

American Thoracic Society

MEDICAL SECTION OF THE AMERICAN LUNG ASSOCIATION

Role of the Pulmonary and Critical Care Medicine Physician in the American Health Care System

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To understand the current and future role of the pulmonary and critical care medicine (PCCM) physician in American medicine, it is crucial to be aware that these physicians: provide consultative and principal care for patients with disorders of the respiratory system; provide principal and consultative care for patients with critical illnesses; serve as medical and administrative directors of respiratory therapy departments, pulmonary function laboratories, and sleep centers; serve as medical directors of medical intensive care units (MICUs); and provide medical education to physicians, other health care providers, and the public. In addition to these activities, many PCCM physicians with full- or part-time medical school affiliations teach medical students, residents, and fellows clinical pulmonary medicine, physiology, and pathophysiology, and participate in basic or clinical research.

The initial sections of this report describe the current training, types of practice, and clinical activities of the PCCM physician. The final section suggests the role of the PCCM physician in an American health care system that delivers responsible patient care and maintains its preeminent position in biomedical education and research. While not comprehensive, this document outlines the current and future role of the PCCM physician in America.

TRAINING

At present, internal medicine residents entering fellowship training in pulmonary and critical care medicine complete a training program that requires a minimum of 36 mo, with at least 6 mo of direct patient care specific to pulmonary diseases, 6 mo of direct patient care specific to critical care medicine, and 6 mo of direct patient care common to both disciplines. The training in pulmonary diseases includes opportunities to manage inpatients and outpatients with a wide variety of acute and chronic illnesses involving the respiratory system. There is also an emphasis on pulmonary physiology and correlation with clinical disorders. The training in critical care medicine includes patient care responsibility in critical care units such as MICUs, coronary intensive care units (CICUs), and surgical intensive care units (SICUs). In conjunction with this broad clinical experience, the fellow develops expertise in performing and interpreting special-

ized diagnostic and therapeutic procedures, such as fiberoptic bronchoscopy, polysomnography, pulmonary function testing, cardiopulmonary exercise testing, right heart catheterization, closed pleural biopsy, ventilatory support, circulatory support, airway intubation, tube thoracostomy, and cardiopulmonary resuscitation.

In addition to clinical training, the fellow participates in an active research program. During this time, the fellow receives training in critical assessment of new therapies and the medical literature, research design and methodology, and responsible conduct of research.

PROFESSIONAL ACTIVITIES

Most board-certified graduates of PCCM training programs spend the majority of their time practicing clinical medicine in private practice or with a health maintenance organization. Many of these physicians maintain affiliations with medical schools and participate in research and teaching. In many schools of medicine, PCCM physicians teach substantial portions of undergraduate and graduate courses in respiratory physiology and pathophysiology. Most academically affiliated PCCM physicians also participate significantly in the clinical education and training of medical students, interns, residents, and fellows.

Many graduates of PCCM training programs take positions as full-time faculty in divisions of pulmonary and critical care medicine. In addition to the practice of medicine, these physicians devote a substantial portion of time to teaching and scholarly activities that increase understanding of the normal and abnormal function of the respiratory system, prevent the development of respiratory disorders, and provide effective therapy for respiratory illnesses. These scholarly activities include conducting basic laboratory research, conducting patient-based clinical research, and writing critical reviews of current issues in pulmonary and critical care medicine.

CLINICAL PRACTICE OF PULMONARY AND CRITICAL CARE MEDICINE

PCCM physicians provide consultative and principal care in outpatient and inpatient settings. They are usually consulted for their skill at diagnostic procedures or because of their expertise at evaluating symptoms, signs, or radiographic abnormalities referable to the respiratory and other systems. The PCCM physician also has specialized expertise in managing complicated and critically ill patients, particularly those in the MICU. In this document, the activities are described by location, although it should be recognized that there is great overlap between inpatient and outpatient clinical practice.

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Outpatient Activities

The PCCM physician provides consultation for the diagnosis and treatment of unexplained dyspnea, cough, hemoptysis, cyanosis, wheezing, hypersomnolence, or chest pain.

The PCCM physician provides consultation for the care of patients with common respiratory diseases who are not responding to standard therapy, are severely affected, or require advanced diagnostic evaluation. These include, but are not limited to, asthma, emphysema, chronic bronchitis, pneumonia in **normal** and immunocompromised hosts, pulmonary emboli, sleep-related breathing disorders, lung nodules and masses, tuberculosis, **fungal** infections, and occupational and environmental lung disorders.

The PCCM physician provides consultation and, in most cases, principal care of patients with relatively uncommon or rare respiratory diseases. These include sarcoidosis, interstitial lung disease, pulmonary vascular disease, neuromuscular or respiratory drive disorders, genetic or developmental disorders, chest wall and diaphragm disorders, complications of lung transplantation, and cystic fibrosis.

The PCCM physician provides consultation regarding the indications, contraindications, limitations, and interpretation of diagnostic tests, such as chest CT or MRI scans, ventilation-perfusion scans, pulmonary angiography, open lung biopsy, and **thoracoscopy**.

The PCCM physician provides consultation and, when indicated, performs and interprets specialized diagnostic tests, such as fiberoptic bronchoscopy, thoracentesis, closed pleural biopsy, complete pulmonary function tests, cardiopulmonary exercise testing, bronchoprovocation tests, tube thoracostomy, **pleurodesis**, arterial blood gas analysis, and right heart catheterization. The PCCM physician may have received additional training and experience in the performance of diagnostic procedures or use of therapeutic interventions, such as transbronchial lymph node biopsy, laser bronchoscopy, placement of **brachytherapy** catheters, transthoracic needle biopsy, polysomnography, thoracoscopy, transtracheal oxygen administration, home mechanical ventilation, pulmonary rehabilitation, and noninvasive ventilatory assist devices.

