

Chapter 3

Common Respiratory Disorders in Primary Care

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Chapter Outline

Case 1 - Influenza

- A. History and Physical Exam
- B. Recommended Lab/Diagnostics
- C. Pathophysiology
- D. Guidelines to direct care: Prevention and control of seasonal influenza with vaccines: recommendation of the Advisory Committee on Immunization Practices (ACIP)
- E. Treatment Plan

Case 2 - Acute Bronchitis

- A. History and Physical Exam
- B. Recommended Labs/Diagnostics
- C. Pathophysiology
- D. Guidelines to direct care: Chronic Cough Due to Acute Bronchitis: American College of Chest Physicians (ACCP) Evidence-Based Clinical Practice Guidelines
- E. Treatment Plan

Case 3 - Asthma

- A. History and Physical Exam
- B. Recommended Labs/Diagnostics
- C. Pathophysiology

- D. Guidelines to direct care: Global Initiative for Asthma 2015 and National Heart Lung and Blood Institute (NHLBI) Guidelines for the Diagnosis and Management of Asthma (EPR-3)
- E. Treatment Plan

Case 4 - Chronic Obstructive Pulmonary Disease (COPD)

- A. History and Physical Exam
- B. Recommended abs/Diagnostics
- C. Pathophysiology
- D. Guidelines to direct care: Global Initiative for Chronic Obstructive Lung Disease (2015)
- E. Treatment Plan

Case 5 - Community-Acquired Pneumonia (CAP)

- A. History and Physical Exam
- B. Recommended Labs/Diagnostics
- C. Pathophysiology
- D. Guidelines to direct care: Infectious Diseases Society of America/American Thoracic Society Consensus Guidelines on the Management of Community-Acquired Pneumonia in Adults
- E. Treatment Plan

Learning Objectives

Using a case-based approach, the learner will be able to:

1. Identify key history and physical examination parameters for common pulmonary disorders seen in primary care including influenza, acute bronchitis, asthma, COPD, and CAP.
2. Summarize recommended laboratory and diagnostic studies indicated for the evaluation of common pulmonary disorders seen in primary care.
3. State pathophysiology of common pulmonary disorders.
4. Document a clear, concise SOAP note for patients with common pulmonary disorders.
5. Identify relevant education and counseling strategies for patients with common pulmonary disorders.
6. Develop a treatment plan for common pulmonary disorders utilizing current evidence-based guidelines.

Case 1

Mrs. Cleaver is a 48-year-old female who comes to the office accompanied by her husband. She's complaining of fatigue, fever, and chills for the last 2 days. She recently returned home from California where she was taking care of her three grandchildren for the last 3 weeks. She reports that the kids all had "colds" but got better without treatment. Her past medical history (PMH) is remarkable for idiopathic cardiomyopathy, diabetes mellitus type 2, and hypertension. She is a non-smoker and nondrinker. She has not been able to exercise since she returned home because of her extreme tiredness. Her medications include: carvedilol 6.25 BID, lisinopril 20 mg, and aldactone 25 mg daily. She planned to get her influenza vaccine sometime next week.

Physical Exam

Vital Signs: Blood pressure (BP) 126/76, heart rate (HR) 65, respiratory rate (RR) 12, temperature (T) 99.8.

General (GEN): No acute distress

Eyes, ears, nose, and throat (EENT): Pharyngeal redness without exudates. Tympanic membranes (TMs) without bulging or fluid lines

Heart: S₁ and S₂ regular rate and rhythm (RRR) with pansystolic murmur along the left sternal border

Lungs: Clear to auscultation

Abdomen: Soft, nontender with good bowel sounds

What additional assessments/diagnostics do you need?

What is the differential diagnoses list?

What is your working diagnosis?

Additional Assessments/Diagnostics Needed

Review of Systems (ROS)

Ask about common signs and symptoms of influenza, including:

- Fever/chills
- Cough
- Sore throat

Runny nose

Nasal congestion

Muscle or body aches

Headaches

Fatigue

Vomiting and diarrhea (more common in children)

Physical Exam

For patients with comorbid conditions, be sure to evaluate for any worsening of underlying conditions. In this patient, it is important not only to rule out pneumonia but also to evaluate for heart failure and uncontrolled diabetes.

Routine Labs/Diagnostics

- ▶ The Centers for Disease Control and Prevention (CDC), World Health organization (WHO), and Infectious Disease Society of America recommend that healthcare providers diagnose influenza clinically.
- ▶ Testing is recommended for:
 - ▶ Hospitalized patients with influenza-like illnesses
 - ▶ Patients who died of an influenza-like illness (to clarify etiology)
 - ▶ Patients for whom decisions about infection control and treatment of close contacts is a concern¹⁻³
- ▶ Sensitivities of rapid diagnostic tests are approximately 50–70% when compared with viral culture or reverse transcription polymerase chain reaction (RT-PCR); specificities of rapid diagnostic tests for influenza are appropriately 90–95%.
- ▶ False-positive (and true-negative) results occur more frequently when disease prevalence in the community is low, usually at the beginning and end of the flu season.
- ▶ False-negative (and true-positive) results occur more frequently when disease prevalence is high in the community, which is usually at the height of the flu season.⁴

■ Differential Diagnoses List

Upper respiratory tract infection

Influenza

■ Working Diagnosis—Influenza

■ Pathophysiology

Influenza is a contagious respiratory illness caused by the influenza viruses that infect the nose, throat, and lungs. Viruses spread mainly by droplets when people cough, sneeze, or talk. Contagiousness of influenza occurs 1 day before symptoms to 5–7 days after illness. These viruses are unpredictable, and their severity can vary widely from season to season. Older people; children; pregnant women; people with asthma, chronic obstructive pulmonary disease (COPD), diabetes, or heart, kidney, or neurologic disease; and people with weakened immune systems (HIV, AIDS, cancer, or chronic steroid use) are at greater risk for serious complications. Complications of flu include bacterial pneumonia, sinus infections, dehydration, worsening of chronic medical conditions, and death.⁵

■ What Is Your Treatment Plan?

