

The following training problems are taken from the CDIM National Objectives:

Asthma, Training Problem #19

Students should be able to define, describe, and discuss:

1. The epidemiology, risk factors, symptoms, signs, and typical clinical course of the common forms of COPD, including chronic bronchitis and emphysema. *(MK)*
2. Common causes of acute exacerbations of COPD (AECOPD), including:
 - Acute infectious bronchitis. *(MK)*
 - Pneumonia. *(MK)*
 - Pulmonary edema. *(MK)*
 - Poor air quality (e.g. ozone, pollutants, tobacco smoke). *(MK)*
 - Occupational exposures. *(MK)*
 - Medical noncompliance. *(MK)*
3. The etiology, pathogenesis, evaluation, and management of hypoxemia and hypercapnia. *(MK)*
4. The genetics and role of alpha-1 antitrypsin deficiency in some patients with emphysema. *(MK)*
5. The epidemiology, risk factors, symptoms, signs, and typical clinical course of asthma. *(MK)*
6. Allergic and non-allergic factors that may precipitate bronchospasm and exacerbate asthma, including:
 - Grass and tree pollen. *(MK)*
 - Animal dander. *(MK)*
 - Cockroaches. *(MK)*
 - Dust mites. *(MK)*
 - Allergic rhinitis/post-nasal drip. *(MK)*
 - Acute/chronic infectious sinusitis. *(MK)*
 - Acute infectious bronchitis. *(MK)*
 - Pneumonia. *(MK)*
 - Pulmonary edema. *(MK)*
 - Exercise. *(MK)*
 - Anxiety/stress. *(MK)*
 - Poor air quality (e.g. ozone, pollutants, tobacco smoke). *(MK)*
 - Occupational exposures. *(MK)*
 - Medical noncompliance. *(MK)*
7. Therapies for COPD and asthma, including:
 - Beta-agonist bronchodilators. *(MK)*
 - Anticholinergic bronchodilators. *(MK)*
 - Leukotriene inhibitors. *(MK)*
 - Mast cell stabilizers. *(MK)*
 - Theophylline. *(MK)*
 - Inhaled corticosteroids. *(MK)*
 - Systemic corticosteroids. *(MK)*
 - Antimicrobial agents. *(MK)*
 - Supplemental oxygen. *(MK)*
 - Immunotherapy. *(MK)*
8. The indications for and the efficacy of influenza and pneumococcal vaccines. *(MK)*

Coronary Artery Disease, Training Problem #6

Students should be able to define, describe and discuss:

