I. Primer on Pulmonary Hypertension
   a. Basic normal pulmonary vascular function and anatomy
   b. Hemodynamic definition of pulmonary hypertension
   c. Histopathology
   d. Mechanistic mediators (e.g. BMPR2, 5-HT, NO, PGI2, endothelin)
   e. Epidemiology

II. Classification of Pulmonary Hypertension
   a. Group I- PAH
      i. Idiopathic
      ii. Portopulmonary
      iii. HIV
      iv. Shistosomiasis
      v. CHD
      vi. Familial/Genetic etiology
      vii. CTD
      viii. Drugs and toxins
      ix. PVOD/PCH
   b. Group II- PVH
      i. Systolic dysfunction
      ii. HFPEF
      iii. Valvular heart disease
   c. Group III- hypoxemic lung disease
      i. ILD
      ii. COPD
      iii. OSA/OHS
      iv. Chronic high altitude exposure
   d. Group IV- Chronic thromboembolic disease
   e. Group V- Miscellaneous
      i. Chronic renal failure
      ii. Hemolytic anemias

III. Pulmonary Hypertension Diagnostics
   a. History and physical
   b. Laboratory studies
   c. Chest imaging
      i. CT and CXR
      ii. VQ
d. Functional testing
   i. SMWT
   ii. PFT
   iii. CPET

e. Cardiac imaging
   i. TTE with bubble
   ii. cMRI

f. Right heart catheterization
   i. Timing of and indications for RHC
   ii. Components of RHC
      1. Pressures
      2. Hemodynamics
      3. Saturation run
      4. Interventions
   iii. Indications for simultaneous LHC
      1. LVEDP
      2. Constrictive/restrictive pathophysiology
      3. CAD

IV. Overview/Mechanisms of Pulmonary Hypertension Medical Therapeutics
a. PDE5-I
b. ETRA
c. Prostanoids
   i. Inhaled
   ii. PO
   iii. Parenteral
d. Riociguat
e. Anticoagulation
f. Exercise and cardiopulmonary rehab
g. Experimental agents
   i. Current (FK-506, Rituximab)
   ii. Past (imatinib)

V. Major Pulmonary Hypertension Medical Therapeutic Trials
a. Group I
   i. PDE5
   ii. ETA
   iii. Prostanoids
   iv. Riociguat
b. Group II
   i. Systolic dysfunction
   ii. HFPEF
c. Group III
   i. ILD
   ii. COPD
   iii. OSA/OHS

d. Group IV
   i. Riociguat
   ii. Inhaled prostanoids

VI. Surgical Therapeutics for Pulmonary Hypertension
   a. Atrial septostomy
   b. Pulmonary thromboendarterctomy
      i. Indications
      ii. Contraindications
      iii. Peri-operative complications
      iv. Long-term therapeutics and follow-up care
   c. Mechanical support
      i. Right heart assist devices
      ii. ECMO
   d. Lung transplantation
      i. Indications
      ii. Contraindications
      iii. Double v. single organ transplant
      iv. Lung allocation score and latest updates for pulmonary hypertension patients
      v. Complications of lung transplantation in pulmonary hypertension patients

VII. Special Considerations in Pulmonary Hypertension
   a. Peri-operative care
      i. Preoperative care
         1. Patient risk assessment
         2. Surgical risk assessment
         3. Preoperative strategies
      ii. Intra-operative care
         1. Plans for anesthesia
         2. Plans for monitoring
         3. Continuation of pulmonary hypertension medications
      iii. Post-operative care
         1. Plans for monitoring
         2. Complications
   b. Pregnancy
      i. Physiologic changes of pregnancy
      ii. Pathophysiologic changes in pregnant pulmonary hypertension patients
      iii. Pulmonary hypertension medications in pregnancy
iv. Prenatal care  
v. Peri-natal care  
vi. Medications peri-delivery  
c. Pulmonary hypertension in critical care  
i. Effects of mechanical ventilation  
ii. Sepsis and pulmonary hypertension  
iii. Strategies  
d. Pericardial effusion in pulmonary hypertension  
i. Etiology  
ii. Indications and contraindications to drainage  

VIII. Other Pulmonary Vascular Diseases  
a. Pulmonary AVMs  
i. Hereditary hemorrhagic telangiectasia  
ii. Hepatopulmonary syndrome  
b. Pulmonary vasculitis  
c. Pulmonary vascular tumors  

Resources *  

*In addition, please obtain copy of compiled relevant article PDFs from Fellowship Director