■ Pharmacologic

- ▶ Annual flu vaccines
- ▶ Trivalent flu vaccine—protects against two influenza A viruses (an H1N1 and an H3N2) and an influenza B virus. Available vaccines include:
 - ▶ Standard-dose trivalent shots (IIV3) that are manufactured using virus grown in eggs
 - ▶ Intradermal trivalent shot—approved for people 18 through 64 years of age
 - ▶ High-dose trivalent shot—approved for people 65 years and older
 - ▶ Trivalent shot containing virus grown in cell culture—approved for people 18 years and older
 - ▶ Recombinant trivalent shot that is egg free—approved for people 18 years and older
- ▶ Quadrivalent flu vaccine—protects against two influenza A viruses and two influenza B viruses. Available vaccines include:
 - ▶ Quadrivalent flu shot
 - ▶ Quadrivalent nasal spray—approved for people 2 through 49 years of age
- ▶ Antiviral drugs
 - ▶ Two antiviral drugs recommended by the CDC
 - ▶ Oseltamivir (Tamiflu) and Zanamir (Relenza)
 - ▶ If used, should be started within 2 days of initial symptoms and taken for at least 5 days

- ▶ Can lessen symptoms and reduce duration of symptoms by 1–2 days
- ▶ Can prevent serious flu-related complications for people with high-risk health conditions
- ▶ Side effects include nausea, vomiting, diarrhea, dizziness, cough, and headache⁶

■ Nonpharmacologic

- ▶ Drink plenty of liquids—choose water, juice, and warm soups to prevent dehydration. Drink enough liquid so that your urine is pale yellow or clear.
- ▶ Rest.
- ▶ Consider pain relievers such as Tylenol (acetaminophen) or ibuprofen to help with body aches.⁷

■ Education/Counseling

- ▶ The best way to prevent influenza is to get a flu vaccine every season.
- ▶ Yearly flu vaccination is ideally by October.
- ▶ It takes 2 weeks after vaccination for antibodies to develop that protect against infection.
- ▶ Everyone 6 months of age and older should get a flu vaccine every year.
- ▶ Reinforce that you can't get the flu from a flu shot.
- ▶ Side effects that can occur include soreness, redness, or swelling at the injection site, low-grade fever, and body aches. Life-threatening allergic reactions are very rare and may include breathing problems, hoarseness, wheezing, hives, tachycardia, or dizziness. These reactions occur among persons with a severe allergy to eggs and usually occur within a few minutes to a few hours after administration.⁷

■ SOAP Note

S: Mrs. Cleaver presents today with a 2-day history of fatigue, fever, and chills. She recently returned home from babysitting her grandchildren, who all had “colds.” She has a sore throat, nasal congestion, and a mild headache. She denies cough, vomiting, diarrhea, chest pain, shortness of breath (SOB), ankle swelling, or lightheadedness. Her blood sugars have been slightly elevated from her normal fasting blood sugar (FBS) range of 130–140, and she continues to eat and drink without difficulty. She has continued all her regular medications. She has not had her annual flu vaccine yet.

O: *Vital Signs:* BP 126/76, HR 65, RR 12, T 99.8

GEN: No acute distress

EENT: No redness or crusting of eyes. TMs without bulging or fluid lines in bilateral ears. Pharyngeal redness without exudates. No thyromegaly or carotid bruits

Heart: S₁ and S₂ RRR with pansystolic murmur along the left sternal border unchanged from previous exam. Point of maximal impact (PMI) minimally displaced laterally

Lungs: Clear to auscultation. No crackles, fremitus, or egophony. No dullness to palpation

Abdomen: Soft, nontender with good bowel sounds

Extremities: Full range of motion of all extremities. No leg edema. Dorsalis pedis and posterior tibialis pulses +2. No open lesions on feet

Neuro: Alert and oriented × 3

Recent Labs (1 month ago): Blood urea nitrogen (BUN) 10, creatinine (Cr) 0.8, potassium (K) 4.0, hemoglobin A1c 6.0

A: Likely influenza: Day 2

Cardiomyopathy: Stable

Diabetes mellitus type 2: Controlled

Hypertension (HTN): At Eighth Joint National Committee (JNC 8) goals

P: Discussed rationale for use of antivirals, given her PMH of cardiomyopathy and diabetes mellitus (DM). Oseltamivir 75 mg BID × 5 days. Quadrivalent influenza vaccine today for both patient and husband. Reviewed possible side effects of antiviral drug and influenza vaccine. Discussed measures to prevent spread of virus (hand washing, covering sneezes).

Drink plenty of fluids. Tylenol (acetaminophen) for muscle aches. Monitor blood sugars daily. Continue all other medications as before. Call back if symptoms don't gradually improve over the next week or if she develops SOB or chest pain or is unable to eat or drink.

■ Health Promotion Issues

- ▶ Annual influenza vaccination

■ Guidelines to Direct Care

Advisory Committee for Immunization Practices (ACIP). ACIP vaccine recommendations. <http://www.cdc.gov/vaccines/hcp/acip-recs/>. Accessed September 16, 2015.

Grohskopf LA, Olsen SJ, Sokolow LZ, et al. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2014–15 influenza season. *MMWR*. 2014;63(32):691–697. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6332a3.htm>. Accessed September 16, 2015.

Case 2

Mr. Gretsky is a 60-year-old engineer who comes to the clinic stating he has been feeling terrible for the last 4 days. He reports having cold symptoms, including a sore throat, runny nose, body aches, and fatigue. His cough was initially dry, but now he has some yellowish sputum. His cough is making it difficult for him to speak and is interfering with his ability to work. Last evening he developed pain in the left side of his chest when he coughs. His PMH is significant only for hypertension. He takes lisinopril 20 mg daily. He denies alcohol use and quit smoking 20 years ago.

■ Physical Exam

Vital Signs: BP 140/88, HR 88, RR 14, T 98.1

HEENT: Mild pharyngeal erythema

Heart: S₁ and S₂ RRR without gallops, murmurs, or rubs

Lungs: Clear to auscultation. No dullness to percussion

Abdomen: Soft, nontender with good bowel sounds (BS)

What additional assessments/diagnostics do you need?

What is the differential diagnoses list?

What is your working diagnosis?

■ Additional Assessments/Diagnostics Needed

Acute bronchitis may be suspected in patients with an acute respiratory infection with cough, and the diagnosis can be made

clinically. Sputum cytology may be helpful if the cough is persistent. Chest X-ray (CXR) should be performed only in patients whose physical examination is suggestive of pneumonia.

