Acute bronchitis in adults

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INTRODUCTION — Acute bronchitis is a common clinical condition characterized by cough, with or without sputum production, which lasts for at least five days. It is typically self-limited, resolving within one to three weeks. Symptoms result from inflammation of the lower respiratory tract and are most frequently due viral infection.

Treatment is focused on patient education and supportive care. Antibiotics are not needed for the great majority of patients with acute bronchitis but are greatly overused for this condition. Reducing antibiotic use for acute bronchitis is a national and international healthcare priority. (See 'Avoiding antibiotic overuse' below.)

The clinical features, diagnosis, and management of acute bronchitis are addressed here. Chronic bronchitis, a subtype of chronic obstructive pulmonary disease, is discussed separately. (See "Management of infection in exacerbations of chronic obstructive pulmonary disease" and "Chronic obstructive pulmonary disease: Definition, clinical manifestations, diagnosis, and staging".)

DEFINITIONS

●Acute bronchitis is a lower respiratory tract infection involving the large airways (bronchi) without evidence of pneumonia that occurs in the absence of chronic obstructive pulmonary disease.

●Chronic bronchitis is a subtype of chronic obstructive pulmonary disease and is defined as a cough that lasts for at least three months in each of two successive years. (See "Chronic obstructive pulmonary disease: Definition, clinical manifestations, diagnosis, and staging", section on 'Definitions'.)

EPIDEMIOLOGY — Acute bronchitis is one of the most common conditions encountered in clinical practice. It accounts for approximately 10 percent of ambulatory care visits in the United States, or 100 million visits per year [[1](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/1)]. The incidence of acute bronchitis is highest in late fall and winter when transmission of respiratory viruses peaks [[2,3](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/2,3)].

MICROBIOLOGY

Viruses — Viruses are the most commonly identified pathogens in patients with acute bronchitis [[4-8](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/4-8)]. In two case series, viruses accounted for about 60 percent of cases in which pathogens were identified [[5,8](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/5,8)]. The most common viral causes of acute bronchitis include [[4,5](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/4,5)]:

●Influenza A and B

●Parainfluenza

●Coronavirus types 1 to 3

●Rhinoviruses

●Respiratory syncytial virus

●Human metapneumovirus

Of the viral agents that cause acute bronchitis, influenza merits special consideration because of its morbidity and the potential for specific therapy. (See "Treatment of seasonal influenza in adults" and "Clinical manifestations of seasonal influenza in adults".)

Other pathogens — Bacteria are uncommon causes of acute bronchitis, accounting for only 6 percent of cases in a single series evaluating adults hospitalized with acute bronchitis [[5](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/5)]. The bacteria most commonly associated with acute bronchitis include *Bordetella pertussis, Mycoplasma pneumoniae*,and *Chlamydia pneumoniae*[[5,8,9](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/5,8,9)].

Among these bacteria, *B. pertussis*is the most likely to cause prolonged cough. The overall incidence of pertussis and associated outbreaks are rising worldwide [[10](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/10)]. In patients with prolonged cough, reported rates of pertussis range from 1 to 12 percent [[11,12](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/11,12)]. Pertussis is one of the few bacterial causes of acute bronchitis that may respond to antibiotic therapy.

*M. pneumoniae* and C*. pneumoniae* are each common causes of upper respiratory tract infections. While each has the potential to cause lower respiratory tract infection, including both acute bronchitis and pneumonia, rates of prolonged cough or acute bronchitis caused by these bacteria vary among cases series, ranging from 0 to 6 percent [[5,13,14](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/5,13,14)].

*Bordetella bronchiseptica*, the cause of kennel cough in dogs, is a rarely reported but likely under-recognized cause of cough in humans [[15,16](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/15,16)]. Clinical manifestations range from mild respiratory illnesses, such as bronchitis or pertussis-like syndromes, to pneumonia and sepsis [[15,17](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/15,17)]. Most infections occur in immunocompromised individuals exposed to farms or pets, although infections in immunocompetent patients and hospital-acquired transmission have been reported [[15,16,18-22](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/15,16,18-22)].