1. Symptoms and signs of chest pain that may be due to an acute coronary syndrome such as unstable angina or acute myocardial infarction. *(MK)*
2. Symptoms and signs of chest pain that are characteristic of angina pectoris. *(MK)*
3. Symptoms and signs of chest pain due to other cardiac causes such as:
 - Atypical or variant angina (coronary vasospasm, Prinzmetal angina). *(MK)*
 - Cocaine-induced chest pain. *(MK)*
 - Pericarditis. *(MK)*
 - Aortic dissection. *(MK)*
 - Valvular heart disease (aortic stenosis, mitral valve prolapse). *(MK)*
 - Non-ischemic cardiomyopathy. *(MK)*
 - Syndrome X. *(MK)*
4. Symptoms and signs of chest pain due to gastrointestinal disorders such as:
 - Esophageal disease (GERD, esophagitis, esophageal dysmotility). *(MK)*
 - Biliary disease (cholecystitis, cholangitis). *(MK)*
 - Peptic ulcer disease. *(MK)*
 - Pancreatitis. *(MK)*
5. Symptoms and signs of chest pain due to pulmonary disorders such as:
 - Pneumonia. *(MK)*
 - Spontaneous pneumothorax. *(MK)*
 - Pleurisy. *(MK)*
 - Pulmonary embolism. *(MK)*
 - Pulmonary hypertension/cor pulmonale. *(MK)*
6. Symptoms and signs of chest pain due to musculoskeletal causes such as:
 - Costochondritis. *(MK)*
 - Rib fracture. *(MK)*
 - Myofascial pain syndromes. *(MK)*
 - Muscular strain. *(MK)*
 - Herpes zoster. *(MK)*
7. Symptoms and signs of chest pain due to psychogenic causes such as:
 - Panic disorders. *(MK)*
 - Hyperventilation. *(MK)*
 - Somatoform disorders. *(MK)*
8. Factors that may be responsible for provoking or exacerbating symptoms of ischemic chest pain by:
 - Increasing myocardial oxygen demand.
 - Tachycardia or tachyarrhythmia. *(MK)*
 - Hypertension. *(MK)*
 - Increased wall stress (aortic stenosis, cardiomyopathy). *(MK)*
 - Hyperthyroidism. *(MK)*
 - Decreasing myocardial oxygen supply.
 - Anemia. *(MK)*
 - Hypoxemia. *(MK)*
9. Risk factors for the development of coronary heart disease:
 - Age and gender. *(MK)*
 - Family history of sudden death or premature CAD. *(MK)*
 - Personal history of peripheral vascular or cerebrovascular disease. *(MK)*
 - Smoking. *(MK)*
 - Lipid abnormalities (includes dietary history of saturated fat and cholesterol). *(MK)*
 - Diabetes mellitus. *(MK)*
 - Hypertension. *(MK)*
 - Obesity. *(MK)*
 - Sedentary lifestyle. *(MK)*

- Cocaine use. *(MK)*
- Estrogen use. *(MK)*
- Chronic inflammation. *(MK)*

10. Physiologic basis and/or scientific evidence supporting each type of treatment, intervention or procedure commonly used in the management of patients who present with chest pain. *(MK)*

11. Role of a critical pathway or practice guideline in delivering high quality, cost effective care for patients presenting with symptoms of chest pain in the outpatient clinic, emergency room or hospital. *(MK, PC, SBP)*

Coronary Artery Disease, Training Problem #16

Students should be able to define, describe, and discuss:

1. The primary and secondary prevention of ischemic heart disease through the reduction of cardiovascular risk factors (e.g. controlling hypertension and dyslipidemia, aggressive diabetes management, avoiding tobacco, and aspirin prophylaxis). *(MK)*

2. The basic principles of the role of genetics in CAD. *(MK)*

3. Pathogenesis, signs, and symptoms of the acute coronary syndromes:

- Unstable angina. *(MK)*
- Non-ST-elevation myocardial infarction (NSTEMI). *(MK)*
- ST-elevation myocardial infarction (STEMI). *(MK)*

4. Atypical presentations of cardiac ischemia/infraction. *(MK)*

5. The typical clinical course of the acute coronary syndromes. *(MK)*

6. ECG findings and macromolecular markers (myoglobin, CK-MB, Troponin-I, Troponin-T) of acute ischemia/MI. *(MK)*

7. The utility of echocardiography in acute MI. *(MK)*

8. The importance of monitoring for and immediate treatment of ventricular fibrillation in acute MI. *(MK)*

9. Therapeutic options for acute MI and how they may differ for NSTEMI and STEMI, including:

- Aspirin. *(MK)*
- Morphine. *(MK)*
- Nitroglycerine. *(MK)*
- Oxygen. *(MK)*
- Heparin. *(MK)*
- Antiplatelet agents (glycoprotein IIb/IIIa inhibitors). *(MK)*
- Beta-blockers. *(MK)*
- ACE-I/ARB. *(MK)*
- HMG-CoA reductase inhibitors. *(MK)*
- Thrombolytic agents. *(MK)*
- Emergent cardiac catheterization with percutaneous coronary intervention. *(MK)*

10. Pathogenesis, signs, and symptoms of the complications of acute MI, including arrhythmias, reduced ventricular function, cardiogenic shock, pericarditis, papillary muscle dysfunction/rupture, acute valvular dysfunction, and cardiac free wall rupture. *(MK)*