Differential Diagnosis:

- Acute bronchitis
- Allergic rhinitis
- Asthma
- COPD
- Common cold
- Influenza
- Congestive heart failure exacerbation
- Gastroesophageal reflux disease
- Occupational exposures
- Malignancy

■ Working Diagnosis—Acute bronchitis

■ Pathophysiology

Cough is the most common symptom compelling patients to come to the office for treatment. Acute bronchitis is an acute respiratory infection with a normal chest radiograph that is manifested by cough with or without phlegm production that lasts for up to 3 weeks. Because many illnesses also present with a cough, this diagnosis can be difficult to distinguish from other illnesses.

The evaluation of adults with an acute cough illness, or with presumptive diagnosis of uncomplicated acute bronchitis, should focus on ruling out pneumonia.

Chronic bronchitis is defined by a productive cough that lasts at least 3 months per year for at least 2 consecutive years. The presence of purulent sputum is not predictive of bacterial infection. Gastroesophageal reflux disease also causes a cough but is usually associated with increased symptoms at night, heartburn, and a sour taste in the mouth. More than 90% of cases of acute cough illness are nonbacterial. Viral etiologies include influenza, parainfluenza, respiratory syncytial virus (RSV), and adenovirus; bacterial agents include *Bordetella*, pertussis, *Mycoplasma pneumoniae*, and *Chlamydia pneumoniae*.⁸

■ What Is Your Treatment Plan?

Treatment of acute bronchitis is divided into prescribing antibiotics and symptom management.

■ Pharmacologic

Antibiotics:⁹

- ▶ Not routinely indicated and should be avoided to minimize antibiotic resistance and *Clostridium difficile* infection.
- ▶ Guidelines suggest a trial of an antitussive medication (such as codeine, dextromethorphan, or hydrocodone) (American College of Chest Physician [ACCP] Guidelines).¹⁰
- ▶ Although commonly used, expectorants and inhaler medications are not recommended for routine use.
- ▶ Beta-agonist inhalers may be beneficial for patients with wheezing.
- ▶ There are no data to support the use of oral corticosteroids.
- ▶ *Pelargonium* (also known as kalwerbossie, South African geranium, or rabassam) was shown to improve return to work in patients (2 days earlier) compared to those taking placebo.^{10, 11}

■ Nonpharmacologic

- ▶ Drink plenty of fluids
- ▶ Dark honey for symptom relief

■ Education/Counseling

- ▶ Many healthcare providers are reluctant to not prescribe antibiotics because it is difficult convincing patients that antibiotics are usually ineffective against acute bronchitis.
- ▶ Methods for managing patient expectations for medication to treat acute bronchitis include:
 - ▶ Define the illness as a “chest cold” or “viral upper respiratory infection.”
 - ▶ Instruct patients that symptoms may last about 3 weeks.
 - ▶ Explain that antibiotics don’t reduce duration of symptoms and may cause side effects or antibiotic resistance.

- ▶ Consider a delayed “wait-and-see prescription” for antibiotics. Instruct patients to not fill prescription until at least 7–10 days, when symptoms are likely to subside without treatment.
- ▶ Provide information sheets for symptom management, viral infections and antibiotics, and ensuring close follow-up by phone or a scheduled follow-up visit.⁹

■ SOAP Note

S: Mr. Gretskey is a 60-year-old patient who reports having cold symptoms, including a sore throat, runny nose, body aches, and fatigue for the last 4 days. He developed a cough, which now is occasionally productive of yellowish sputum. Cough is his worse symptom, and it’s making it difficult for him to work. His cough was initially dry, but now he has some yellowish sputum. He also has left-sided chest pain when he coughs. He had his flu vaccine 1 month ago at his work health clinic.

O: Vital Signs: BP 140/88, HR 88, RR 14, T 98.1

GEN: No acute distress. Coughing frequently with occasional yellowish sputum.

EENT: Eyes without redness or crusting. Ears no redness, TMs normal without bulging or fluid line. Nasal turbinates mildly red with serous drainage. Pharynx red with +1 tonsils without exudates.

Heart: S₁ and S₂ RRR without murmurs, gallops, or rubs

Lungs: Clear to auscultation. No egophony or fremitus. No dullness to percussion. No wheezing

Abdomen: Soft, nontender with good bowel sounds

Extremities: No edema

A: Acute bronchitis

HTN: At JNC 8 guideline goals

Prior smoker

P: Discussed the nature of acute bronchitis. Explained that antibiotics are not indicated for bronchitis even with discolored sputum. Given CDC patient handout on avoidance of antibiotics for viral conditions. Drink plenty of fluids and rest. Tylenol for chest wall pain. Try dark honey for symptom relief. *Pelargonium* may also be used. Congratulate patient for his continued smoking cessation. Given anticipatory guidance regarding likelihood of cough lasting for another 7–10 days. Call back if symptoms don’t gradually decrease.

■ Health Promotion Issues

- ▶ Discuss importance of annual influenza vaccine.
- ▶ Wash hands frequently and practice good hygiene.

■ Guidelines to Direct Care

Braman SS. Chronic cough due to acute bronchitis: ACCP evidence-based clinical practice guidelines. *Chest*. 2006; 129(1 suppl):95S–103S. <http://journal.publications.chestnet.org/data/Journals/CHEST/22039/95S.pdf>

Centers for Disease Control and Prevention. Acute cough illness (acute bronchitis) physician information sheet (adults). <http://www.cdc.gov/getsmart/community/materials-references/>

[print-materials/hcp/adult-acute-cough-illness.html](http://www.cdc.gov/getsmart/campaign-materials/info-sheets/adult-acute-cough-illness.html). Accessed September 16, 2015. <http://www.cdc.gov/getsmart/campaign-materials/info-sheets/adult-acute-cough-illness.pdf>

Case 3

Jennifer is a 27-year-old slender white female who presents today with a complaint of a chronic cough of more than 2 months and shortness of breath. Sometimes the cough produces clear phlegm. Her episodes of SOB are occurring more often, up to several times a week, and it seems to take longer for her to recover. She has difficulty breathing at night and can sometimes hear a “wheezing sound.” It occasionally feels like there is “a band around my chest and it’s frightening.” She has also been very tired lately and has a decreased appetite. Jennifer smokes 2 packs of cigarettes a day, a habit she began at 15 years of age.

