotation.

B. Neurosurgery – Detroit Receiving Hospital

Fellows will be directly involved in the management of patients with a variety of neurosurgical and neurology emergencies including subarachnoid hemorrhage/intracranial bleeding/aneurysms and seizures/status epilepticus, as well as post-surgical care of craniotomies and back surgery. One month rotation.

C. Elective Rotations

Rotations in areas related to Critical Care Medicine may be undertaken by Fellows during their elective month. The following is a partial list of electives provided in the past few years.

1. Infectious diseases
2. Toxicology

Conferences and Seminars

A. Pulmonary/Critical Care Core Lecture Series

State of the art lectures that review the core curriculum of both pulmonary and critical care medicine. Lectures will emphasize both the basic pulmonary/critical care pathophysiology as well as diagnosis/management. Lecturers primarily given by faculty with invited speakers when available. Held weekly. Each trainee is responsible for preparing and presenting at least one formal conference as a final project. The trainee is expected to do a complete literature search and present the information. This is an opportunity for the fellows to develop a broad base of knowledge in Pulmonary Medicine and in Critical Care Medicine, as well as to keep abreast of current issues and topics. A faculty member is assigned to the trainee to advise him/her in the development of the topic, to ensure "classic" papers are discussed, and to assist in presentation.

B. Pulmonary/Critical Care Case Conference Series

Case Conferences are also presented in this format on a monthly basis. Input from radiology and pathology services as well as other subspecialties are sought during these presentations. Radiology/pathology correlations are encouraged. Held weekly.

C. Journal Club

Recent literature is critically by the Fellows and discussed in a group with attendings. Held monthly.

- D. Morbidity & Mortality Conference
Mortality and morbidity cases from the MICUs are critically reviewed. Held monthly.
- E. Research Seminar: Research seminars are conducted each month (as part of the lecture series). Fellows and Faculty members present their research. The aim of these seminars is to discuss scientific methods and analysis of results.
- F. Medicine Grand Rounds: These are organized by the Department of Internal Medicine and attended by all faculty, residents fellows and students rotating in various clinical rotations.

Research

The Pulmonary and Critical Care Medicine Division conducts both clinical and basic science research.

A block of time is assigned for research training. This period will be in the third years of training for most trainees in the PCCM track and the second year for fellows in the CC track. All Fellows are expected to use this time to participate in a research project. While the project will be supervised by a Faculty member, the trainees are encouraged to develop their own protocols and projects. The Fellow is expected to write a research proposal and submit it for funding. Scientific papers and abstracts should be submitted for publication and presentation.

Some areas of current activity and research interests are listed below. Fellows are not necessarily restricted to these areas of endeavor.

1. Neuromuscular control of breathing
2. Sepsis/ shock
3. ARDS
4. Sleep disorders and breathing: pathogenesis of upper airway obstructions
5. Inner city asthma
6. Pulmonary hypertension
7. Sarcoidosis/ILD

Miscellaneous Information

Evaluations

1. Monthly evaluations: All members of every rounding team must fill monthly evaluation forms. Each individual must evaluate every other member of the team (Fellows, attendings, residents and students). Fellows will receive copies of all of their evaluations on a regular basis. Feedback sessions will be held to update Fellows on their performance.
2. 360° evaluations: fellows will be regularly evaluated by nursing staff during MICU rotations and patients in out-patient clinics. These will become part of their permanent record.
3. Program Director's Evaluations: These will be done at least every six months. A meeting will be held between each fellow and the program director during which a comprehensive review of the fellow's performance will be conducted. A record of the meeting will be generated and signed by both the Program Director and the respective fellow.
4. End-of-Training Assessment: The Program Director will generate a Final Evaluation Form based on personal observations and input from the Division Chief and members of the Education Committee.
5. Portfolios: fellows will keep a portfolio demonstrating a commitment to practice-based learning; the portfolio will include summaries of evaluations of their case conferences/journal clubs.
6. Clinical competencies: fellows will complete selected on-line modules regarding specific competencies, such as bronchoscopy and pulmonary arterial catheters.
7. Procedure logs: fellows will keep a log of all procedures performed.
8. Testing: End of rotation tests will be done in selected rotations. In addition, in-service exams are offered on a regular basis.
9. Annual Evaluation: All fellows are offered the opportunity to fill a detailed survey at the end of each academic year. The survey is anonymous and provides assessment of all rotations, educational activities and faculty of the Division.

Duty Hours

The Division of Pulmonary/Critical Care & Sleep Medicine adheres to the duty hours policies as set forth by the ACGME. Fellows are expected to log their duty hours on a bi-weekly basis.

Moonlighting

It is the policy of the fellowship program that moonlighting outside of the DMC/VAMC is not allowed.

Vacation Policy

Fellows are allowed 3 calendar weeks (15 working days) of vacation during the academic year. Fellows are allowed a maximum of 1 calendar week (5 working days) to attend an academic meeting. Prior approval of vacation time should be obtained from the Program Director, the rounder, if applicable, and the Clinic Attending, if applicable. Appropriate forms should be filled and filed.

Electives

Electives should be approved by the program Director. Proper forms should be filled and filed.

APPLICATIONS

The WSU Pulmonary/Critical Care and Critical Care Fellowships utilize the Electronic Residency Application Service (<http://www.aamc.org/students/eras/>) for all applications. We require that one of the references be from the program director of the internal medicine program from which the applicant will graduate. Deadline for submission of all materials (including references) is December 31st for applicants interested in the Pulmonary/Critical Care track and March 31st for applicants interested in the Critical Care track. Note that applicants will only be considered for either the Pulmonary/Critical Care track or Critical Care track but not both; therefore, applicants should select only one track for their application.

**PULMONARY AND CRITICAL CARE
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