

UNIVERSITY OF COLORADO HEALTH SCIENCES CENTER PULMONARY ELECTIVE HOUSESTAFF ROTATION CURRICULUM AND OBJECTIVES

This paragraph only applies if you are rotating at the University of Colorado Hospital. Please review the rest of the curriculum below.

Specialty Residents must complete the Web-based Training for Touchworks for this rotation. To complete the training, please follow the instructions below and then notify the Ambulatory Training team via email at UCH-AmbulatoryServicesTraining@uch.edu that the training is complete. They will send you a login via email.

1. Type www.uch.edu in the address field of your web browser.
2. Click the **For Employees** option in the upper-right corner of the page.
3. Under the **Other Helpful Links** section, select the Ambulatory Services Training link.
4. Under the **Web Based Training** section, select to complete each section: Lesson1, Lesson 2, Lesson 3 links under title **TouchWorks for Specialty Residents**.

Educational Purpose

The goal of the elective pulmonary rotation is to expose the physician-in-training (second and third year medical residents) to patients with pulmonary disease that are encountered in the primary care setting as well as in the sub-specialist's realm.

Specific learning objectives include:

1. Identify key principles in evaluating pulmonary complaints and patients
2. Enhance physical examination skills in the pulmonary patient
3. Expand differential diagnosis skills in the pulmonary patient
4. Learn and practice common bedside procedures necessary in pulmonary patients
5. Improve interpretation skills in common laboratory and radiographic procedures as they apply to the pulmonary patient
6. Participate in the educational curriculum of the team by providing relevant literature and preparing a short lecture

Principal Teaching Methods

I. Supervised direct patient care – Inpatient

A. Inpatient pulmonary consult rounds conducted 5 days of the week at University Hospital

1. Residents will perform the initial history and physical exam of patients referred for pulmonary consultation, and present the patients to the consult team during formal rounds. Residents will complete a consult form including documenting the history, examination, diagnostic evaluation, impression and plan for further evaluation and/or treatment. Residents will follow the patient throughout the duration of the consult period and help with medical decision-making.

- B. Didactic sessions** on rounds may include pathophysiology, basic science knowledge, appropriate use and interpretation of diagnostic tests including pulmonary function tests, radiographs (plain X-rays, CT scans, nuclear images, etc.), and decision-making in pulmonary patients.
- C. Common pulmonary bedside procedures** (including thoracentesis, closed pleural biopsy, bronchoscopy, laryngoscopy, chest tube insertion) will be performed by the resident under the direct supervision of the attending physician and/or pulmonary fellow when appropriate to level of experience

II. Didactic sessions

- A.** At least twice weekly, didactic session will occur on formal rounds by the attending and/or fellow so that a broad spectrum of pulmonary medicine is covered each month
- B.** Focused didactic lectures by attending physicians – mainly by attending physicians on the consult service and focused on specific patients who are being evaluated by the consult team
- C.** Informal teaching by pulmonary fellows on the service
- D.** Residents may be expected to prepare at least one brief oral presentation on a topic of their choice to present during rounds

III. Conferences

- A.** Residents are expected to attend the following conferences during the pulmonary rotation:
 - 1. Weekly Pulmonary Grand Rounds, Thursday mornings 7:30-8:30 AM – three interesting cases are presented each week by the fellows to the faculty where the clinical thinking and decision making is discussed as the case evolves.
 - 2. Weekly Pulmonary Topics, Friday 7-8 AM - Lectures from Pulmonary faculty on topics in Pulmonary Medicine
 - 3. Weekly Pulmonary Research in Progress, Fridays, 8-9 AM - research (basic and clinical) talks (2) by fellows, faculty, and occasionally visitors on problems encountered in pulmonary pathophysiology
 - 4. Weekly, Critical Care Lecture topics, Fridays, 12:30-1:30 PM - lectures from critical care faculty on critical care topics
 - 5. Weekly, X-ray Conference, Fridays, 1:30-2:30 PM - series of interesting chest imaging (X-rays and CT scans) presented for review and discussion with generation of differential diagnosis
 - 6. Weekly, Medical Grand Rounds, Wednesdays 12-1 PM - weekly Medicine Department Grand Rounds
 - 7. Monthly Pulmonary/Radiology Correlates, last calendar Thursday, Noon - clinical, radiographic and pathologic correlates from interesting cases seen in the pulmonary division are discussed

