

Put a cap on community-acquired pneumonia

Community-acquired pneumonia (CAP) is one of the leading causes of death in children and older adults. A critical component of successful recovery is accurate identification and early treatment. We give you the tools you need.

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The author has disclosed that she has no significant relationships with or financial interest in any commercial companies that pertain to this educational activity.



Ms. B is a retired teacher living in Santa Fe, N.M. She has a wide circle of friends of all ages, attends public performances and concerts, and attends meetings as a member of a few organizations. She's an active 80 year old, but she has recently complained of chills, headache, and some difficulty breathing following a week-long upper respiratory infection.

Mr. C is 65 years old and works for the school board in North Carolina. He recently had a mild stroke and while home recovering, he started experiencing difficulty breathing, excessive sweating, and confusion.

Ms. M is a 37-year-old mother of a school-aged daughter and a toddler. When all the kids were catching colds at her daughter's school, Ms. M was ill for weeks with fever, vomiting, a productive cough, and unusual fatigue.

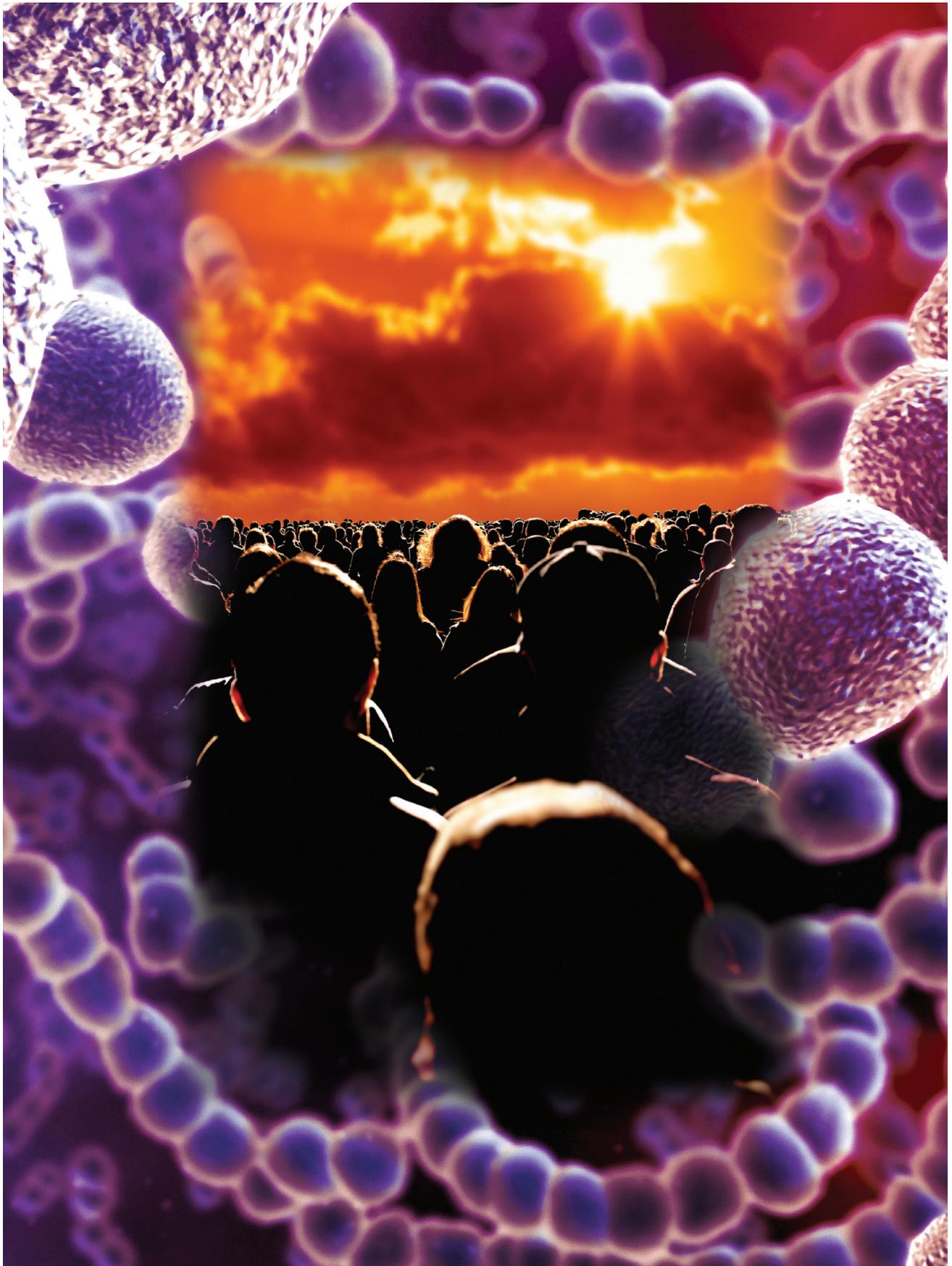
Ms. M's 3-year-old daughter has been coughing and complaining that her head hurts and that she feels cold in the middle of a sweltering Baltimore summer.

