

Overview of Goals and Objectives of Rotation: OHSU Pulmonary Consult Service

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Over the course of training, PCCM Fellows will spend approximately half of their required pulmonary rotations within Oregon Health & Sciences University. This exposure is intended to provide fellows with the necessary cognitive, technical, and ethical/social skills to manage a host of complex pulmonary conditions including but not limited to 1) Pulmonary Hypertension 2) Cystic Fibrosis 3) Interstitial Lung Diseases and 4) Opportunistic Infections arising from immune suppression. Working closely with Pulmonary-Critical Care Attendings, Fellows gain familiarity with health care delivery within the context of the University Health care system.

Medical Knowledge: *Residents are expected to demonstrate knowledge of established and evolving biomedical, clinical and social sciences, and the application of their knowledge to patient care and the education of others.*

Pulmonary Hypertension

Junior Fellows:

- Utilize the classification scheme of pulmonary hypertension employed by the WHO
- Understand the difference between elevated pulmonary pressure and pulmonary arterial hypertension as defined in the WHO classification
- Formulate a rational plan for ruling out or treating other causes/contributors to elevated pulmonary pressure in individual patients
- List conditions associated with development of PAH (cirrhosis, HIV, certain connective tissue diseases, anorexigens, congenital intracardiac shunts)
- Discuss appropriate screening and detection techniques for at-risk populations
- Define the functional classification & hemodynamic definition of pulmonary hypertension
- Understand the role of right heart catheterization and vasodilator testing in patient evaluation
- List agents employed in acute vasodilator testing and define a positive vasodilator response
- Define the patient population in which CCBs are appropriate initial therapy
- Understand the risk associated with surgery and mechanical ventilation
- Demonstrate knowledge of the pharmacokinetics and principle toxicities of therapeutic agents

Senior Fellows:

- List the genetic substrates leading to PH (*Bone Morphogenetic Protein Receptor II, Activin-Like Kinase Type-1,5- Hydroxytryptamine (Serotonin) Transporter*)
- Describe the molecular and cellular mechanisms contributing to pulmonary hypertension including *Prostacyclin, Endothelin, NO Pathway, 5-HT (Serotonin), Ion Channels, Inflammation, Coagulation, & Endothelial Cell Dysfunction*
- Understand the role of genetic evaluations in family counseling
- Understand the natural history of different forms of PH and employ prognostic factors (*Functional Class, six minute walk test, exercise peak systolic pressure, MVO₂, RAP/CI/mPAP*) in establishing life expectancy
- Describe other treatment options for FC III and IV groups including lifestyle modifications, conventional treatments, prostacyclins, endothelin receptor antagonists, phosphodiesterase inhibitors, combination therapy, atrial septostomy and lung transplantation
- Discuss means of assessing response to therapy (e.g. Echo, 6MWD, cardiac catheterization)

Idiopathic Pulmonary Fibrosis:

Junior Fellows:

- List the seven IIP entities in order of frequency and describe the epidemiologic features of each
- Understand differential diagnosis for interstitial pneumonitis with known causes and apply that to workup of individual patients
- Understand role of lung biopsy versus radiologic/clinical diagnosis.
- Define acute exacerbations of IPF and list potential contributing disease states
- Describe the natural history of smoking-related interstitial pneumonias and Pulmonary Langerhans Cell Histiocytosis

Senior Fellows:

- Contrast the duration of illness, HRCT findings, and prognosis of the various IIPs
- Describe the histologic appearance of and key differences in the ILD Diseases
- List features seen on HRCT that are helpful in establishing diagnosis in fibrotic lung disease including subpleural predominance, peribronchovascular distribution, ground glass, mosaic attenuation, cyst formation, nodules, honeycombing, and reticular patterns
- Relate CT appearance, 6MWD, CPI, clinical performance and acute exacerbations to prognosis in IPF
- Review treatment options for the various IIPs including 1) anti-inflammatory and immunosuppressive therapies 2) N-acetylcysteine 3) IFN- γ 1b 4) anticoagulation 5) lung transplantation 6) perflinidone

Cystic Fibrosis:

Junior Fellows:

- Understand the changing epidemiology of cystic fibrosis
- Describe the phenotypic features of cystic fibrosis (chronic sinopulmonary disease, GI & nutritional abnormalities, salt loss syndromes, male urogenital abnormalities)
- Describe the pros/cons of various techniques to screen for/diagnose CF (eg. immunoreactive trypsin, sweat chloride, nasal potential difference, and various genetic screens)
- List the common early and late colonizing pathogens
- Be familiar with inpatient guidelines for the management of CF exacerbations (including, but not limited to: antibiotic selection and dosing, timing of antibiotic levels and appropriate adjustments, sputum analysis, use of spirometry, chest physiotherapy, supplemental nutritional support -eg. intralipids, tube feedings-, infection control issues)
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Senior Fellows:

- Know the standards of care set forth by the Cystic Fibrosis Foundation for outpatient management (e.g. standards for # of clinic evaluations, spirometry, BMI monitoring, sputum analysis, endocrinologic screening, radiologic tests and blood work)
- Describe the appropriate use of/indication for chest physiotherapy, mucolytics, hypertonic saline, bronchodilators, & anti-inflammatory therapy
- Understand the role of 1) nutritional support 2) exocrine and endocrine pancreatic enzyme supplementation and 3) CF dietician/nutritionist consultation in patient management
- Understand the role & complications of assisted ventilation and lung transplantation in management of advanced cystic fibrosis
- Understand the unique psychosocial situations of CF patients and understand the role the CF social worker play

Hematologic Malignancies/Solid Organ & Bone Marrow Transplant:

- Relate the timing from transplant to risk of various infectious and non-infectious pulmonary complications
- Develop radiologic interpretive skills necessary to identify common complications in immune suppressed hosts(e.g. halo sign, BOOP)
- Understand the role and limitations of bronchoscopy in defining pathologic pulmonary processes in the Transplant population
- Demonstrate knowledge of the pharmacokinetics and principle toxicities of therapeutic agents used in the treatment of opportunistic fungi and viruses
- Understand the improved prognosis in intubated bone marrow transplant patients and relate outcome to particular pathogens and/or clinical status(i.e. vasopressor dependent, MODS)

Patient Care: *Residents are expected to provide patient care that is compassionate, appropriate and effective for the promotion of health, prevention of illness, treatment of disease and at the end of life.*

Junior Fellows:

- Demonstrate proficiency in use of information systems technology (EPIC, Lifetime Medical Record) to assist in patient care
- Use information technology (BICC, PubMed, National Guidelines Clearing House) to support patient care decisions and patient education
- Review history and physical findings with Faculty and confirm key elements
- Develop and perform the skills required to 1) safely anesthetize the upper & lower airway prior to bronchoscopy 2) maintain adequate gas exchange during the procedure 3) recognize and address complications arising from bronchoscopy and 4) provide appropriate samples and instructions for BAL/PSB
- Demonstrate the ability to safely perform diagnostic and therapeutic thoracentesis
- Read and interpret with supervision service Pulmonary Function Tests
- Identify patient care situations requiring complex management/arrange and participate in patient-centered care conferences
- Demonstrate the ability to identify common abnormalities on chest and CT radiography and provide an initial differential diagnosis

Senior Fellows:

- Defend management plan using EBM
- Ensure proper functioning, storage and sterility of bronchoscopes
- Demonstrate basic understanding of the functioning and administration of Pulmonary Function Labs
- Organize and direct the Pulmonary Consult service
- Provide initial consultation and management of Pulmonary Consult patients
- Demonstrate advanced 1) pattern-recognition skills 2) differential diagnosis 3) histopathologic diagnostic skills when reviewing radiographic and pathologic material

Practice based Learning: *Residents are expected to be able to use scientific evidence and methods to investigate, evaluate, and improve patient care practices.*

Fellows at all levels of training are expected to 1) identify areas for improvement and implement strategies to enhance knowledge, skills, attitudes and processes of care 2) analyze and evaluate practice experiences and implement strategies to continually improve the quality of patient practice 3) develop and maintain a willingness to learn from errors and use errors to improve the system or processes of care and 4) use information technology or other available methodologies to access and manage information, support patient care decisions and enhance both patient and physician education. Requirements for this competency include;

- Maintain a list of patients experiencing an untoward event (morbidity and mortality) during their stay

- Review relevant literature surrounding occurrences and presenting findings to fellows and faculty at monthly M&M conference
- Provide limited “root cause” analysis of significant errors and developing relevant action plans
- Review key articles in the literature related to patient safety (see section on conferences) and presenting synopsis at M&M conference
- Demonstrate ability to access critical event and adverse drug reporting forms and participating in surveillance
- Support ongoing basic and clinical science protocols in the ICU by participating in candidate identification or in proposing future projects
- Contribute to and support process improvements meeting with nursing or physician staff to assess current practice

Professionalism: Residents are expected to demonstrate behaviors that reflect a commitment to continuous professional development, ethical practice, an understanding and sensitivity to diversity and a responsible attitude toward their patients, their profession, and society.