Educational Content

I. Patient characteristics / Disease Mix

- A.** Physicians-in-training are exposed to the wide variety of pulmonary patients including patients with airways disease, interstitial lung disease, infectious

disease, vascular disease, sleep disorders, pleural diseases, pulmonary embolism, etc. Patients are adults ranging in age from late adolescents to the elderly. Encounters occur in the inpatient setting with the physician-in-training acting as a consultant. Most encounters are with patients admitted from the ED.

II. Learning venues

- A.** University of Colorado Hospital inpatient wards (surgical, medical, transplant, rehab) and intensive care units

III. Procedures

- A.** History, physical exam skills needed for diagnosing, evaluating and managing pulmonary disorders
- B.** Laboratory interpretive skills
 1. General laboratory interpretation as applies to pulmonary patients (i.e. metabolic disturbances that may suggest ventilatory limitation, evidence for hypoxemia, etc.)
 2. Pulmonary physiology tests - airflow, lung volumes, determinants of gas exchange, sleep physiology, etc.
 3. Arterial blood gas interpretation
 4. Pleural fluid analysis
 5. Bronchoscopy sample analysis (cell counts and differential, histology)
 6. Microbiology of pulmonary samples
 7. General pulmonary histology (lung biopsy samples)
- C.** Pulmonary bedside procedures
 1. Thoracentesis
 2. Laryngoscopy
 3. Bronchoscopy
 4. Closed pleural biopsy
 5. Chest tube thoracostomy
 6. Peak flow measurements
 7. Respiratory muscle strength testing
- D.** Radiology study interpretive skills
 1. Plain chest radiograph
 2. CT scanning - high resolution, contrast enhanced, etc.
 3. Nuclear imaging - ventilation perfusion scanning, PET scanning
- E.** Consultative skills – residents will serve as consultants to other services under the supervision of attendings and fellows

IV. Ancillary services

- A.** All pulmonary faculty at UCHSC
- B.** Pulmonary/Critical Care fellows
- C.** Faculty in other specialties – surgery, medicine, radiology, pathology, etc.
- D.** Residents from other training programs – surgery, radiology, pathology, etc.
- E.** Case managers
- F.** Nursing staff
- G.** Other ancillary staff – clinical and administrative

V. Rotation structure

	Monday	Tuesday	Wednesday	Thursday	Friday
AM	<ul style="list-style-type: none"> • See Consults 	<ul style="list-style-type: none"> • See Consults 	<ul style="list-style-type: none"> • See consults 	<ul style="list-style-type: none"> • Pulmonary Grand Rounds • See Consults • Monthly Radiographic /Pathologic Correlates Conf 	<ul style="list-style-type: none"> • Pulmonary Topics Lecture • Pulmonary Research in Progress Conf • See Consults • Inpatient rounds/ didactics
PM	<ul style="list-style-type: none"> • See consults • Inpatient rounds/ didactics 	<ul style="list-style-type: none"> • See consults • Inpatient rounds/ didactics 	<ul style="list-style-type: none"> • Medical Grand Rounds • See consults • Inpatient rounds/ didactics 	<ul style="list-style-type: none"> • See consults • Inpatient rounds/ didactics 	<ul style="list-style-type: none"> • Critical Care Conf • X-ray Conf

Methods of Evaluation

I. Resident performance

- A. Inpatient attendings will observe and evaluate the performance of, and complete computerized evaluation forms for each resident on the rotation, summarizing their performance on the inpatient consult service. The inpatient attending will make every effort to meet individually with the resident during the rotation to give constructive feedback.
- B. Patient records (both written and electronic) written by the resident will be reviewed by the attending physicians on the consult services.