Ms. M's sister, Ms. A, has a 6-month-old baby. Ms. A takes the baby to visit her sister, and the baby has recently been coughing and feeling feverish.

What might all these people of different ages and backgrounds have in common? Could it be CAP? And what exactly is CAP?

CAP is pneumonia contracted by a person who hasn't been a patient in a health-care facility (either a hospital or nursing home). It's spread by common mechanisms such as coughing and sneezing. This means that being in close proximity to someone who has CAP puts one at risk. Just like institution-acquired pneumonia, this disease is an infection of the lungs, with inflammation of the interstitial tissue and alveoli (see *Picturing pneumonia*). It's caused most typically by bacteria, but atypically by viruses or fungi or even by the presence of a foreign object or particle that has infiltrated the lungs.

However, it's difficult to distinguish between viral and bacterial CAP, so careful assessment must be conducted to make an accurate diagnosis. To understand the nature of CAP, you'll also want to understand the disease in terms of mortality (deaths caused by the disease), morbidity (its coexistence with other debilitating and potentially life-threatening conditions or



diseases), and the decreasing quality of life that patients with CAP experience.

It isn't an exaggeration to declare that CAP is a global health problem. In the United States alone, 4 to 5 million people are diagnosed with CAP every year and the cost for treatment runs in the billions of dollars. The CDC data suggest that pneumonia is one of the leading causes of death worldwide. Without proper treatment, CAP can be fatal for the very young, the elderly, and others who are immunocompromised.

Any of the people in our scenario might have CAP, but you'll want to help your patient determine which factors are pre-

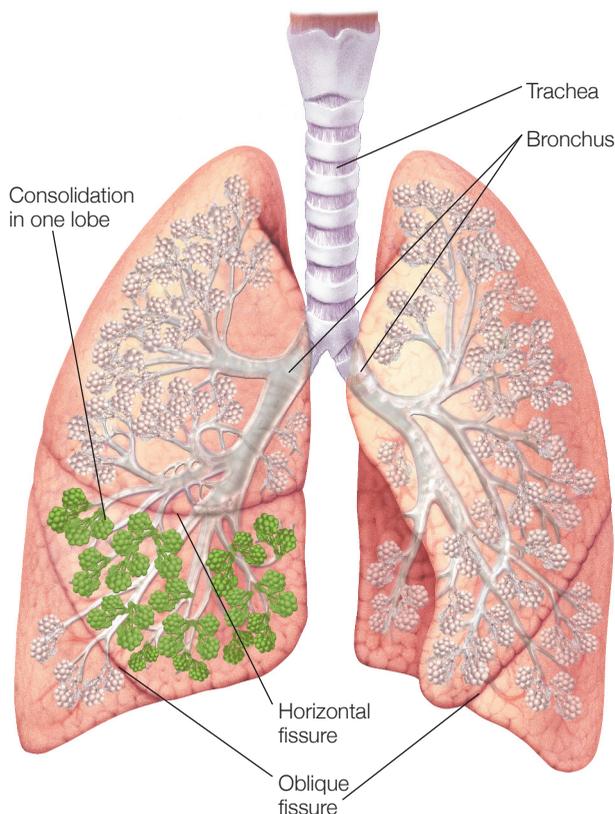
ventable and what can be done to decrease his or her likelihood of catching this contagious disease. Here are some questions to consider:

- What causes CAP?
- Which patients are in more danger than the others?
- How's CAP diagnosed?
- What tools do healthcare providers use to assess the severity of the disease and assign a definitive diagnosis?
- What are the treatments and therapies recommended for fighting CAP?
- Can CAP be prevented?