Physical Exam

Vital Signs: BP 104/64, HR 94 (regular), RR 20, T 97.6

EENT: Visual fields and extraocular movements (EOMs) intact. TMs translucent, gray, light reflex and landmarks visible, no fluid. Nose: Mucosa pink, clear discharge, no polyps. Mouth: No pharyngeal edema, exudates, or lymphadenopathy. No frontal/maxillary sinus tenderness. Negative transillumination

Lungs: Resonant to percussion, lung expansion equal. No increase in anteroposterior (AP)/lateral diameter. Diffuse expiratory wheezes bilaterally. No voice sounds or tactile fremitus

CV: S₁, S₂ RRR, no murmurs, rubs, or gallops

Abdomen: Nontender, no masses or guarding. BS+

Neuro: No tremors, strength 5/5. Tender paracervical muscles to palpation

Extremities: No edema, pulses 2+

What additional assessments/diagnostics do you need?

What is the differential diagnoses list?

What is your working diagnosis?

Additional Assessments/Diagnostics Needed

ROS

ROS that focuses on the following key indicators for a diagnosis (dx) of asthma:

- ▶ Wheezing
- ▶ History of any of the following: cough, worse particularly at night, recurrent wheeze, recurrent difficulty in breathing, recurrent chest tightness

- ▶ Symptoms occur or worsen in the presence of exercise, viral infection, animals with fur or hair, house dust mites (in mattresses, pillows, etc.), mold, smoke (tobacco/wood), pollen, changes in weather, strong emotional expression (laughing or crying), airborne chemicals or dusts, menstrual cycles
- ▶ Symptoms occur or worsen at night, awakening the patient

Classify asthma severity. See Table 3-1.¹²

Physical Exam

Physical exam (PE) given is adequate to start dx list and treatment (tx) plan

Routine Labs/Diagnostics Needed

- ▶ Pulmonary function test was done after bronchodilation with albuterol
 - Ratio of forced expiratory volume in 1 second to forced vital capacity (FEV₁/FVC) <70% of predicted
 - FEV₁ 56% of predicted
- ▶ Allergy tests—used to document specific allergens suggested by clinical history or to reinforce need for environmental control (not done in this patient)

Differential Diagnoses List

- COPD
- Asthma
- CHF
- Pulmonary embolism
- Mechanical obstruction of the airways (benign and malignant tumors)
- Pulmonary infiltration with eosinophilia
- Cough secondary to drugs
- Vocal cord dysfunction

Working Diagnosis

Moderate persistent asthma

Pathophysiology

Asthma is a chronic inflammatory disorder of the airways that involves the interaction of airflow obstruction, bronchial hyperresponsiveness, and underlying inflammation. The interaction of these

TABLE 3-1 Classification of Asthma Severity

Components of Severity		Classification of Asthma Severity (patients age 12 years or older)			
		Intermittent	Mild	Moderate	Severe
Impairment Normal FEV ₁ / FVC: 8–9 y 85%, 20–39 y 80%, 40–59 y 75%, 60–80 y 70%	Symptoms	<2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2 times/month	3–4 times/month	>1 time/week, but not nightly	Often 7 times/week
	SABA use for symptom control	≤2 days/week	>2 days/week, but not daily and not >1 time/day	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extreme limitation
	Lung function	Normal FEV ₁ between exacerbations	FEV ₁ >80% of predicted FEV ₁ /FVC normal	FEV ₁ >60% but <80% of predicted FEV ₁ /FVC reduced 5%	FEV ₁ <60% of predicted FEV ₁ /FVC reduced >5%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/y ^a Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category. Relative annual risks of exacerbations may be related to FEV ₁ .	>2/y ^a		

features determines the clinical presentation and the severity of the disease, including variable and recurring symptoms such as coughing, wheezing, shortness of breath, and chest tightness.^{12,13}

Although asthma usually presents in children, it is common among persons over the age of 65 and is an important cause of illness and death among older adults. When asthma does occur in advanced age, the symptoms are similar to those of young adults. However, asthma can be more dangerous in older adults because they are more likely to develop respiratory failure even with mild attacks.^{12–14}

■ What Is Your Treatment Plan?

■ Pharmacologic

After you determine disease severity, the National Asthma Education and Prevention Program (NAEPP) guidelines recommend a stepwise approach to the pharmacologic management of asthma for ages 12 and older.¹²

Step 1: Preferred: Short-acting beta-2-agonist (SABA) prn

Step 2: Preferred: Low-dose inhaled corticosteroids (ICS)

Alternative: Cromolyn, leukotriene receptor antagonists (LTRA), nedocromil, or theophylline

Step 3: Preferred: Low-dose ICS and long-acting beta-2-agonist (LABA) or medium-dose ICS

Alternative: Low-dose ICS and either LTRA, theophylline, or zileuton

Step 4: Preferred: Medium-dose ICS and LABA

Alternative: Medium-dose ICS and LTRA or theophylline or zileuton

Step 5: Preferred: High-dose ICS and LABA and oral corticosteroid and consider omalizumab for patients who have allergies

Step 6: Preferred: High-dose ICS and LABA and oral corticosteroid and consider omalizumab for patients who have allergies

An important component of this stepwise treatment strategy is reevaluation of treatment within 2 to 6 weeks of diagnosis so medications can be adjusted.

■ Nonpharmacologic

► Follow up in 1 month to develop action treatment plan based on peak flow measurements¹⁵

► Evaluate symptom control on routine follow-up using one of the following:

► Asthma Therapy Assessment Questionnaire (<https://evidencebasedpractice.osumc.edu/Documents/Guidelines/ATAQChecklist.pdf>)

► Asthma Control Questionnaire (<http://aafa.org/pdfs/SWP%20final%20questionnaire.pdf>)

► Asthma Control Test (<http://www.asthmacontrol.com>)

Education/Counseling

- ▶ Discuss and demonstrate correct device technique.
- ▶ Discuss importance of annual influenza vaccine.
- ▶ Provide peak flow meter and instructions to take peak flow measurement daily \times 1 month.
- ▶ Smoking cessation: Make a strong recommendation to quit, discuss motivation to attempt smoking cessation, and offer strategies for smoking cessation.¹²

SOAP Note

S: Jennifer presents today with a complaint of a chronic cough of more than 2 months and shortness of breath. She has daily symptoms and awakens with nighttime symptoms 2–3 times a week. Sometimes the cough produces clear phlegm. She reports wheezing and chest tightness that worsen when she goes to the gym. She has stopped going to the gym because of the SOB. She is trying to cut down her smoking habit; now down to 1 pack daily. No other environmental exposures except her pet cat, which she has slept with nightly for the last 4 years. She reports her cousin has asthma.