11. The general approach to the evaluation and treatment of ventricular tachycardia and fibrillation. *(MK)*

12. The importance of post-MI risk stratification, including the burden of residual coronary disease and assessment of left ventricular function. *(MK)*

13. Basic principles of cardiac rehabilitation. *(MK)*

14. Indications for coronary artery bypass grafting (CABG). *(MK)*

15. The Centers for Medicare & Medicaid Services (CMS) and the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) quality measures for acute MI treatment. *(MK, PLI, SBP)*

Congestive Heart Failure, Training Problem #22

Students should be able to define, describe, and discuss:

1. Types of processes and most common disease entities that cause HF (i.e. ischemic, valvular, hypertrophic, infiltrative, inflammatory, etc.). *(MK)*
2. The basic role of genetics in certain forms of cardiomyopathy. *(MK)*
3. Staging system for heart failure:
 - Stage A: high risk for HF but no structural heart disease is present. *(MK)*
 - Stage B: structural heart disease is present but never any symptoms. *(MK)*
 - Stage C: past or current symptoms associated with structural heart disease. *(MK)*
 - Stage D: end-stage disease with requirements for specialized treatment. *(MK)*
3. Types of processes that cause systolic vs. diastolic dysfunction. *(MK)*
4. Symptoms and signs of left-sided vs. right-sided heart failure. *(MK)*
5. Compensatory mechanisms of heart failure including cardiac remodeling and activation of endogenous neurohormonal systems. *(MK)*
6. Factors leading to symptomatic exacerbation of HF, including ischemia, arrhythmias, hypoxemia, anemia, fever, hypertension, thyroid disorders, non compliance with medications and dietary restrictions and use of nonsteroidal anti-inflammatory drugs. *(MK)*
7. Importance of age, gender and ethnicity on the prevalence and prognosis of HF. *(MK)*
8. Physiological basis and scientific evidence supporting each type of treatment, intervention, or procedure commonly used in the management of patients who present with HF. *(MK)*
9. The general approach to the evaluation and treatment of atrial fibrillation *(MK)*
10. Role of critical pathways or practice guidelines in delivering high-quality, cost effective care for patients presenting with new or recurrent heart failure. *(PC, SBP)*
11. The Centers for Medicare & Medicaid Services (CMS) and the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) quality measures for HF treatment. *(MK, PLI, SBP)*

COPD, Training Problem #19

Students should be able to define, describe, and discuss:

1. The epidemiology, risk factors, symptoms, signs, and typical clinical course of the common forms of COPD, including chronic bronchitis and emphysema. *(MK)*
2. Common causes of acute exacerbations of COPD (AECOPD), including:
 - Acute infectious bronchitis. *(MK)*
 - Pneumonia. *(MK)*
 - Pulmonary edema. *(MK)*
 - Poor air quality (e.g. ozone, pollutants, tobacco smoke). *(MK)*
 - Occupational exposures. *(MK)*
 - Medical noncompliance. *(MK)*
3. The etiology, pathogenesis, evaluation, and management of hypoxemia and hypercapnia. *(MK)*
4. The genetics and role of alpha-1 antitrypsin deficiency in some patients with emphysema. *(MK)*
5. The epidemiology, risk factors, symptoms, signs, and typical clinical course of asthma. *(MK)*
6. Allergic and non-allergic factors that may precipitate bronchospasm and exacerbate asthma, including:
 - Grass and tree pollen. *(MK)*
 - Animal dander. *(MK)*
 - Cockroaches. *(MK)*
 - Dust mites. *(MK)*
 - Allergic rhinitis/post-nasal drip. *(MK)*
 - Acute/chronic infectious sinusitis. *(MK)*
 - Acute infectious bronchitis. *(MK)*
 - Pneumonia. *(MK)*