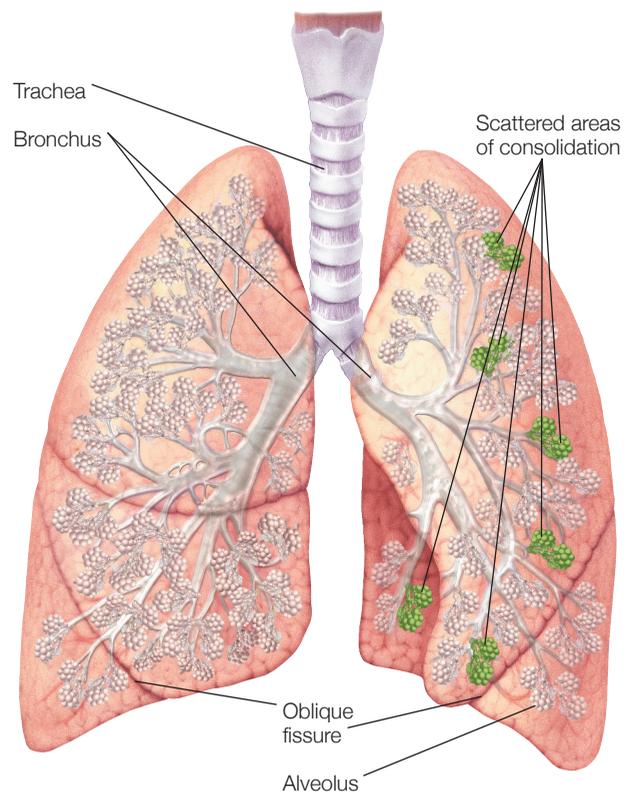
In this article, I'll give you the answers you need.

Picturing pneumonia

Lobar pneumonia



Bronchopneumonia



This type of cap is harmless; CAP isn't.

Common and not so common organisms

The diagnosis of CAP is most often associated with bacterial pathogens, particularly in adults. In children diagnosed with CAP, viruses may be the primary culprits. However, in many cases of CAP in children, there's often an underlying bacterial infection present.

Some common respiratory bacteria that can cause CAP in adults are *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis*. The majority of all diagnosed cases of CAP are the result of *S. pneumoniae* infection, which is the most common bacterial culprit. CAP is also attributed to other less common bacterial pathogens such as Gram-negative bacilli, *Legionella pneumophila*, *Mycoplasma pneumoniae*, and *Chlamydia pneumoniae*. Other bacterial organisms that may cause CAP include *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, and methicillin-resistant *Staphylococcus aureus*, usually associated with hospital-acquired pneumonia. Bacterial pathogens that cause CAP in children include, but aren't limited to, Group B streptococcus, *Bordetella pertussis*, and *Chlamydia trachomatis*, as well as those bacteria, such as *S. pneumoniae* and *H. influenzae*, that cause CAP in adults.

Viruses known to contribute to the diagnosis of CAP, especially in children younger than age 5, include respiratory syncytial virus (RSV), influenza A and B virus, rhinovirus, adenovirus, and coronavirus. See *Commonly encountered pneumonias* for more information.

Who's most at risk?

The very young are extremely vulnerable, particularly children age 1 or younger, although children of any age may be susceptible to CAP. Young children whose immune systems aren't well developed are at greater risk than older children. Although a CAP diagnosis in

children often requires hospitalization, it's very rare that children in the United States die from CAP. In contrast, CAP accounts for 20% of child deaths in developing nations, according to the World Health Organization.

Another age group that's often defenseless against CAP is the elderly, starting at age 65 and older. Half of the diagnosed cases of CAP in the United States are people age 65 and older. Even more radically affected are people age 75 and older. As people age, their immune systems weaken. Older adults often experience anatomic and physiologic changes that lessen their body's ability to fight disease. A deteriorated gag reflex or reduced mucociliary function can intensify the difficulty an older person may already have in resisting CAP.

In addition to the bacterial, viral, fungal, or infiltrate causes of CAP, there are several widespread conditions often affecting older adults that may contribute to their susceptibility to CAP, such as liver disease, chronic obstructive pulmonary disease (COPD), a partially functioning immune system, institutionalization, and heart, neoplastic, cerebrovascular, or renal diseases.