O: *Vital Signs:* BP 104/64, HR 94 (regular), RR 20, T 97.6

EENT: Visual fields and EOM intact. TMs translucent, gray, light reflex and landmarks visible, no fluid. Nose: Mucosa pink, clear discharge, no polyps. Mouth: No pharyngeal edema, exudates, or lymphadenopathy. No frontal/maxillary sinus tenderness. Negative transillumination.

Lungs: Resonant to percussion, lung expansion equal. No increase in AP/lateral diameter. Diffuse expiratory wheezes bilaterally. No voice sounds or tactile fremitus.

CV: S₁, S₂ RRR, no murmurs, rubs, or gallops

Abdomen: Nontender, no masses or guarding. BS+

PFTs taken 10 minutes after 2 puffs of albuterol: FEV₁/FVC <70% of predicted; FEV₁ 56% of predicted

A: Moderate persistent asthma

Tobacco use

P: Discussed etiology and pathophysiology of asthma, signs of deterioration, and when to contact healthcare provider. Discussed the purpose of inhaled SABA, LABA, and inhaled corticosteroid. Start albuterol 1–2 puffs prn for SOB and wheezing and 100/50 fluticasone propionate/salmeterol diskus, 1 puff twice daily. Demonstrated use of inhalers; returned demonstration without difficulty. Emphasized importance of rinsing mouth after inhaler use to minimize chance of developing candidiasis. Recommended having cat sleep in another room, which she is reluctant to do. Described how smoking affects asthma. She would like to try to titrate her cigarette smoking down gradually. Plan is to decrease daily cigarettes down to 15 daily within the next month. She is strongly motivated to stop smoking because symptoms are interfering with sleep and ability to exercise. Ordered and demonstrated proper use of peak flow meter. Take daily measurement for 1 month and bring these values to 1-month follow-up visit. Evaluate symptoms and develop asthma action plan at that time.

Health Promotion Issues

- ▶ Annual influenza vaccine
- ▶ Use nonsteroidal anti-inflammatory drugs (NSAIDs) sparingly because they may exacerbate symptoms

Guidelines to Direct Care

Global Initiative for Asthma. *Pocket Guide for Asthma Management and Prevention*. http://www.ginasthma.org/local/uploads/files/GINA_Pocket_April20_1.pdf. Accessed September 16, 2015.

National Heart, Lung, and Blood Institute. Expert Panel Report 3: guidelines for the diagnosis and management of asthma. <http://www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines>. Accessed September 16, 2015.

Case 4

Mr. Lucas is a 65-year-old man complaining of increasing shortness of breath over the last few months. He reports that he is used to being SOB with physical exertion but has started to feel SOB when performing basic daily activities. He denies fever, sick contact, or weight loss. He does report a chronic cough that is occasionally productive of whitish sputum but has not noticed any recent change in the frequency or character of his cough. He doesn't take any regular medication. He has a 65-pack-year history of cigarette smoking.

Physical Exam

Vital Signs: BP 138/88, HR 88 (regular), RR 18, T 98.8

GEN: Thin and mildly dyspneic

Lungs: No evidence of consolidation or focal abnormality, fairly diffuse mild end-expiratory wheezing. Breathing through pursed lips and has a prolonged expiratory phase during quiet breathing.

CV: S₁ and S₂ RRR, faint heart sounds with no murmurs

Abdomen: Soft, nontender with good bowel sounds. No bruits

Extremities: Full range of motion of all extremities. No cyanosis or edema

What additional assessments/diagnostics do you need?

What is the differential diagnoses list?

What is your working diagnosis?

■ Additional Assessments/Diagnostics Needed

■ ROS

Key indicators for considering a COPD diagnosis include:

- ▶ Chronic cough
- ▶ Chronic sputum production
- ▶ Repeated episodes of acute bronchitis
- ▶ Dyspnea that is progressive, persistent, worse on exercise, and worse with respiratory infections
- ▶ History of exposure to risk factors, including tobacco smoke, occupational dust and chemicals, smoke from home cooking and heating fuels
- ▶ Three tools helpful for assessing COPD include:
 - ▶ *COPD Assessment Test (CAT)*: Measures health status impairment in COPD¹⁶
 - ▶ *Clinical COPD Questionnaire (CCQ)*: Measures clinical control in COPD¹⁷
 - ▶ *Modified British Medical Research Council (MMRC) dyspnea scale*: Measures health status and predicts future mortality risk¹⁸
- ▶ To assess for risk of exacerbations, use the history of exacerbations and spirometry. High-risk patients are those with two or more exacerbations within the last year, those with an $FEV_1 < 50\%$ of predicted values, or patients with one or more hospitalizations for COPD¹⁹
- ▶ Assess for comorbid conditions—these may influence mortality and hospitalizations and should be evaluated routinely:
 - ▶ Cardiovascular diseases
 - ▶ Osteoporosis
 - ▶ Respiratory infections
 - ▶ Anxiety and depression
 - ▶ Diabetes
 - ▶ Lung cancer
 - ▶ Bronchiectasis

■ Physical Exam

This patient has some classic findings, including expiratory wheezing, pursed-lip breathing, and a prolonged expiratory phase. Other notable findings to look for include an increased anteroposterior (AP) diameter, use of accessory muscles of respiration, hyperresonance to percussion, hypoxemia, cyanosis, and signs of right heart failure in advanced cases.

■ Routine Labs/Diagnostics

1. Spirometry is required to establish the diagnosis and severity of disease
Gold Staging System for COPD Severity¹⁹

Description Findings (based on postbronchodilator FEV_1)

- 0 At risk for COPD—risk factors and chronic symptoms but normal spirometry
 - 1 Mild COPD
 FEV_1/FVC ratio < 0.70
 $FEV_1 \geq 80\%$ of predicted value
 - 0 Moderate COPD
 FEV_1/FVC ratio < 0.70
 FEV_1 50% to $< 80\%$ of predicted value
May have chronic symptoms
 - 0 Severe COPD
 FEV_1/FVC ratio $< 70\%$
 $FEV_1 < 30\%$ of predicted value
May have chronic symptoms
 - 0 Very severe COPD
 FEV_1/FVC ratio $< 70\%$
 $FEV_1 < 30\%$ of predicted value OR
 $FEV_1 < 50\%$ of predicted value plus severe chronic symptoms
- 2. Chest X-ray—pulmonary hyperinflation, flattening of the diaphragm, and increased retrosternal clear space on the later view are all classic findings for COPD. Valuable to exclude alternative diagnoses
- 3. Alpha-1 antitrypsin deficiency screening for alpha-1 antitrypsin deficiency, which is a rare autosomal cause of emphysema in young patients with no smoking history. Not indicated for this patient. Perform when COPD develops in patients of Caucasian descent younger than the age of 45 or with a strong family history of COPD
- 4. Complete blood count (CBC) to evaluate for elevated hemoglobin and hematocrit (H&H) (common in COPD) and for elevated white blood cell count due to infection
- 5. Pulse oximetry to evaluate for oxygen saturation and need for supplemental oxygen therapy
- 6. Electrocardiogram (ECG) to evaluate for right ventricular hypertrophy

Arterial blood gases are not indicated in the primary care setting.