- Pulmonary edema. *(MK)*
 - Exercise. *(MK)*
 - Anxiety/stress. *(MK)*
 - Poor air quality (e.g. ozone, pollutants, tobacco smoke). *(MK)*
 - Occupational exposures. *(MK)*
 - Medical noncompliance. *(MK)*
7. Therapies for COPD and asthma, including:
- Beta-agonist bronchodilators. *(MK)*
 - Anticholinergic bronchodilators. *(MK)*
 - Leukotriene inhibitors. *(MK)*
 - Mast cell stabilizers. *(MK)*
 - Theophylline. *(MK)*
 - Inhaled corticosteroids. *(MK)*
 - Systemic corticosteroids. *(MK)*
 - Antimicrobial agents. *(MK)*
 - Supplemental oxygen. *(MK)*
 - Immunotherapy. *(MK)*
8. The indications for and the efficacy of influenza and pneumococcal vaccines. *(MK)*

Diabetes, Training Problem #20

Students should be able to define, describe, and discuss:

1. Diagnostic criteria for impaired fasting glucose and impaired glucose tolerance. *(MK)*
2. Diagnostic criteria for type I and type II diabetes mellitus, based on a history, physical examination, and laboratory testing. *(MK)*
3. Pathophysiology, risk factors, and epidemiology of type I and type II diabetes mellitus. *(MK)*
4. The basic principles of the role of genetics in diabetes mellitus. *(MK)*
5. Presenting symptoms and signs of type I and type II diabetes mellitus. *(MK)*
6. Presenting symptoms and signs of diabetic ketoacidosis (DKA) and nonketotic hyperglycemic (NKH). *(MK)*
7. Pathophysiology for the abnormal laboratory values in DKA and NKH including plasma sodium, potassium, and bicarbonate. *(MK)*
8. Precipitants of DKA and NKH. *(MK)*
9. Major causes of morbidity and mortality in diabetes mellitus (coronary artery disease, peripheral vascular disease, hypoglycemia, DKA, NKH coma, retinopathy, neuropathy—peripheral and autonomic, nephropathy, foot disorders, infections). *(MK)*
10. Laboratory tests needed to screen, diagnose, and follow diabetic patients including: glucose, electrolytes, blood urea nitrogen/creatinine, fasting lipid profile, HgA1c, urine microalbumin/creatinine ratio, urine dipstick for protein. *(MK)*
10. Non-pharmacologic and pharmacologic (drugs and side effects) treatment of diabetes mellitus to maintain acceptable levels of glycemic control, prevent target organ disease, and other associated complications. *(MK)*
11. The specific components of the American Diabetes Association (ADA) dietary recommendations for type I and type II diabetes mellitus. *(MK)*
12. Basic management of diabetic ketoacidosis and nonketotic hyperglycemic states, including the similarities and differences in fluid and electrolyte replacement. *(MK)*
13. Basic management of blood glucoses in the hospitalized patient. *(MK)*
14. The Somogyi effect and the Dawn phenomenon and the implications of each in diabetes pharmacologic management. *(MK)*
15. The fundamental aspects of the American Diabetes Association (ADA) clinical practice recommendations and how they encourage high quality diabetes care. *(MK, PLI, SBP)*
16. Basic management of hypertension and hyperlipidemia in the diabetic patient. *(MK)*

DVT/PE, Training Problem #33

Students should be able to define, describe and discuss:

1. Risk factors for developing DVT, including:
 - Prior history of DVT/PE. *(MK)*
 - Immobility/hospitalization. *(MK)*
 - Increasing age. *(MK)*
 - Obesity. *(MK)*
 - Trauma. *(MK)*
 - Smoking. *(MK)*
 - Surgery. *(MK)*
 - Cancer. *(MK)*
 - Acute MI. *(MK)*
 - Stroke and neurologic trauma. *(MK)*
 - Coagulopathy. *(MK)*
 - Pregnancy. *(MK)*
 - Oral estrogens. *(MK)*
2. Genetic considerations predisposing to venous thrombosis. *(MK)*
3. The symptoms and signs of DVT and PE. *(MK)*
4. The differential diagnosis of DVT including the many causes of unilateral leg pain and swelling:
 - Venous stasis and the postphlebotic syndrome. *(MK)*
 - Lymphedema. *(MK)*
 - Cellulitis. *(MK)*
 - Superficial thrombophlebitis. *(MK)*
 - Ruptured popliteal cyst. *(MK)*
 - Musculoskeletal injury. *(MK)*
 - Arterial occlusive disorders. *(MK)*
5. The differential diagnosis of PE including the many causes of chest pain and dyspnea:
 - MI/unstable angina. *(MK)*
 - Congestive heart failure. *(MK)*
 - Pericarditis. *(MK)*
 - Pneumonia/bronchitis/COPD exacerbation. *(MK)*
 - Asthma. *(MK)*
 - Pulmonary hypertension. *(MK)*
 - Pneumothorax. *(MK)*
 - Musculoskeletal pain (e.g. rib fracture, costochondritis). *(MK)*
6. Treatment modalities for DVT/PE, including:
 - Unfractionated heparin. *(MK)*
 - Low-molecular-weight heparin. *(MK)*
 - Warfarin. *(MK)*
 - Thrombolytics. *(MK)*
7. The risks, benefits, and indications for inferior vena cava filters. *(MK)*
8. The long-term sequelae of DVT and PE. *(MK)*
9. Methods of DVT/PE prophylaxis, their indications and efficacy, including:
 - Ambulation. *(MK)*
 - Graded compression stockings. *(MK)*
 - Pneumatic compression devices. *(MK)*
 - Unfractionated heparin. *(MK)*
 - Low-molecular-weight heparin. *(MK)*
 - Warfarin. *(MK)*

GI Bleed, Training Problem #12

Students should be able to define, describe, and discuss:

1. The common causes for and symptoms of upper and lower gastrointestinal blood loss, including:
 - Esophagitis/esophageal erosions. (MK)
 - Mallory Weiss tear. (MK)
 - Peptic and duodenal ulcer disease. (MK)
 - Esophageal/gastric varices. (MK)
 - Erosive gastritis. (MK)
 - Arteriovenous malformations. (MK)
 - Gastrointestinal tumors, benign and malignant. (MK)
 - Diverticulosis. (MK)
 - Ischemic colitis. (MK)
 - Hemorrhoids. (MK)
 - Anal fissures. (MK)
4. The distinguishing features of upper versus lower GI bleeding (MK)
5. The indications for inpatient versus outpatient evaluation and treatment (MK)
6. The principles of stabilization and treatment of acute massive GI blood loss. (MK)
7. The role of contributing factors in GI bleeding such as H. pylori infection; NSAIDs, alcohol, cigarette use, coagulopathies; and chronic liver disease. (MK)

HIV, Training Problem #23

Students should be able to define, describe, and discuss:

1. Symptoms and signs of acute HIV seroconversion. (MK)
2. CDC AIDS case definition. (MK)
3. Specific tests for HIV (e.g. HIV ELISA, confirmatory western blot, quantitative PCR) and their operating characteristics. (MK)
4. Relationship of CD4 lymphocyte count to opportunistic infections as well as relationship between CD4 lymphocyte count and viral load to overall disease progression. (MK)
5. The basic principles of highly active antiretroviral therapy (HAART), including the different classes of antiviral medications and their use, as well as common side effects and drug-drug interactions. (MK)
6. Basics of post-exposure prophylaxis. (MK)
7. The marked importance of antiretroviral medication adherence and the potential consequences of erratic or poor adherence. (MK)
8. Vaccination recommendation for patients infected with HIV. (MK)
9. Indications for and utility and risks of prophylaxis of HIV-related opportunistic infections. (MK)
10. Pathogenesis, symptoms, signs, typical clinical course, and management of HIV-related opportunistic infections with a recognition of which are most common:
 - *Pneumocystis jiroveci*. (MK)
 - Candidiasis (oral, esophageal, vaginal). (MK)
 - *Cryptococcus neoformans*. (MK)
 - *Cryptosporidium parvum*. (MK)
 - Cytomegalovirus infection (gastrointestinal, neurologic, retinal). (MK)
 - Varicella-zoster virus. (MK)
 - *Isospora belli*. (MK)
 - Microsporidiosis. (MK)
 - *Mycobacterium avium complex*. (MK)
 - *Mycobacterium tuberculosis*. (MK)