- Demonstrate respect, compassion, integrity, and altruism in relationships with patients, families, and colleagues
- Demonstrate sensitivity and responsiveness to the gender, age, culture, religion, sexual preference, socioeconomic status, beliefs, behaviors and disabilities of patients and professional colleagues
- Adhere to principles of confidentiality, scientific/academic integrity, and informed consent
- Recognize and identify deficiencies in peer performance
- Teach junior colleagues or peers
- Admit to and seek help in remedying errors
- Interact with nursing staff and other professionals as two-way educational opportunities when current approach does not appear to be effective

Interpersonal and Communication Skills: Residents are expected to demonstrate interpersonal and communication skills that enable them to establish and maintain professional relationships with patients, families, and other members of health care teams.

- Provide effective and professional consultation to other physicians and health care professionals and sustain therapeutic and ethically sound professional relationships with patients, their families, and colleagues.
- Use effective listening, nonverbal, questioning, and narrative skills to communicate with patients and families
- Counsel and educate patients and families
- Communicate effectively in times of dynamically changing conditions
- Interact with consultants in a respectful, appropriate manner
- Communicates clearly, correctly, and concisely in a written report, stressing the important issues and an articulate plan.
- Maintain comprehensive, timely, and legible medical records
- Use nomenclature and writing standards consistent with that of the institution
- Display support & empathy to patients and their families, as witnessed by attending staff or reported to staff
- Demonstrate respect for and recognition of particular skill sets possessed by other practitioners, such as CC nurses, RT, PT, OT, dieticians, pharmacists.
- Consider ethical issues and patient wishes in treatment decisions

Systems-Based Practice: Residents are expected to demonstrate both an understanding of the contexts and systems in which health care is provided, and the ability to apply this knowledge to improve *and optimize health care*.

- Understand, access and utilize the resources, providers and systems necessary to provide optimal care
- Apply evidence-based, cost-conscious strategies to prevention, diagnosis, and disease management
 - Collaborate with other members of the health care team to assist patients in dealing effectively with complex systems and to improve systematic processes of care
- Demonstrate the Practitioner's role as patient/quality care advocate
- Establish multidisciplinary relationships needed to effect quality care
- Participate actively in coordinated multidisciplinary patient care plans
- Utilize established quality management procedures to facilitate care (e.g., massive transfusion protocol, standing order sets, ventilator pathway, etc.)
- Participate actively in PCCM or multidisciplinary M&M or case conferences
- Develop and coordinate multidisciplinary patient care plans
- Describe how resources are generated in different delivery systems
- Recognize how pulmonary services are documented, coded, billed, and reimbursed in different medical practices
- Interpret drug costs in context of outcomes (e.g., activated Protein C, rVIIa)
- Discuss the issues of patient safety including the medical systems that put patients at risk, medication, operations, transfusions & nursing ratios.
- Describe the proper procedure to correctly identify a patient to minimize patient errors.
- Recognize and describe basic compensation methodologies for critical care services.
- Recognize, describe and ensure compliance with institutional and unit policies and procedures as well as regulatory policies from accreditation agencies, regulators, and payers

Instructional Methods:

Introductory Lecture Series, Web-Based Curriculum (RICU), Weekly Critical Care Fellows Conference, Multidisciplinary lecture Series, PCCM Grand Rounds, PFT Interpretation with Consult Faculty, CDC Web-Based Tuberculosis Tutorial

Methods of Assessment:

- Competency-based staff evaluations
- Ancillary care provider evaluations
- Critical incident reporting
- Conference attendance and participation
- Structured evaluations of bronchoscopy
- Web-Based Instruction on Tuberculosis(complete during Fellowship)

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Webpages:

Cystic Fibrosis:

Cystic Fibrosis Foundation: <http://www.cff.org/> (website is for both providers and patients/families)

Pulmonary Hypertension Patient Resources:

www.phassocaition.org

1-800-748-7274 Patient helpline

www.phcentral.org

www.scleroderma.org

Interstitial lung Disease Slide Kit:

http://www.pilotforipf.org/comp_2006/SLIDE_KIT/slide_kit_2006.html

Rare Lung Diseases Network:
<http://rarediseasesnetwork.epi.usf.edu/>