Inpatient Activities

The PCCM physician provides consultation and, in some cases, comprehensive care for patients with primary respiratory illnesses, pulmonary manifestations of systemic illnesses, or respiratory complications who require further diagnostic and therapeutic evaluation, are severely affected, or are not responding to initial therapy. Many of the specialized diagnostic tests described previously are also practiced in the inpatient setting.

The PCCM physician provides principal care for most patients with critical medical illnesses admitted to a MICU. These illnesses include, but are not limited to, acute respiratory failure or acute lung injury requiring mechanical ventilation, shock, multisystem organ failure, severe infections with hemodynamic or respiratory instability, upper and lower GI bleeding that is associated with hemodynamic instability or liver disease, coagulopathies and hematologic disorders requiring hemodynamic monitoring or respiratory support, acute drug intoxication and overdose, acute diabetic emergencies, trauma, malignant hypertension, complications of immunosuppression, seizures, and central nervous system disorders.

The PCCM physician provides consultation for the diagnostic evaluation and therapy of critically ill patients not being treated in the MICU (e.g., SICU, CICU, **neurologic** intensive care unit) for problems such as mechanical ventilatory support and weaning, diagnosis of nosocomial or opportunistic infection, preoperative evaluation of potential respiratory complications, pain or sedation control, acute myocardial infarction, trauma, organ or

marrow transplantation, circulatory support, and nutritional support. Because of their frequent involvement with critically and terminally ill patients, the PCCM specialist often participates in decisions regarding withholding or withdrawing life-support measures.

Administrative Activities

PCCM physicians serve as administrative and medical directors of respiratory therapy departments in most hospitals. These departments are responsible for providing oxygen therapy, providing, operating and maintaining mechanical ventilators, and, in most institutions, providing inhalational therapy, chest percussion, postural drainage, and other respiratory therapy techniques. Often, these physicians also supervise home oxygen and mechanical ventilator therapy.

PCCM physicians serve as administrative and medical directors of pulmonary function and cardiopulmonary exercise laboratories in nearly all hospitals. These laboratories are often responsible for pulmonary function and cardiopulmonary exercise testing of inpatients and outpatients. The PCCM physician is responsible for providing safe and accurate testing, keeping abreast of new technological developments, and maintaining strict quality control of the testing equipment.

PCCM physicians often serve as medical and administrative directors of **MICUs**. This position requires the director to ensure that high-quality medical care is delivered in an efficient fashion. The medical director works closely with the medical, nursing, respiratory therapy, radiology, and pharmacy staff to create a cooperative patient care environment. The medical director is also responsible for ensuring that recordkeeping is accurate, that monitoring equipment is reliable, and that the **MICU** meets the standards of the Joint Commission on Accreditation of **Health-care Organizations (JCAHO)**.

PCCM physicians serve as medical and administrative directors of sleep disorders centers in most communities. The physician is responsible for seeing that sleep studies are performed safely, interpreted accurately, and that all testing equipment is reliable.

PCCM physicians frequently direct or participate in administration of multidisciplinary programs in environmental and occupational medicine. These programs monitor and evaluate industrial hygiene, ensure a safe workplace, evaluate workers with occupational or environmental exposure, and care for patients with occupational- and environmental-related diseases.

PCCM physicians often serve on a variety of hospital committees because of their special expertise in respiratory and critical care medicine. These may include Pharmacy and Therapeutics, Ethics, Morbidity and Mortality, Clinical Practice Guideline and Critical Nursing Pathway Development, and Human Subjects Review Committees.

Educational Activities

PCCM physicians participate in a large portion of undergraduate medical, nursing, and allied health curricula. They also teach house staff and fellows clinical medicine in clinics, wards, and intensive care units. PCCM physicians contribute to the continuing medical education of physicians and other health care professionals by participating in local, regional, and national conferences. These physicians are often valuable community resources for educating the public regarding issues of lung health and disease.

Research Activities

In addition to the educational activities mentioned previously, academic PCCM physicians contribute significantly to the search for new knowledge regarding the respiratory system and critical disorders and apply this knowledge to patient care. This is **ac-**

complished by physicians who conduct basic laboratory research, by physicians who take advances from the bench to test at the bedside, and by physicians who critically assess innovations to determine whether these improve patient care. In addition to research, academic PCCM physicians contribute scholarly writing that educates the medical community regarding current issues in pulmonary and critical care medicine.

THE FUTURE ROLE OF THE PCCM PHYSICIAN

PCCM physicians obtain extensive training and clinical experience in the care of patients with respiratory and/or critical illnesses. With this background, they are best suited to provide optimal and efficient care to these patients. Thus, in a health care system that seeks to provide optimal health care for all Americans in a medically and fiscally responsible fashion, the PCCM physician shall:

1. provide principal care for all patients in MICUs;
2. provide consultative or principal care to patients in nonmedical ICUs;
3. provide consultative or principal care to patients with acute or chronic respiratory illnesses who are severely affected or are not responding to initial therapy;
4. provide principal care for patients whose major medical problem is a chronic respiratory illness or a rare disorder affecting predominantly the respiratory system;
5. perform specialized diagnostic and therapeutic procedures on patients with pulmonary, thoracic, or other disorders;
6. educate physicians, other health care professionals, and the public regarding lung health and disease and critical care medicine; and
7. continue to generate new knowledge regarding the respiratory system and critical illness, and apply this knowledge to improve patient health and health care.