There is no convincing evidence to support the concept of "acute bacterial bronchitis," caused by pathogens such as *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Haemophilus influenzae*, *Moraxella catarrhalis*, or other gram-negative bacilli in adults without airway violations (eg, tracheostomy, endotracheal intubation) or chronic obstructive pulmonary disease.(See "Management of infection in exacerbations of chronic obstructive pulmonary disease".)

CLINICAL FEATURES — Cough is the cardinal symptom in patients presenting with acute bronchitis. By definition, the cough lasts at least 5 days, although, in most patients, it persists for 1 to 3 weeks, with a median duration of 18 days [[11,23,24](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/11,23,24)]. The cough may be associated with either purulent or nonpurulent sputum production [[24,25](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/24,25)]. The presence of purulent sputum is a nonspecific finding and does not appear to be predictive of bacterial infection or response to antibiotics [[26,27](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/26,27)].

Upper respiratory tract infection (eg, common cold) can precede the onset of acute bronchitis. During the first few days of illness, symptoms associated with these two conditions such as headache, nasal congestion, and sore throat can overlap [[24,25](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/24,25)]. With involvement of the lower respiratory tract, cough becomes the predominant symptom.

Wheezing and mild dyspnea may accompany the cough. Both wheezing and rhonchi may be auscultated on physical examination; rhonchi usually clear with coughing. Although pulmonary function testing is typically not indicated in clinical practice, bronchospasm, evidenced by reduced FEV1, has been reported in 40 percent of patients in a small case series [[28](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/28)], and bronchial hyperreactivity can be demonstrated with provocative testing [[6](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/6)]. Bronchial hyperresponsiveness is typically transient, resolving in six weeks, and is believed to be the mechanism that underlies the persistent cough [[6,28](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/6,28)].

With prolonged coughing, chest wall or substernal pain can occur [[24,25](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/24,25)]. Other complications are rare; most common among them are the development of pneumonia or bacterial superinfection. For most patients, acute bronchitis is a self-limited illness that does not require specific diagnostic testing or treatment.

Certain clinical features suggest a specific cause or an alternate diagnosis that may require antimicrobial therapy. For example, paroxysms of cough accompanied by an inspiratory whoop or posttussive emesis suggest pertussis, particularly during known outbreaks. Fever, or other systemic symptoms, are rare in patients with acute bronchitis. These findings, in addition to cough and sputum production, should raise suspicion for influenza or pneumonia. On physical examination, signs of parenchymal consolidation such as dullness to percussion, decreased breath sounds, rales, egophony, or signs of pleural inflammation such as a pleural rub suggest that disease extends beyond the bronchi, and chest imaging should be considered. (See 'Chest radiograph' below.)

DIAGNOSIS

Clinical diagnosis — Acute bronchitis should be suspected in patients with cough for at least five days (often one to three weeks) who do not have clinical findings suggestive of pneumonia (eg, fever, tachypnea, rales, signs of parenchymal consolidation) and do not have chronic obstructive pulmonary disease. For most patients, the diagnosis can be made based upon the history and physical examination. Testing is generally reserved for cases in which pneumonia is suspected, clinical diagnosis is uncertain, or when results would change management (eg, a positive influenza test result in a patient who meets criteria for antiviral therapy).

Chest radiograph — Chest radiographs are unlikely to change management for most patients with acute cough [[29,30](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/29,30)]. In patients with acute bronchitis, chest radiographs are either normal or findings are nonspecific, though subtle changes consistent with thickening of the bronchial walls in the lower lobes are occasionally reported [[29](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/29)].

The primary reason for obtaining a chest radiograph is to exclude pneumonia; reasonable indications for suspecting pneumonia and obtaining imaging include the following [[31-36](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/31-36)]:

●Abnormal vital signs (pulse >100/minute, respiratory rate >24 breaths/minute, or temperature >38°C [100.4°F])

●Signs of consolidation on chest examination (rales, egophony, or tactile fremitus)

●Mental status or behavioral changes in patients >75 years old, who may not mount a fever

Additional factors, such as moderate or severe dyspnea, hypoxia, hemoptysis, immunocompromise, older age, and/or dementia, may raise the likelihood of pneumonia or other underlying pulmonary disorders. The decision to obtain a chest radiograph or other imaging should always take the full clinical picture into consideration.