■ Differential Diagnoses List

Asthma
Congestive heart failure
Bronchiectasis
Tuberculosis
Diffuse panbronchiolitis

■ Working Diagnosis COPD

■ Pathophysiology

COPD is a common preventable and treatable disease. COPD is the third leading cause of death in the United States and has

continued to increase in incidence. The burden of this disease will likely increase in the future because of continued exposure to COPD risk factors and the aging population.

COPD is characterized by persistent airflow limitation involving both small airway disease and parenchymal destruction. In the small airways, flow limitation is due to airway inflammation, airway fibrosis, luminal plugs, and increased airway resistance. Parenchymal destruction occurs because of loss of alveolar attachments and a decrease in elastic recoil.^{19–21}

■ What Is Your Treatment Plan?

■ Pharmacologic

Bronchodilators:

- ▶ Principal agents include beta-2 agonists, anticholinergics, theophylline, or combination therapy
- ▶ May be prescribed as needed or on a schedule to prevent or reduce symptoms
- ▶ Long-acting agents reduce exacerbations and hospitalization and improve symptoms
- ▶ Combining bronchodilators from different pharmacologic classes instead of increasing the dose of a single agent may improve efficacy and decrease the risk of side effects¹⁹

Inhaled corticosteroids:

- ▶ Scheduled treatment with these medications improves symptoms, lung function, and quality of life and reduces frequency of exacerbations in patients with an FEV₁ <60% of predicted.
- ▶ These drugs may increase risk of pneumonia.¹⁹

Combination therapy:

- ▶ Combining a long-acting beta-2 agonist with an inhaled corticosteroid is more effective in improving lung function and reducing exacerbations in patients with moderate to very severe COPD.
- ▶ Adding a third agent (anticholinergic) to the drug regimen appears to provide additional benefit.
- ▶ Phosphodiesterase-4 inhibitors are indicated for patients in GOLD 3 and GOLD 4 stages to reduce exacerbations.¹⁹

Theophylline:

- ▶ Less effective and less well tolerated than inhaled long-acting bronchodilators; not recommended if those drugs are available and affordable.
- ▶ Low-dose theophylline reduces exacerbations but doesn't improve postbronchodilator lung function.¹⁹

Antibiotics:

- ▶ Only should be used for treating infectious exacerbations of COPD and other bacterial infections.
- ▶ Chronic treatment with systemic corticosteroids should be avoided because of an unfavorable benefit-to-risk ratio.¹⁹

■ Nonpharmacologic

- ▶ *Oxygen therapy:* Long-term administration of oxygen (>15 hours daily) has been shown to increase survival in patients with severe resting hypoxemia.
- ▶ *Ventilatory support:* A combination of noninvasive ventilation with long-term oxygen therapy may be helpful in patients with pronounced daytime hypercapnia.
- ▶ *Surgery:* Surgical treatment options include lung volume reduction surgery and lung transplantation in appropriately selected patients.¹⁹

■ Education/Counseling

Education and counseling are important to help prevent exacerbations. Exacerbations negatively affect quality of life, accelerate the rate of decline of lung function, are associated with significant mortality, and have a high socioeconomic cost.¹⁹

- ▶ Smoking cessation has the greatest capacity to influence the progression of COPD. Encourage all patients who smoke to quit. Pharmacotherapy and nicotine replacement increase long-term smoking abstinence. Use the 5 A's and 5 R's.
- ▶ Encourage regular physical activity. Recommend pulmonary rehabilitation program.

■ SOAP Note

S: Mr. Lucas is a 65-year-old man complaining of increasing shortness of breath over the last few months. He recently has noticed increasing SOB while performing basic daily activities. In the past he has had dyspnea on exertion (DOE). He has a chronic cough that is occasionally productive of whitish sputum; no recent change in the character of his cough. He takes no regular medication. Significant 65-pack-year smoking history.

O: *Vital Signs:* BP 142/86, HR 76, RR 18, afebrile. O₂ saturation 94%

GEN: Thin, mildly dyspneic

HEENT: PERRLA, EOMs intact. Normal fundoscopic exam. No sinus tenderness on palpation. TMs normal, turbinates without redness or boggy, pharynx without exudates. Neck: Supple, no lymphadenopathy, thyroid enlargement, jugular vein distention (JVD), or carotid bruits

Cardiovascular (CV): S₁ and S₂ regular rate and rhythm without murmurs, gallops, or rubs

Resp: No labored breathing. Lungs: Increased AP diameter, no dullness to palpation, decreased breath sounds throughout with mild expiratory wheezing

Abdomen: Soft, nontender, good bowel sounds, no organomegaly

Extremities: Dorsalis pedis (DP) and posterior tibial (PT) pulses +2, trace pedal edema

CXR: Pulmonary hyperinflation, flattening of the diaphragm

Pulmonary function test (after bronchodilation with 2 puffs albuterol) FEV₁/FVC ratio 0.60; FEV₁ 60% of predicted value

CBC: H&H 16/48, white blood cells (WBCs) 3.8

CAT test = 25

MMRC score = 3

Clinical COPD questionnaire—deferred until after therapy is initiated

A: COPD (moderate, stage 2)

Tobacco use disorder

P: Discussed the nature of COPD. Albuterol, 1–2 puffs q 4–6 hours as needed for shortness of breath. Fluticasone propionate/salmeterol inhaled 250/50, 1 puff inhaled every 12 hours. Demonstrated proper use of inhalers. Returned demonstration without difficulty. Referral for pulmonary rehabilitation exercise program. Discussed importance of risk reduction, including smoking cessation, and offered medication to assist with smoking cessation. Declines at this time but has strong motivation to quit. Wants to try slow taper of cigarettes. Avoid vigorous outdoor exertion or stay inside on high-pollution days. Will evaluate for home oxygen on a routine basis. Discussed strategies for minimizing dyspnea, including pursed-lip breathing. Influenza and pneumococcal vaccine today.