Other factors that can increase a person's susceptibility to CAP include:

- smoking, or living or working with people who smoke
- poor management of diabetes
- living in a congested environment
- altered mental status
- consuming contaminated water from public faucets, whirlpools, showers, or respiratory equipment
- poor nutrition
- difficulty swallowing
- being bedridden for long periods of time
- using sedative medications.



Commonly encountered pneumonias

Type	Organism responsible	Epidemiology	Clinical features	Treatment	Comments
CAP					
Streptococcal pneumonia (pneumococcal)	<i>Streptococcus pneumoniae</i>	Highest occurrence in winter months. Incidence greatest in the elderly and in patients with COPD, heart failure, alcoholism, asplenia, and after influenza. Leading infectious cause of illness worldwide among young children, persons with underlying chronic health conditions, and the elderly. Death occurs in 14% of hospitalized adults with invasive disease.	Abrupt onset, toxic appearance, pleuritic chest pain. Usually involves one or more lobes. Lobar infiltrate common on chest X-ray or bronchopneumonia pattern. Bacteremia in 15% to 25% of all patients.	Penicillins. Alternative antibiotic therapy, such as cefotaxime or ceftriaxone; antipseudomonal fluoroquinolones (levofloxacin, gatifloxacin, moxifloxacin).	Complications include shock, pleural effusion, superinfections, pericarditis, and otitis media.
Haemophilus influenzae	<i>Haemophilus influenzae</i>	Incidence greatest in alcoholics, the elderly, patients in long-term care facilities and nursing homes, patients with diabetes or COPD, and children < 5 years of age. Accounts for 5% to 20% of CAP. Mortality rate: 30%.	Frequently insidious onset associated with upper respiratory tract infection 2 to 6 weeks before onset of illness. Fever, chills, productive cough. Usually involves one or more lobes. Bacteremia is common. Infiltrate, occasional bronchopneumonia pattern on chest X-ray.	Ampicillin, third- or fourth-generation cephalosporin, macrolides (azithromycin, clarithromycin), fluoroquinolones.	Complications include lung abscess, pleural effusion, meningitis, arthritis, pericarditis, epiglottitis.
Legionnaires' disease	<i>Legionella pneumophila</i>	Highest occurrence in summer and fall. May cause disease sporadically or as part of an epidemic. Incidence greatest in middle-aged and older men, smokers, patients with chronic diseases, those receiving immunosuppressive therapy, and those in close proximity to excavation sites. Accounts for 15% of CAP. Mortality rate: 15% to 50%.	Flulike symptoms. High fevers, mental confusion, headache, pleuritic pain, myalgias, dyspnea, productive cough, hemoptysis, leukocytosis. Bronchopneumonia, unilateral or bilateral disease, lobar consolidation.	Erythromycin +/- rifampin (in severely compromised patient) or clarithromycin, or a macrolide (azithromycin), or a fluoroquinolone (ofloxacin, levofloxacin, sparfloxacin).	Complications include hypotension, shock, and acute renal failure.