Microbiologic testing — For most patients, testing for specific pathogens is not needed because results will not change management. Bacterial cultures of expectorated sputum are specifically not recommended because bacterial pathogens are rare causes of acute bronchitis [[31,37-40](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/31,37-40)].

Circumstances in which microbiologic testing may change treatment options include:

●**Suspicion for influenza** – During influenza season, it is reasonable to make a clinical diagnosis of influenza in patients who present with acute onset fever and cough. The positive predictive value of this pair of symptoms is approximately 75 percent in adult patients.

Testing for influenza may be indicated in patients who are at high risk for complications (table 1), hospitalized patients, and healthcare workers who may benefit from treatment and/or when results would be helpful for providing local surveillance data or implementing infection control measures. Testing options vary with clinical setting. (See "Diagnosis of seasonal influenza in adults", section on 'Laboratory testing'.)

When indicated, treatment should not be withheld while awaiting the results of diagnostic testing. (See "Treatment of seasonal influenza in adults", section on 'Indications for treatment'.)

●**Suspicion for pertussis** – Microbiologic confirmation is usually not needed for patients with pertussis. When confirmation is desired based on patient risk status or public health concern, multiple testing options are available (figure 1). Selection of the most appropriate test varies by duration of cough. (See "Pertussis infection in adolescents and adults: Clinical manifestations and diagnosis", section on 'Approach to diagnosis'.)

It is usually unrealistic and unnecessary to attempt to determine if *Mycoplasma* or *Chlamydia* are the etiologic agents of acute bronchitis. Diagnostic testing may be justified in suspected outbreaks, when antibiotics might limit spread [[41](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/41)]. (See "Mycoplasma pneumoniae infection in adults", section on 'Diagnosis' and "Pneumonia caused by Chlamydia pneumoniae in adults", section on 'Diagnosis'.)

Testing for *Bordetella*bronchiseptica, a rare cause of prolonged cough, may be warranted in patients with exposures to sick animals such as veterinary workers or in the immunocompromised patients with respiratory illnesses that cannot be otherwise diagnosed. Culture of the organism from the affected site is the gold standard for diagnosis. Use of specialized transport and culture media us preferred when testing for *B. bronchiseptica*,and laboratories should be informed in advance when this organism is suspected [[15](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/15)]. Some polymerase chain reaction (PCR) assays designed for the detection of *Bordetella pertussis* also detect *B. bronchiseptica*[[42,43](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/42,43)]*.*

Procalcitonin — Procalcitonin is an emerging biomarker for diagnosis of bacterial infection and monitoring response to antibiotic therapy. We do not routinely use procalcitonin in the evaluation of patients with a clinical diagnosis of bronchitis. We suggest that use of this test be reserved for cases in which there is diagnostic uncertainty and need for antibiotics is unclear. Testing should only be obtained at centers where results can be obtained in a timely manner.

No study has directly evaluated use of procalcitonin for guiding antibiotic decisionmaking in patients with acute bronchitis. However, three within-study subgroup analyses involving a total of 338 patients with acute bronchitis have each shown a reduction in inappropriate antibiotic use when procalcitonin algorithms were used [[44-46](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/44-46)]. Several larger randomized trials and meta-analyses inclusive of patients with acute respiratory tract infections of all kinds have shown that use of procalcitonin-guided decisionmaking for antibiotic treatment was associated with a reduction in antibiotic exposure (median 8 to 4 days) without an increase in 30-day treatment failure or all-cause mortality [[44-50](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/44-50)].

The use of procalcitonin in the diagnostic evaluation of pneumonia is discussed separately. (See "Diagnostic approach to community-acquired pneumonia in adults", section on 'Procalcitonin and CRP'.)

DIFFERENTIAL DIAGNOSIS

Because the diagnosis of acute bronchitis is based on history and physical examination, it is important to assess carefully for other causes of acute cough that may be reversible or require additional testing or treatment when evaluating the patient with acute cough. The most common causes of acute cough are listed below [[51](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/51)].