Follow-up: 1 month

Health Promotion Issues

- ▶ Influenza vaccines yearly
- ▶ Pneumococcal polysaccharide vaccine is recommended for COPD patients 65 years and older and for COPD patients younger than age 65 with an FEV₁ <40% of predicted

Guidelines to Direct Care

Global Initiative for Chronic Obstructive Lung Disease. <http://www.goldcopd.org/>. Accessed September 16, 2015.

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Case 5

Mr. Roos is a 57-year-old man who comes to the office complaining of fever and a cough. He states that he felt completely healthy 4 days ago, but on the following day started feeling feverish and coughed up yellowish-green phlegm the next morning. His symptoms have progressively worsened. He also mentions that his chest hurts on the right side when he takes a deep breath. He reports that his wife was sick with milder but similar symptoms a week or two ago.

PMH: Includes hypertension and arthritis. His medications include metoprolol and celecoxib. He smokes roughly a pack of cigarettes per day but does not drink alcohol or use other drugs. No drug allergies.

Physical Exam

Vital Signs: BP 128/86, HR 101 (regular), RR 18, T 37.4°C

GEN: Appears mildly tachypneic, but is not in distress

What additional assessments/diagnostics do you need?

What is the differential diagnoses list?

What is your working diagnosis?

Additional Assessments/Diagnostics Needed

ROS

Evaluate for presence of comorbidities (to direct antibiotic tx), including chronic heart, lung, liver, or renal disease; DM; alcoholism; malignancies; asplenia; immunosuppressing conditions or

use of immunosuppressing drugs; use of antimicrobials within the previous 3 months (in which case an alternative from a different class should be selected); or other risks for drug-resistant *Streptococcus pneumoniae* (DRSP) infection.

Physical Exam

- ▶ The physical exam should include a respiratory, cardiovascular, abdominal, skin, and mental health assessment
- ▶ Physical exam for this patient revealed decreased breath sounds, dullness to percussion, and increased tactile fremitus in the right lower lobe. All other systems were within normal limits
- ▶ Assess for criteria for clinical stability including:²²
 - ▶ Temp ≤37.8°C
 - ▶ HR ≤100 bpm
 - ▶ RR ≤24 breaths/min
 - ▶ Systolic blood pressure (SBP) ≥90 mm Hg
 - ▶ Arterial oxygen sat ≥90%
 - ▶ Ability to maintain oral intake
 - ▶ Normal mental status
- ▶ Assess for severity of illness
 - ▶ CURB-65 criteria help determine hospital admission decision (confusion, uremia, respiratory rate, low blood pressure, age 65 or greater) (Curb-65 Pneumonia Severity Score).²³

- ▶ Pneumonia Severity Index (PSI) can be used to identify patients with CAP who may be candidates for outpatient treatment versus inpatient treatment (Pneumonia Severity Index Calculator).²⁴

■ General

The information below (general, PMH, physical exam, and lab and radiology findings) all relate to the pneumonia severity index.

1. Age in years: *Add* 1 point per year
2. Gender: *Subtract* 10 points for women
3. Nursing home resident: *Add* 10 points

■ Past Medical History

1. Cancer: *Add* 30 points
2. Liver disease: *Add* 20 points
3. CHF: *Add* 10 points
4. CVA: *Add* 10 points
5. Chronic kidney disease: *Add* 10 points

■ Examination Findings

1. Altered level of consciousness: *Add* 20 points
2. Breathing rate >30 rpm: *Add* 20 points
3. Systolic BP <90 mm Hg: *Add* 20 points
4. Temperature not 95–104°F (35–40°C): *Add* 15 points
5. Heart rate >125 bpm: *Add* 10 points

■ Labs

Arterial blood gas (ABG):

1. Arterial pH <7.35: *Add* 30 points
2. PaO₂ <60 mm Hg (<90% O₂ sat): *Add* 10 points

Keep in mind that arterial blood gases (ABGs) are not usually ordered in the primary care setting. This parameter limits the ability to use this scoring system in the office. However, its use is helpful for patients presenting to the emergency department (ED) where an ABG can be obtained.

Labs: Serum chemistry:

1. Serum sodium <130 mEq/L: *Add* 20 points
2. Blood urea nitrogen (BUN) >64 mg/dL: *Add* 20 points
3. Serum glucose >250 mg/dL: *Add* 10 points
4. Blood count—hematocrit <30%: *Add* 10 points
5. Chest X-ray—pleural effusion: *Add* 10 points

■ Scoring

1. Class 1: Points 0: Mortality 0.1% (low risk)
2. Class 2: Points <70: Mortality 0.6% (low risk)
3. Class 3: Points 71–90: Mortality 2.8% (low risk)
4. Class 4: Points 91–130: Mortality 8.2% (moderate risk)

5. Class 5: Points >130: Mortality 29.2% (high risk)

■ Interpretation

1. Classes 1–2: Outpatient management
2. Class 3: Consider short observation hospital stay
3. Classes 4–5: Inpatient management

■ Additional Diagnostics Needed

CBC (WBC = 14,900, neutrophils = 87%, platelets = 310,000/uL, Hgb = 16, Hct = 48)

Basic metabolic panel (BMP) (Na = 137, K = 4.1, BUN = 15, Cr = 1.0, BG = 148)

Pulse oximetry (98%)

Chest X-ray (consolidation of right midlobe. No pleural effusion noted)

Pulmonary function tests (PFTs) (not really helpful in this situation, i.e., we expect them to be abnormal)

Sputum/blood cultures: The overall yield and infrequent positive impact on clinical care argue against the routine use of blood and sputum cultures. Therefore, the guidelines suggest empirical treatment for patients in the outpatient setting (as long as you have risk stratified appropriately).