- *Toxoplasma gondii*. (MK)
11. Symptoms and signs of the following HIV-related malignancies:
 - Kaposi's sarcoma. (MK)
 - Non-Hodgkin's lymphoma. (MK)
 - Cervical carcinoma. (MK)
 12. Common skin and oral manifestations of HIV infection and AIDS:
 - Molluscum contagiosum. (MK)
 - *Cryptococcus neoformans*. (MK)
 - Viral warts. (MK)
 - Lipodystrophy. (MK)
 - Herpes zoster. (MK)
 - Seborrheic dermatitis. (MK)
 - Buccal candidiasis. (MK)
 - Oral hairy leukoplakia. (MK)
 13. "Safe sex" practices. (MK)
 14. The importance of proper ongoing dental care. (MK)

Liver Disease, Training Problem #25

Students should be able to define, describe, and discuss:

1. The biochemical/physiologic/mechanistic approach to hyperbilirubinemia, including:
 - Increased production. (MK)
 - Decreased hepatocyte uptake. (MK)
 - Decreased conjugation. (MK)
 - Decreased excretion from the hepatocyte. (MK)
 - Decreased small duct transport (intrahepatic cholestasis). (MK)
 - Decreased large duct transport (extrahepatic cholestasis, obstructive jaundice). (MK)
2. The biochemistry and common causes of unconjugated and conjugated hyperbilirubinemia. (MK)
3. The use of serum markers of liver injury (e.g. AST, ALT, GGT, Alk Phos) and function (e.g. bilirubin, ALB, PT/INR) in the diagnostic evaluation of hepatobiliary disease. (MK)
4. The clinical significance of asymptomatic, isolated elevation of AST, ALT, GGT, and/or Alk Phos. (MK)
5. The common pathologic patterns of liver disease and their common causes, including:
 - Steatosis (fatty liver). (MK)
 - Hepatitis. (MK)
 - Cirrhosis. (MK)
 - Infiltrative. (MK)
 - Intrahepatic cholestasis. (MK)
 - Extrahepatic cholestasis (obstructive jaundice). (MK)
6. The epidemiology, symptoms, signs, typical clinical course, and prevention of viral hepatitis. (MK)
7. The distinctions between acute and chronic hepatitis. (MK)
8. The indications for and efficacy of hepatitis A and B vaccinations. (MK)
9. The common causes and clinical significance of hepatic steatosis and steatohepatitis. (MK)
10. The epidemiology, symptoms, signs, and typical clinical course of autoimmune liver diseases such as autoimmune hepatitis, primary biliary cirrhosis, and primary sclerosing cholangitis. (MK)
11. The epidemiology, symptoms, signs, and typical clinical course of cirrhosis. (MK)
12. The pathophysiologic manifestations, symptoms, signs, and complications of alcohol-induced liver disease. (MK)
13. The symptoms, signs, and complications of portal hypertension. (MK)
14. The pathophysiology and common causes of ascites. (MK)
15. The pathophysiologic manifestations, symptoms, and signs of spontaneous bacterial peritonitis. (MK)