●**Pneumonia** – Cough accompanied by abnormal vital signs (fever, tachypnea, or tachycardia), signs of consolidation or rales on physical examination, or mental status changes in older adult patients each suggest the possibility of pneumonia. In such cases, a confirmatory chest radiograph is needed to distinguish acute bronchitis from pneumonia [[32](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/32)]. (See "Diagnostic approach to community-acquired pneumonia in adults".)

●**Postnasal drip syndrome** – The sensation of postnasal drainage, the need to frequently clear their throat, and/or rhinorrhea are consistent with postnasal drip. Postnasal drip can be caused by the common cold, allergic rhinitis, vasomotor rhinitis, postinfectious rhinitis, rhinosinusitis, and/or environmental irritants. (See "An overview of rhinitis" and "Acute sinusitis and rhinosinusitis in adults: Clinical manifestations and diagnosis".)

●**Gastroesophageal reflux (GERD)** – Heartburn, regurgitation, and dysphagia are common symptoms of GERD, although cough may be the sole presenting symptom in some patients. (See "Clinical manifestations and diagnosis of gastroesophageal reflux in adults".)

●**Asthma** – A history of episodic wheezing, cough, and shortness of breath suggest asthma, particularly when these symptoms occur in response to triggers such as allergen or irritant exposure, exercise, or viral infections. Physical examination findings such as an end-expiratory wheeze that resolves with albuterol further suggest this diagnosis.

For patients presenting with their first episode of asthma, it may not be possible to distinguish this diagnosis from acute bronchitis [[52](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/52)]. In one study, 65 percent of patients who had two or more episodes of bronchitis over a five-year period were found to have mild asthma [[53](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/53)]. (See "Diagnosis of asthma in adolescents and adults" and "Reactive airways dysfunction syndrome and irritant-induced asthma".)

●**ACE inhibitor use** – A nonproductive cough is a well-recognized complication of treatment with angiotensin converting enzyme (ACE) inhibitors, occurring in up to 15 percent of patients treated with these agents. For most, ACE inhibitor-induced cough arises within one week of starting therapy and presents as a tickling or scratchy sensation in the throat. It typically resolves within one to four days of discontinuing therapy but can take up to four weeks. (See "Evaluation of subacute and chronic cough in adults", section on 'ACE inhibitors'.)

●**Heart failure** – Cough accompanied by shortness of breath, particularly with exertion or when lying flat, should raise suspicion for heart failure. Physical examination findings such as a gallop rhythm, displaced apical impulse, elevated jugular venous pressure, and peripheral edema should further heighten suspicion and indicate need for further testing. (See "Evaluation of the patient with suspected heart failure".)

●**Pulmonary embolism (PE)** – Dyspnea, pleuritic chest pain, and hemoptysis in addition to cough are classic symptoms associated with PE. However, presenting symptoms vary and can be mild and nonspecific. Physical examination findings also vary, but those that support this diagnosis include tachypnea, tachycardia, and lower extremity swelling. Any suspicion for PE warrants further evaluation. (See "Clinical presentation, evaluation, and diagnosis of the nonpregnant adult with suspected acute pulmonary embolism".)

●**Lung cancer** – Lung cancer is an uncommon cause of acute cough but should be considered in any current or prior smoker. Features that should raise suspicion for this diagnosis include a recent change in a chronic "smoker’s cough," hemoptysis, and signs of focal airway obstruction on physical examination such as wheeze or decreased breath sounds.

Additional causes of prolonged cough and an approach to evaluation of patients with cough lasting >3 weeks are discussed separately. (See "Evaluation of subacute and chronic cough in adults".)

The differential diagnosis of prolonged cough in immunocompromised patients is more inclusive and discussed separately. (See "Pulmonary infections in immunocompromised patients".)

TREATMENT — For most patients with acute bronchitis, symptoms are self-limited, resolving in about one to three weeks. Reassurance and symptom control are the cornerstones of care. Antibiotics are not recommended for routine use [[1,54-56](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/1,54-56)].

Patient education — We suggest having a discussion on the expected course of illness and treatment plan with all patients. Reassuring patients that acute bronchitis is a self-limited illness that typically resolves in one to three weeks without specific therapy can help improve patient satisfaction and reduce inappropriate antibiotic use [[24,25](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/24,25)].