■ Differential Diagnoses List

Community-acquired pneumonia (CAP)

COPD

Lung abscess

Pulmonary embolism

Congestive heart failure (CHF)

Neoplasms

Sarcoidosis

■ Working Diagnosis

Community-acquired pneumonia

Tobacco use disorder

■ Pathophysiology

CAP is one of the most common infectious diseases. *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis* are the pathogens that account for approximately 85% of CAP. CAP usually occurs as a result of inhalation or aspiration of the pathogen into a lung segment or lobe; it may also occur from a distant source or from bacteremia. Morbidity and mortality are highest in elderly patients and immunocompromised hosts.²⁵

■ What Is Your Treatment Plan?

CURB-65 score indicates that this patient can be treated in the outpatient setting. PSI score was not calculated because of unavailability of ABGs.

Pharmacologic

Basic concepts:

- ▶ Patients with pneumonia should be treated with antibiotics for at least 5 days.
- ▶ Antibiotics should not be stopped until the patient has been afebrile for at least 48 to 72 hours.
- ▶ The most common causes of CAP in outpatients are *S. pneumoniae*, *Mycoplasma pneumoniae*, and *H. influenzae*; patient history, clinical findings, and epidemiology may suggest a cause that could alter therapy. See Table 3-2.

Nonpharmacologic

- ▶ Drink fluids to avoid dehydration.
- ▶ Take deep breaths and cough hourly.
- ▶ Use a humidifier to make air warm and moist.
- ▶ Rest.
- ▶ Take acetaminophen, ibuprofen, or naproxen for fever or pain.²⁵

Education/Counseling

- ▶ Emphasize importance of taking the antibiotic until gone, even if symptoms improve.
- ▶ Call back if you develop new or worsening shortness of breath, chest pain, or confusion or cough up bloody or rust-colored mucus.

- ▶ For smokers, patients must have repeat CXR in 6 months to verify that pneumonia was not caused by underlying mass.²⁵

SOAP Note

S: Mr. Roos is a 57-year-old man who reports fever and productive sputum, which began 3 days ago. His symptoms have progressively worsened. He denies SOB, DOE, palpitations, lightheadedness, or headaches. He reports that his chest hurts on the right side when he takes a deep breath. He is currently able to drink fluids without difficulty, but his appetite is poor. He denies nausea, vomiting, diarrhea, or abdominal pain. His wife was sick with milder symptoms a week or two ago but got better without treatment. He smokes 1 pack of cigarettes daily but does not drink alcohol. He has not taken any antibiotics for the last several years. PMH is significant for HTN and arthritis. Had influenza vaccine this year but never got pneumococcal vaccine.

O: *Vital Signs:* T 37.4°C, BP 128/86, RR 18, HR 101 (regular), pulse oximetry 98%

GEN: Appears mildly tachypneic, but is not in distress

Skin: Warm and dry, good skin turgor

HEENT: No sinus tenderness. PERRLA, EOMs intact. Normal fundoscopic exam. TMs normal, turbinates mildly reddened, but no discharge. Pharynx without exudate, cobblestoning, or enlargement. Neck: Supple, no thyroid enlargement, JVD, or carotid bruits. No lymphadenopathy

TABLE 3-2 Clinical Characteristics and Possible Antibiotic Choices

Patient Characteristics	Outpatient Oral Antibiotic Regimen
Previously healthy; no risk factors for drug-resistant <i>S. pneumoniae</i>	Macrolide <ul style="list-style-type: none"> • Azithromycin • Clarithromycin • Erythromycin OR <ul style="list-style-type: none"> • Doxycycline
Comorbidity or risk factor for drug-resistant <i>S. pneumoniae</i> , including: <ul style="list-style-type: none"> • Use of a broad spectrum antibiotic in the previous 3 months • Age older than 65 years • Alcoholism • Chronic disease (e.g., heart, lung, liver, or kidney disease; diabetes) • Cancer • Asplenia • Exposure to a child in day care • Immunosuppression 	Macrolide PLUS beta-lactam: <ul style="list-style-type: none"> • High-dose amoxicillin • Alternative to macrolide-doxycycline Alternative to oral beta-lactams: <ul style="list-style-type: none"> • PO cefpodoxime or cefuroxime IM ceftriaxone OR <ul style="list-style-type: none"> • Respiratory fluoroquinolone: <ul style="list-style-type: none"> • Moxifloxacin • Levofloxacin • Gemifloxacin
Lives in a region with >25% or higher rate of infection with high-level (MIC ≥16 mcg/mL) macrolide-resistant <i>S. pneumoniae</i>	As above

Source: Courtesy of Prescriber's Letter.

CV: HR RRR without murmurs, gallops, or rubs

Resp: No labored breathing. Decreased breath sounds, dullness to percussion, and increased tactile fremitus in the right lower lobe (RLL). Mild crackles in the RLL without wheezes or egophony

Abdomen: Soft, nontender, good bowel sounds, no organomegaly

Extremities: DP and PT pulses +2, trace pedal edema

Mental Status: Awake and oriented × 3

Labs: CBC (WBC = 14,900, neutrophils = 87%, platelets = 310,000/uL, Hgb = 16, Hct = 48)

BMP (Na = 137, K = 4.1, BUN = 15, Cr = 1.0, BG = 148)

CXR: Consolidation of right midlobe. No pleural effusion noted
CURB-65 Pneumonia Severity Score = 1 point (age) low risk

A: CAP: Clinically stable

HTN: At JNC 8 goals

Tobacco use: Poor motivation to try quit attempt at this time

P: CAP: Azithromycin 500 mg daily × 3 days. Discussed importance of taking antibiotic until gone. Drink fluids, rest, take deep breaths and cough hourly, use humidifier. May use acetaminophen for fever or pain. Pneumococcal vaccine today.

HTN: Continue metoprolol. Encouraged heart healthy lifestyle.

Tobacco use: Advised regarding the importance of smoking cessation. Stressed that smoking may contribute to development of pneumonia. Patient is willing to discuss smoking cessation strategies at follow-up visit. Handouts provided on possible smoking cessation interventions.

■ Health Promotion Issues

- ▶ Recommend yearly influenza vaccine.
- ▶ Recommend pneumococcal vaccine now.
- ▶ Wash hands frequently and practice good hygiene.
- ▶ Strongly recommend smoking cessation and offer treatment options.

■ Guidelines to Direct Care

Mandell LA, Wunderink RG, Anzueto A, et al. Infectious Diseases Society of America/American Thoracic Society Consensus guidelines on the management of community-acquired pneumonia in adults. *Clin Infect Dis.* 2007;44:S27–72.

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