Appendix 1:

COPD Cases

- *Case 1: Patient with DM and moderate COPD exacerbation.*
  66/M with known COPD comes in for shortness of breath uncontrolled by his medications. He is currently on daily fluticasone/salmeterol BID and albuterol PRN. He had only one exacerbation in the past year (7 months ago), for which he was treated in the hospital for 3 days. He denies fever, chills, chest pain, or malaise. He has a cough with scant amounts of yellow sputum. His last PFT was performed a year ago and showed an FEV1/FVC ratio of 0.6, FEV1 55% pf predicted. He also has diabetes mellitus, well-controlled on metformin and linagliptin daily. His last hemoglobin A1c (2 months ago) was 6.5%. He continues to smoke but has cut down to a ½ pack per day (down from 2 packs daily).

- *Case 2: Acute dyspnea in a patient with COPD, stable heart failure and with pulmonary embolism on workup.*
  68/M with known COPD is admitted to the ER for dyspnea that began a few hours ago. He was returning from a fishing trip at his friend's lake house 6 hours away when he developed pleuritic chest pain associated with worsening dyspnea. His COPD is well controlled on daily formoterol and PRN albuterol. His last exacerbation was 2 years ago; he has never been intubated for a COPD exacerbation. He has good functional capacity and is able to complete his daily exercise routine (1-mile walks) without marked shortness of breath. His last PFT performed a year ago showed an FEV1/FVC ratio of 0.65, FEV1 55% of predicted. He also has hypertension and diastolic heart failure, for which he is on valsartan and PRN furosemide, and he is adherent to therapy. He had a left heart catheterization 2 years ago which showed 30% disease in the RCA and left circumflex, and no PCI was performed. He quit smoking over 5 years ago.

- *Case 3: Severe COPD in exacerbation and hypercarbic respiratory failure.*
  62/F with known COPD and CAD comes in for shortness of breath, cough, increased sputum production (green), and decreased functional status over the past 2 weeks. She has been given a steroid shot and a 5-day course of PO azithromycin after she went to the urgent care clinic for the above symptoms. She completed the antibiotic course without relief of symptoms. She has also used her PRN inhaled albuterol round-the-clock. Aside from these, she is on daily budesonide/formeterol, tiotropium, diltiazem, aspirin, atorvastatin, and quinapril. She has had 3 exacerbations in the past year, the last one being 3 months ago. Her last PFT done a year ago showed an FEV1/FVC ratio of 0.6, FEV1 45% of predicted. She has no history of intubation for COPD. She quit smoking 5 years ago.

- *Case 4: Patient with severe COPD who should be referred for evaluation of lung volume reduction surgery.*
  65/M with known COPD and a long history of smoking and severe shortness of breath with limited functional capacity (dyspnea after walking to the bathroom) is readmitted for the 5th time this year for worsening dyspnea. His daily medications are as follows: budesonide/formeterol, tiotropium, albuterol PRN and azithromycin. He recently completed a 14-day course of prednisone and was recently started on roflumilast a month ago. His last PFT done a year ago showed an FEV1/FVC ratio of 0.5, FEV1 35% pf predicted, TLC of 115%, DLCO of 70%. He has no history of intubation for COPD exacerbation but has been on NPPV a few times. He completed a 6-month pulmonary rehabilitation program, and post-rehabilitation, his 6-minute walk distance was 150 feet while on oxygen supplementation at 2 LPM via nasal cannula. He quit smoking a year ago.

- *Case 5: COPD with paroxysmal atrial fibrillation.*
  69/M with COPD and paroxysmal atrial fibrillation who comes in for shortness of breath. He has NYHA Class II-III symptoms at baseline, and he describes increased dyspnea (e.g. walking to the bathroom and getting dressed) over the past week, which prompted the ER consult. He tells you that his sputum has turned yellow but has not increased in amount, and he has no episodes of fever, anorexia, chest pain or dizziness. He is currently on daily tiotropium and PRN budesonide inhalations. He was diagnosed with paroxysmal atrial fibrillation after a stroke episode 2 years ago. He has no residual neurologic deficits. He is currently taking aspirin 81 mg, apixaban, and atorvastatin daily.

- *Case 6: COPD exacerbation secondary to influenza.*
  You go down to the ED to see him for admission, 69/M with COPD comes in for fever, cough and shortness of breath. He states that symptoms began 4 days ago, with fever, cough, and malaise. He has NYHA Class II symptoms at baseline, and describes increased dyspnea (e.g. walking to the bathroom and getting dressed) over the past 2 days, which, along with the fever and cough, prompted the ER consult. He tells you that his sputum has not changed in character or amount and has no episodes of chest pain or dizziness. He is currently on daily tiotropium and PRN budesonide inhalations, which he says he has been using round-the-clock. He refused his most recent influenza vaccination. He also describes fatigue; he takes frequent naps during the day due to an overall lack of energy. He tells you that he has always snored, but has not been told that he stops breathing during his sleep.

<u>Sepsis Cases</u>

- *Case 1: Sepsis from acute bacterial cellulitis in diabetic foot ulcer.*

78/F presents with erythema of dorsum of right foot with fever, which she noticed about a week ago. She has diabetes mellitus (on metformin and insulin) & sensory neuropathy. She often fails to wear proper shoes with recurrent minor trauma to feet. Patient is acutely ill, febrile (temp 101.5° F), tachycardic (HR 102), RR 18, BP 100/80.

- *Case 2: Acute pyelonephritis with Gram-negative bacteremia.*
  62/F from a long-term care facility comes in for a 6-day history of fever, frequency of micturition, and flank pain. She has no co-morbid illnesses and no history of surgery. She does not have an indwelling urinary catheter.

- *Case 3: Acute diverticulitis in an elderly woman.*
  68/F comes in with a 2-day history of worsening left lower quadrant pain, fever, frequent urination without dysuria, and mild, non-bloody diarrhea for 1 day. She has long-standing rheumatoid arthritis and she is on biweekly adalimumab injections.

- *Case 4: Central line-associated bloodstream infection.*
  48/F admitted for multiple injuries secondary to chest trauma and is on parenteral nutrition via a PICC line. She develops fever on the 12th hospital day but has no other associated symptoms. Patient has diabetes maintained on metformin prior to admission.

- *Case 5: Febrile neutropenia in a patient with a hematologic malignancy.*
  46/F is being treated for anaplastic large cell B lymphoma with a regimen consisting of cyclophosphamide, doxorubicin, vincristine, etoposide and prednisone, and she just received her 3rd cycle of chemotherapy 12 days ago. She felt warm last night and this morning. Her temperature was 101.6 at home prior to calling for this appointment. No skin discomfort, sore throat, cough, abdominal pain, nausea, diarrhea, or dysuria.

- *Case 6: Healthcare-associated pneumonia in a patient s/p ORIF for traumatic femoral fracture.*
  56/M with hypertension who was admitted 6 days ago after a motor vehicle accident. He sustained a right femoral fracture and underwent an uneventful ORIF of the femur 5 days ago. Today, you are consulted because of new-onset fever noted last night. He also had an episode of desaturation (88%) and was placed on supplemental oxygen.