Type	Organism responsible	Epidemiology	Clinical features	Treatment	Comments
CAP					
Mycoplasma pneumoniae	<i>Mycoplasma pneumoniae</i>	Increase in fall and winter. Responsible for epidemics of respiratory illness. Most common type of atypical pneumonia. Accounts for 20% of CAP. More common in children and young adults. Mortality rate: < 0.1%.	Onset is usually insidious. Patients not usually as ill as in other pneumonias. Sore throat, nasal congestion, ear pain, headache, low-grade fever, pleuritic pain, myalgias, diarrhea, erythematous rash, pharyngitis. Interstitial infiltrates on chest X-ray.	Doxycycline, macrolide or fluoroquinolone.	Complications include aseptic meningitis, meningoen­cephalitis, transverse myelitis, cranial nerve palsies, pericarditis, myocarditis.
Viral pneumonia	Influenza viruses types A and B, adenovirus, parainfluenza, cytomegalovirus, coronavirus	Incidence greatest in winter months. Epidemics occur every 2 to 3 years. Most common causative organisms in adults. Other organisms in children (e.g., cytomegalovirus, RSV). Accounts for 20% of CAP.	Patchy infiltrate, small pleural effusion on chest X-ray. In most patients, influenza begins as an acute upper respiratory infection; others have bronchitis, pleurisy, and so on, and still others develop gastrointestinal symptoms.	Type A: amantadine and rimantadine. Type A/B: zanamivir, oseltamivir phosphate. Treated symptomatically. Doesn't respond to treatment with currently available antimicrobials.	Complications include a superimposed bacterial infection, bronchopneumonia.
Chlamydial pneumonia (TWAR agent)	<i>Chlamydia pneumoniae</i>	Reported mainly in college students, military recruits, and the elderly. May be a common cause of CAP or observed in combination with other pathogens. Mortality rate is low because the majority of cases are relatively mild. The elderly with coexistent infections, comorbidities, and reinfections may require hospitalization.	Hoarseness, fever, chills, pharyngitis, rhinitis, nonproductive cough, myalgias, arthralgias. Single infiltrate on chest X-ray; pleural effusion possible.	Tetracycline, erythromycin, macrolide, quinolone.	Complications include reinfection and acute respiratory failure.
Source: Smeltzer S, Bare B, Hinkle J, Cheever K. <i>Brunner and Suddarth's Textbook of Medical-Surgical Nursing</i> . 11th ed. Philadelphia, PA: Lippincott, Williams & Wilkins; 2007:630-631.					

Patients diagnosed with asthma, cancer, AIDS, or any degree of cardiopulmonary dysfunction may also experience a profound lack of resistance to CAP.

Assessment and definitive diagnosis

If a patient presents with coughing, tachypnea (fast and difficult breathing), fever, chills, pleuritic pain or chest discomfort, crackles, headache, vomiting, excessive sweating, rapid heart rate, and low BP with generalized weakness, CAP should be suspected. Confusion, lethargy, and fatigue with underlying hypoxia may be present in older patients. The patient may also exhibit anxious behaviors, be unable to find a comfortable lying position, and instead assume a tripod sitting position in an effort to expand chest capacity.

The absence of any of these symptoms doesn't preclude a diagnosis of CAP. Note that most patients with CAP will have tachypnea, but most patients with tachypnea won't have CAP.

If there's an abnormality on a chest X-ray, a question of respiratory infection contracted outside the hospital, or if the patient has had a recent history of an upper respiratory infection or influenza, CAP should be considered and an appropriate assessment should be made.

Focused assessment of the respiratory system will likely reveal unequal or diminished

chest expansion upon inspiration and use of accessory muscles. Upon auscultation, crackles may be heard over the consolidated lung or involved lobe, and wheezing may be present as a result of inflammation and restricted airways from the accumulation of exudate. Increased tactile fremitus, bronchial breath sounds, and dullness to percussion indicate consolidation. Decreased tactile fremitus is indicative of pleural effusion. The sputum of the patient with bacterial CAP infection will be purulent, thick, sticky, and yellow in color. The patient may also have foul-smelling breath.

A chest X-ray is the best way to determine if the patient has pneumonia. The chest X-ray provides information needed to make a definitive diagnosis of CAP and shows evidence of any underlying pulmonary complications. Bacterial and viral infections present differently. Scattered or localized infiltrates suggest bacterial infections. Diffuse and extensive nodular infiltrates indicate viral infections.

Sputum and nasopharyngeal samples provide information about the specific organism and sensitivity to specific antibiotic therapy. Serologic testing, blood cultures, and urine antigen testing are also recommended.

Bronchoalveolar lavage and needle thoracentesis yield useful information, but are invasive and difficult to use in children and some older people. As with any diagnostic testing, the choice of method will be somewhat determined by the patient's ability to provide the sample or undergo the procedure.

Guidelines to improve care and outcomes

Given the high mortality rate and costs associated with CAP, it's crucial to consider the severity of the disease and the risk associated with inpatient versus outpatient care. Best practice guidelines and risk scales help the healthcare provider ascertain the nature of treatment. The



memory jogger

Whether you're treating an outpatient or attending to a patient in the hospital, it's essential that you teach your patient with CAP to follow these instructions. Tell your patients to "Mind the **DRAFT**."

Drink liquids and eat healthily.

Report abnormal signs or symptoms.