For patients who request antibiotics, we encourage having an explicit discussion on the risks and benefits of their use (see 'Avoiding antibiotic overuse' below). For the great majority of patients, use of antibiotics does not hasten recovery or prevent complications but puts patients at increased risk of adverse effects including potentially severe complications such as *Clostridium difficile* infection and anaphylaxis [[56,57](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/56,57)]. Provision of patient handouts, offering nonantibiotic medications for symptom control, engaging in shared decisionmaking, and using delayed prescriptions (eg, providing a prescription to be filled only if symptoms persist) can also help reduce antibiotic use; each has shown to be effective in randomized trials or meta-analyses [[58-62](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/58-62)]. (See 'Information for patients' below.)

Symptom control

For cough — For patients with acute bronchitis who are bothered by cough, we suggest offering over-the-counter (OTC) medications, such as dextromethorphan or guaifenesin. Although the benefits of these medications for symptom improvement in patients with acute bronchitis are uncertain, multiple clinical practice guidelines suggest that offering medications for symptom relief may help reduce requests for antibiotics [[1,54](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/1,54)]. No randomized trials have directly evaluated the use of antitussives in patients with acute bronchitis, and a large systematic review of OTC medications for acute cough, including 19 trials in over 3000 adults primarily with the common cold, concluded that there is no strong evidence for or against the effectiveness of OTC cough medications [[63](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/63)]. However, some patients may benefit, and our recommendation is in line with the American College of Physicians and United States Centers for Disease Control and Prevention statement on appropriate antibiotic use for acute respiratory tract infection in adults [[1](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/1)].

We suggest limiting use of inhaled beta-agonists, such as albuterol, and reserve their use for patients with wheezing and underlying pulmonary disease. A single randomized controlled trial evaluating 42 adults with acute bronchitis showed reduced rates of cough at 7 days in patients taking inhaled albuterol compared with placebo (61 versus 91 percent) [[64](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/64)]. About one-half of patients in this trial had wheezing at baseline. When this trial was analyzed in a meta-analysis of studies comparing other oral beta-agonists as well as other inhaled beta-agonists, similar reductions in cough were not detected [[65](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/65)].

We suggest not using ibuprofen or herbal remedies for cough related to acute bronchitis, either due to lack of efficacy or safety concerns. Ibuprofen was not shown to be more effective than placebo for reducing frequency or duration of cough based on a randomized trial [[66](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/66)]. A systematic review found no quality randomized trials to support the use of Chinese herbs for acute bronchitis, with a note of concern about side effects and safety [[67](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/67)]. A liquid herbal preparation derived from the roots of *Pelargonium sidoides* (EPs 7630) appears to shorten the duration of symptoms in acute bronchitis based on two randomized trials [[68](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/68)]; however, these trials were determined to be low quality and concerns have been raised about potential liver injury with its use [[69,70](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/69,70)].

For concurrent cold symptoms — Many patients with acute bronchitis have associated symptoms of the common cold, particularly early in the course of illness. Analgesics, either acetaminophen or nonsteroidal anti-inflammatory drugs (NSAIDs), may help relieve symptoms such as headache, malaise, muscle pain, and joint pain. Antihistamine/decongestant combinations, intranasal or inhaled cromolyn sodium, and intranasal ipratropium may also provide relief for some patients, though the likelihood of benefit should be weighed against potential side effects. A detailed discussion of options and their efficacy for treating the common cold is presented separately. (See "The common cold in adults: Treatment and prevention".)

Antimicrobial therapy — Acute bronchitis usually is caused by viruses. Inappropriate use of antibiotics for viral respiratory infections can cause adverse events and contribute to development of antibiotic resistance.

Multiple major medical societies and healthcare organizations, including the United States Centers for Disease Control and Prevention, American College of Physicians, and the National Health Services in the United Kingdom, specifically recommend against the use of empiric antibiotics for the treatment of acute bronchitis [[1,54,56](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/1,54,56)]. Avoidance of antibiotics for the treatment of adults with acute bronchitis was also included as a component of the Healthcare Effectiveness Data and Information Set reported to the National Committee for Quality Assurance in 2007 and included as a National Quality Forum quality measure [[55,71](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/55,71)].