16. The basic pathophysiology, symptoms, signs, typical clinical course, and precipitants of hepatic encephalopathy. *(MK)*
17. The basic pathophysiology, symptoms, signs, and typical clinical course of the hepatorenal syndrome. *(MK)*
18. The analysis of ascitic fluid and its use in the diagnostic evaluation of liver disease. *(MK)*
19. Common causes of drug-induced liver injury. *(MK)*
20. Genetic considerations in liver disease (i.e. hemochromatosis, Wilson's disease, alpha-1 antitrypsin deficiency, Gilbert's syndrome). *(MK)*
21. The epidemiology, pathophysiology, symptoms, signs, and typical clinical course of cholelithiasis and cholecystitis. *(MK)*
22. The clinical syndrome of "ascending cholangitis" including its common causes and typical clinical course. *(MK)*
23. The indications for and risks of paracentesis and liver biopsy. *(MK)*
24. The indications for and utility of hepatobiliary imaging studies, including:
 - Ultrasound. *(MK)*
 - Nuclear medicine studies. *(MK)*
 - CT. *(MK)*
 - MRI. *(MK)*
 - Magnetic resonance cholangiopancreatography (MRCP). *(MK)*
 - Endoscopic retrograde cholangiopancreatography (ERCP). *(MK)*

Mental Status Change, Training Problem #3

Students should be able to define, describe, and discuss:

1. The differentiation of delirium, dementia, and depression. *(MK)*
2. The pathophysiology, symptoms, and signs of the most common and most serious causes of altered mental status, including:
 - Metabolic causes (e.g. hyper/hyponatremia, hyper/hypoglycemia, hypercalcemia, hyper/hypothyroidism, hypoxia/hypercapnea, B12 deficiency, hepatic encephalopathy, uremic encephalopathy, drug/alcohol intoxication/withdrawal, and Wernicke's encephalopathy). *(MK)*
 - Structural lesions (e.g. primary or metastatic tumor, intracranial hemorrhage, subdural hematoma). *(MK)*
 - Vascular (e.g. cerebrovascular accident, transient ischemic attack, cerebral vasculitis). *(MK)*
 - Infectious etiologies (e.g. encephalitis, meningitis, urosepsis, endocarditis, pneumonia, cellulites). *(MK)*
 - Seizures/ post-ictal state. *(MK)*
 - Hypertensive encephalopathy. *(MK)*
 - Low perfusion states (e.g. arrhythmias, MI, shock, acute blood loss, severe dehydration). *(MK)*
 - Miscellaneous causes (e.g. fecal impaction, postoperative state, sleep deprivation, urinary retention). *(MK)*
3. The importance of thoroughly reviewing prescription medications over-the-counter drugs, and supplements and inquiring about substance abuse. *(MK)*
4. The risk factors for developing altered mental status, including:
 - Dementia. *(MK)*
 - Advanced age. *(MK)*
 - Substance abuse. *(MK)*
 - Comorbid physical problems such as sleep deprivation, immobility, dehydration, pain, and sensory impairment. *(MK)*
 - ICU admission. *(MK)*
5. The diagnostic evaluation of altered mental status. *(MK)*
6. Indications, contraindications, and complications of lumbar puncture. *(MK)*
7. Principles of management of the common causes of altered mental status. *(MK)*
8. Nonpharmacologic measures to reduce agitation and aggression, including:

- Avoiding the use of physical restraints whenever possible. *(MK)*
- Using reorientation techniques. *(MK)*
- Assuring the patient has their devices to correct sensory deficits. *(MK)*
- Promoting normal sleep and day/night awareness. *(MK)*
- Preventing dehydration and electrolyte disturbances. *(MK)*
- Avoiding medications which may worsen delirium whenever possible (e.g. anticholinergics, benzodiazepines, etc.). *(MK)*

9. The risks of using physical restraints. *(MK)*

10. The risk and benefits of using low-dose high potency antipsychotics for delirium associated agitation and aggression. *(MK)*

Pneumonia, Training Problem #29

Students should be able to define, describe, and discuss:

1. The epidemiology, pathophysiology, symptoms, signs, and typical clinical course of community-acquired, nosocomial, and aspiration pneumonia and pneumonia in the immunocompromised host. *(MK)*
2. The conceptualization of “typical” and “atypical” pneumonia and its limitations. *(MK)*
3. Common pneumonia pathogens (viral, bacterial, mycobacterial, and fungal) in immunocompetent and immunocompromised hosts). *(MK)*
4. Identify patients who are at risk for impaired immunity. *(MK)*
5. Indications for hospitalization and ICU admission of patient with pneumonia. *(MK)*
6. The radiographic findings of the various types of pneumonia. *(MK)*
7. The antimicrobial treatments (e.g. antiviral, antibacterial, antimycobacterial, and antifungal) for community-acquired, nosocomial, and aspiration pneumonia, and pneumonia in the immunocompromised host. *(MK)*
8. The implications of antimicrobial resistance. *(MK)*
9. The pathogenesis, symptoms, and signs of the complications of acute bacterial pneumonia including: bacteremia, sepsis, parapneumonic effusion, empyema, meningitis, and metastatic microabscesses. *(MK)*
10. The indications for and complications of chest tube placement. *(MK)*
11. The indications for and efficacy of influenza and pneumococcal vaccinations. *(MK)*
12. The indications and procedures for respiratory isolation. *(MK)*
13. The Centers for Medicare & Medicaid Services (CMS) and the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) quality measures for community-acquired pneumonia treatment. *(MK, PLI, SBP)*

Lung Cancer/Pulmonary Nodule, Training Problem #18

Students should be able to define, describe, and discuss:

1. The epidemiology, pathophysiology, symptoms, signs, and typical clinical course of community-acquired, nosocomial, and aspiration pneumonia and pneumonia in the immunocompromised host. *(MK)*
2. The conceptualization of “typical” and “atypical” pneumonia and its limitations. *(MK)*
3. Common pneumonia pathogens (viral, bacterial, mycobacterial, and fungal) in immunocompetent and immunocompromised hosts). *(MK)*
4. Identify patients who are at risk for impaired immunity. *(MK)*
5. Indications for hospitalization and ICU admission of patient with pneumonia. *(MK)*
6. The radiographic findings of the various types of pneumonia. *(MK)*
7. The antimicrobial treatments (e.g. antiviral, antibacterial, antimycobacterial, and antifungal) for community-acquired, nosocomial, and aspiration pneumonia, and pneumonia in the immunocompromised host. *(MK)*
8. The implications of antimicrobial resistance. *(MK)*
9. The pathogenesis, symptoms, and signs of the complications of acute bacterial pneumonia including: bacteremia, sepsis, parapneumonic effusion, empyema, meningitis, and metastatic microabscesses. *(MK)*

10. The indications for and complications of chest tube placement. *(MK)*
11. The indications for and efficacy of influenza and pneumococcal vaccinations. *(MK)*
12. The indications and procedures for respiratory isolation. *(MK)*
13. The Centers for Medicare & Medicaid Services (CMS) and the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) quality measures for community-acquired pneumonia treatment. *(MK, PLI, SBP)*

Laboratory interpretation:

Students should be able to recommend when to order diagnostic and laboratory tests and be able to interpret them, both prior to and after initiating treatment based on the differential diagnosis, including consideration of test cost and performance characteristics as well as patient preferences.

Laboratory and diagnostic tests should include, when appropriate:

- CBC. *(PC, MK)*
- Blood cultures. *(PC, MK)*
- ABG. *(PC, MK)*
- Pleural fluid chemistry, cell counts, staining, and culture. *(PC, MK)*
- Chest radiograph. *(PC, MK)*

Students should be able to define the indications for and interpret (**with consultation**) the results of:

- Chest CT. *(PC, MK)*

Students should be able to:

- Communicate the diagnosis, treatment plan, prognosis, and subsequent follow-up to the patient and his or her family. *(PC, CS)*
- Elicit questions from the patient and his or her family about the management plan. *(PC, CS)*
- Educate the patient about pneumococcal and influenza immunizations. *(PC, CS)*
- Educate the patient about the importance of smoking cessation. *(PC, CS)*

ACGME Competencies:

PC = Patient Care
MK = Medical Knowledge
PLI = Practice-Based Learning and Improvement

CS = Communication Skills
P = Professionalism
SBP = Systems-Based Practice