Ambulate. Engage in moderate activity if not contraindicated. The more reasonably active a patient stays, the better the chance of recovery.

Finish all courses of medications completely. Report any adverse reactions immediately.

Turn away from behaviors that endanger health such as smoking.

CURB-65 severity score for CAP and the Pneumonia Severity Index (PSI) are two ways that patients' risks for complications and care needs can be quantified. These comprehensive, data-driven risk assessment tools were developed by the Infectious Disease Society of America and the American Thoracic Society to help healthcare providers make care recommendations for patients with CAP.

CURB-65 is a severity risk index used to determine the type of medical treatment needed and the best location for the treatment. The acronym CURB-65 stands for:

- confusion
- uremia (blood urea nitrogen level greater than or equal to 20 mg/dL)
- respirations greater than or equal to 30 breaths/minute
- low BP, requiring fluids
- age over 65.

A patient diagnosed with CAP who has two or more of these criteria is hospitalized.

The PSI, a more comprehensive instrument, uses a predication model algorithm to help the healthcare provider determine the best site of care. Data used to determine the patient's risk status include demographic variables, presence or absence of comorbid diseases, physical exam, and lab values. After the data are compiled and evaluated, the patient is classified along a scale from I (low risk) to V (high risk). Patients who are classified in risk categories I to III are considered safe to receive outpatient treatment. Those in categories IV or V are hospitalized.

These standardized risk assessment guidelines, in combination with good clinical judgment and effective treatment modalities, can help improve the outcomes of patients with CAP.

Treatments at the ready

Antibiotics and over-the-counter (OTC) drugs, coupled with visits to the healthcare provider, are used for patients with lower risk diagnoses of CAP caused by bacte-

rial sources. In general, patients diagnosed with mild-to-moderate bacterial CAP are treated as outpatients and are usually given macrolides such as erythromycin, clarithromycin, and azithromycin or doxycycline. Respiratory fluoroquinolones such as levofloxacin, moxifloxacin, and gemifloxacin are the drugs of choice for patients who have considerable comorbidities, are allergic to the macrolides, or have a history of drug-resistant pneumonia.

Higher-risk patients may be admitted to the hospital and even placed in the ICU if the disease has been assessed as critical and the patient isn't able to receive adequate care as an outpatient. See *Sample treatment algorithm for a patient with suspected CAP*.

Immediate use of antibiotics is critical for successful recovery of a patient diagnosed with CAP caused by bacterial sources. The type of drug and route of delivery are determined by the severity of the illness, the causal organism, and individual patient risk factors such as comorbidities and prior antibiotic use. Oral drug therapy is preferred; patients who need I.V. treatment are switched to oral antibiotics within 48 hours after initial therapy or as soon as their condition allows.

Viral CAP, caused by pathogens such as RSV, adenoviruses, or influenza-type viruses, is often a secondary infection after a person has had a cold or the flu. It's important to remember that viral CAP isn't treated with antibacterial drugs. There are antiviral drugs available, such as oseltamivir, zanamivir, and acyclovir, which can be used to treat the infection. The drug of choice depends on the type of organism identified by isolating the virus in cultures or the presence of antibodies that suggest your patient had a previous infection.

Antiviral drugs must be started within 48 hours of the symptoms occurring to be effective. Most often, viral CAP is treated symptomatically or with supportive care such as hydration, rest, and taking OTC

Tools like CURB-65 and the PSI can help determine care needs.