II. Program and faculty performance

- A. Upon completion of the rotation, residents will complete an evaluation of the rotation commenting on the quality of teaching, the faculty, and the overall rotation experience. Evaluations are compiled and reviewed by the program and collective evaluations will serve as a tool for improving the rotation.

Rotation Specific Competency Objectives (apply to both 2nd and 3rd year residents)

- I. Medical Knowledge** – The resident will demonstrate knowledge about pulmonary conditions with an emphasis on patient evaluation and management in the following areas:
 - A. Asthma
 - B. COPD
 - C. Lung neoplasms
 - D. Pulmonary manifestations of systemic diseases (i.e. vasculitis, infectious, neoplastic, etc.)
 - E. Ventilatory disorders (i.e impaired respiratory muscle activity, hypoventilation)
 - F. Interstitial lung diseases
 - G. Pleural Diseases (effusions, tumors, etc.)
 - H. Pulmonary Hypertension
 - I. Pulmonary Embolism
 - J. Pneumonias (typical, atypical)
 - K. Pulmonary complications of immunosuppression (HIV, transplant recipients, etc.)
 - L. Bronchiectasis
 - M. Mycobacterial lung diseases (typical and atypical)
 - N. Endocrine hypertension

- II. Patient Care Skills** – The resident will demonstrate proficiency in the following clinical skills:
 - A. Accurately perform and document pulmonary-focused histories and physical exams based on the pathophysiology of patient complaints
 - B. Identify and prioritize patients' problems, formulate appropriate differential diagnoses specific to pulmonary system-related complaints, and develop appropriate plans for evaluation and management
 - C. Present patients to the team on rounds efficiently and accurately
 - D. Follow patients seen for inpatient consults during hospital stay
 - E. Order appropriate diagnostic tests, and interpret results of testing for pulmonary disorders
 - F. Perform bedside pulmonary procedures (when appropriate)

- III. Communication Skills** – The resident will demonstrate the following skills:
 - A. Communicate effectively with patients and families regarding diagnosis, evaluation and treatment plans
 - B. Communicate with referring physicians regarding evaluations and recommendations
 - C. Communicate with specialists in surgery, radiology, pathology and laboratory medicine to obtain needed clinical information and plan treatment
 - D. Demonstrate compassionate treatment of patients and respect for their privacy and dignity

IV. Professionalism – The resident is expected to demonstrate appropriate attitudes and behaviors in the following areas:

- A. Display integrity, honesty and appropriate boundaries with team members including attending physicians, fellows, residents, medical students, administrative staff, and clinical support staff
- B. Display integrity, honesty and appropriate boundaries with patients, patients' representatives and fellow specialists
- C. Recognize the limits of one's knowledge and skills, and seek to overcome those limits

V. SBP and PBLI: Self-directed and Life-long Learning Skills

- A. Locate, evaluate and apply information for solving pulmonary system problems and make decisions relevant to the care of individuals and populations

Principal Ancillary Educational Materials

Residents have available several key pulmonary and general medical books in the pulmonary fellow's office and in the ICU. Additionally, residents have available on-line resources 24 hours a day through Up-To-Date in Medicine. All are provided on-line bibliographies through the Internal Medicine division for Critical Care and have access to annotated bibliographies through the American Thoracic Society website. Lectures and conferences as outlined above are mandatory for the physician-in-training. Residents and medical students are also encouraged to bring in articles for the team on interesting patients they are caring for. Physicians-in-training are also required to prepare a short (15 minute) didactic for the team on a pulmonary medicine topic of interest. Review of one to two scientific articles to make the lecture state-of-the-art is expected.

The following are other suggested sources of information to facilitate patient care and education:

- Harrison's Principles of Internal Medicine, 2005
- Murray and Nadel's Textbook of Respiratory Medicine, 2006
- Current Diagnosis and Treatment in Pulmonary Medicine, Lange Series 2004