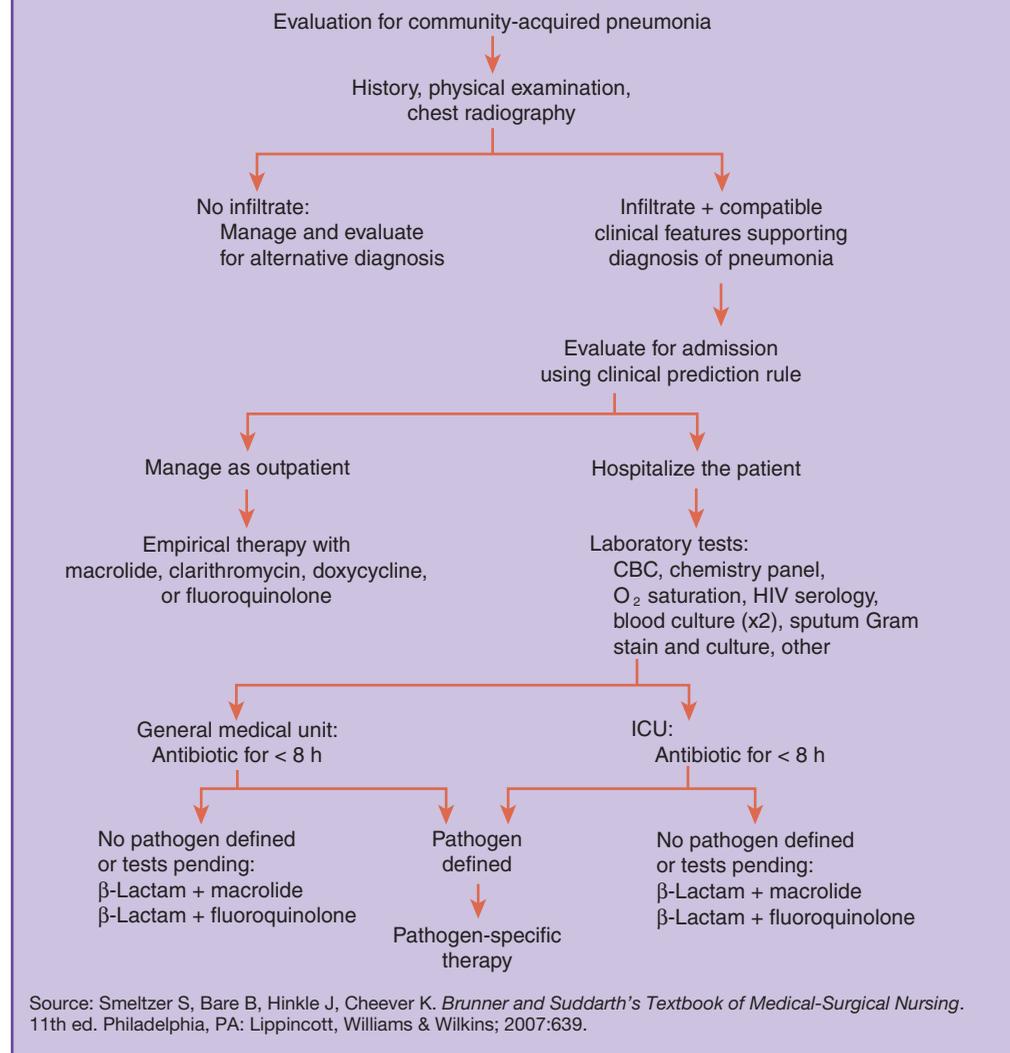


medications as recommended by the healthcare provider to relieve fever, cough, and generalized aches. If viral CAP doesn't get treated, the worst case scenario is that patients may develop a bacterial infection on top of the viral infection they have already. If a patient's symptoms worsen, the healthcare provider should be contacted.

Your care is needed

Regardless of setting, your patient requires close monitoring of vital signs, especially respiratory function. This includes sputum production and quality, oxygenation, and activity tolerance. Tracking fluid input and output and nutritional status gives you information about the patient's general condition. Monitoring lab values such as white

Sample treatment algorithm for a patient with suspected CAP



blood cell counts, serology, and sputum cultures ensures that your patient is receiving adequate and appropriate antibiotic therapy. Be sure that follow-up chest X-rays are ordered.

You need to know your patient's health history to determine prior antibiotic use and any allergies to medications. Be sure that all medications are administered and taken as prescribed.

If your patient is hospitalized or requires I.V. medications, make sure that all I.V. lines are accessible and patent. When your patient is switched to oral antibiotics, teach him or her the importance of completing the prescribed course of treatment. Remind your patient that failure to take medicine even when feeling better can lead to a recurrence of CAP or another type of infection.

Potential complications from CAP include the development of an abscess (a pus filled sac or cavity); respiratory failure (the leading cause of death in patients with pneumonia); and acute respiratory distress syndrome (ARDS), which often leads to failure of the lungs. Another conceivable complication is bacteremia, a condition in which bacteria enter the bloodstream, causing an infection of the blood. Pleural effusion, in which fluid builds up around the two-layered membranes that surround the lungs (pleura), is another complication of CAP. Although the pleura naturally have a small amount of fluid in them, an excess of fluid can lead to more respiratory distress for the patient, who may present with pain or shortness of breath. If CAP is left untreated, the worst case scenario is a possible fatality, especially in high risk patients, such as the elderly, the very young, pregnant women, and patients with immune system problems or disorders.

In addition to the physical distress of CAP, patients often feel a decrease in their quality of life as a result of isolation and loss of work while being treated for CAP. Families also feel the burden of caring for a patient diagnosed with CAP. Routines are disrupted and caregivers may lose time from



memory jogger

Here are a few steps that you can take to help stop CAP in its tracks. Take the following “**CWIS**” to see whether you're doing all you can to help your community fight CAP.

Cover your mouth and nose when coughing or sneezing. Teach your patients to cough or sneeze into their shoulders, not into their hands.
Wash your hands often and thoroughly and teach your patients to do the same.

Immunize! Seek information about where to get the flu vaccine. There are also different and appropriate pneumonia vaccines for children and adults.

Stay home from work or school when you're sick. Stop the spread of disease by considering isolating yourself from the community until you get better.

work and may be susceptible to contracting this infectious disease.

Teach your patient that infectious diseases can be prevented. The first line of defense against any infectious illness is good hand hygiene and personal care to minimize the spread of diseases. Another protective avenue is immunizations. Find out if your patient has been immunized against influenza and pneumonia. There are vaccines available to prevent pneumonia and associated respiratory illness. The 23-valent polysaccharide pneumococcal vaccine for adults and the influenza vaccine reduce the incidence of disease and subsequent need for treatment or hospitalization associated with pneumonia or influenza. Vaccines that help reduce the incidence of pneumonia in children include *H. influenzae* type b, measles, pneumococcal conjugate vaccine, pertussis, and rotavirus. Remember, a diagnosis of CAP can be avoided if your patients take precautions.

Teacher, teacher!

CAP is a preventable disease, although certain factors may be present for some people that will make treatment and recovery more difficult than for others. Don't underestimate your role as a teacher. Take a public health approach and help your own community fight locally to help diminish this global health crisis. ■

Learn more about it

Agency for Healthcare Research and Quality. Pneumonia Severity Index calculator. <http://pda.ahrq.gov/psicalc.asp>.

Burke, CA. Pneumonia, community-acquired. <http://emedicine.medscape.com/article/234240-overview>.

CDC. Fast stats: Pneumonia. <http://www.cdc.gov/nchs/fastats/pneumonia.htm>.

CDC. Pneumonia among children in developing countries. http://www.cdc.gov/ncidod/dbmd/diseaseinfo/pneumchilddevcount_t.htm.

CDC. Pneumonia can be prevented—vaccines can help. <http://www.cdc.gov/Features/Pneumonia/>.

Ebell MH. CURB-65 and CRB-65 severity scores for community-acquired pneumonia. <http://www.aafp.org/fpm/2006/0400/fpm20060400p41-rt2.pdf>.

Kronman MP, Shah SS. Pediatric community-acquired pneumonia: current challenges in the outpatient diagnosis. *Contemporary Pediatrics*. 2009;26(8):44-50.

Lutfiyya MN, Henley E, Chang LF, Reyburn SW. Diagnosis and treatment of community-acquired pneumonia. *Am Fam Physician*. 2006;73(3):442-450.

Madhi SA, Levine OS, Hajjeh R, Mansoor OD, Cherian T. Vaccines to prevent pneumonia and improve child survival. <http://www.who.int/bulletin/volumes/86/5/07-044503/en/index.html>.

Mandell LM, 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. <http://www.thoracic.org/statements/resources/mtpi/idsaats-cap.pdf>.

Pathophysiology Made Incredibly Visual! Philadelphia, PA: Lippincott Williams & Wilkins; 2008:61.

Smeltzer S, Bare B, Hinkle J, Cheever K. *Brunner and Suddarth's Textbook of Medical-Surgical Nursing*. 11th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2007:630-631,639.

Workman ML. Care of patients with infectious respiratory problems. In Ignatavicius D, Workman ML (eds). *Medical-Surgical Nursing: Patient-Centered Collaborative Care*. 6th ed. St. Louis, MO: Saunders Elsevier, Inc.; 2010:653-676.

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