The rare instances in which antibiotics may improve outcomes are discussed below. (See 'Indications for use' below.)

Avoiding antibiotic overuse — For the great majority of patients with acute bronchitis, we recommend not using empiric antibiotics. We suggest having an explicit discussion on the risks and benefits of antibiotic use for patients who desire antibiotics. For most patients, the risks associated with antibiotic use outweigh the benefits. Discussion can also help align patient and provider expectations. A systematic review found that a physician's perception of patient desire for antibiotics was strongly associated with antibiotic prescription, more so than actual patient desire [[26](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/26)].

Multiple high-quality trials and meta-analyses have shown that antibiotics do not provide substantial benefit or enhance likelihood of cure in patients with acute bronchitis, and use can result in adverse effects [[1,57,72-74](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/1,57,72-74)]. A large observational study found no increase in the rate of complications in patients who were not prescribed antibiotics for acute lower respiratory tract infections [[75](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/75)].

●A randomized trial evaluating over 800 patients with acute bronchitis found no difference in symptom severity or duration in adults treated with amoxicillin compared with placebo [[72](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/72)]. Lack of antibiotic efficacy was also observed in a prespecified subgroup analysis of over 500 adults >60 years old. This trial was included in a meta-analysis of 11 studies comparing antibiotic treatment with placebo in 3841 patients with acute bronchitis [[57](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/57)]. Results were inconsistent across studies included in the meta-analysis, with some suggesting marginal benefit.

●Antibiotic use has also been associated with an increased risk of adverse effects compared with placebo in a meta-analysis of 11 trials with 3162 patients with acute bronchitis (risk ratio 1.22, 95% CI 1.07-1.4) [[57](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/57)]. The most commonly reported adverse events were nausea, vomiting, diarrhea, rash, headache, and vaginitis; serious adverse events reported included anaphylaxis [[57,72](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/57,72)]. Based on the meta-analysis, the number needed to harm with antibiotics is 24.

●The effect of antibiotic use on complication rates was assessed in a prospective cohort study evaluating over 28,000 adults with acute cough lasting <3 weeks without radiographic evidence of pneumonia. Major complications, including hospital admission and death, occurred in <1 percent of patients; no significant difference in event rates was detected when comparing patients given immediate antibiotic prescriptions with delayed prescription or no prescription [[75](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/75)].

Antibiotic use also alters the patient's microbiome and carries the risk of inducing antibiotic resistant organisms both in the individual patient and in the community [[76,77](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/76,77)].

Despite these data, inappropriate antibiotic prescription for the treatment of bronchitis is widespread. Studies indicate that 50 to 90 percent of patients with acute bronchitis who seek care are given antibiotics, making acute bronchitis one of the most common reasons for antibiotic overuse [[26,62,78-80](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/26,62,78-80)].

Reducing inappropriate use for the treatment of acute bronchitis is a national and international healthcare priority [[1,54-56](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/1,54-56)]. To promote appropriate antibiotic use, the United States Centers for Disease Control and Prevention has launched a program that offers online educational resources for both patients and providers.

Indications for use — Antimicrobial agents are generally reserved for cases in which a specific pathogen is suspected or diagnosed in patients who are at high risk for complications or when treatment might limit spread of a contagious illness. The most common scenarios are discussed below:

●**Influenza** – Most patients with influenza do not require therapy. Treatment is reserved for hospitalized patients or those at high risk for complications (table 1). Neuraminidase inhibitors, either oseltamivir or zanamivir, are the recommended first-line agents, though local antiviral resistance patterns should be taken into account when prescribing therapy (table 2). Treatment is most effective when given early in the course of illness. When indicated, treatment should not be withheld while awaiting the results of diagnostic testing. (See "Treatment of seasonal influenza in adults".)

●**Pertussis** – Antibiotic therapy is recommended for patients with cough of ≤3 weeks and suggested for pregnant women with cough <6 weeks. Antibiotics can also be considered in other circumstances in which treatment may limit spread. Macrolides are first-line therapy (table 3).

Treatment for acute bronchitis due to *M. pneumoniae* or *C. pneumonia*, in the absence of pneumonia, is generally not recommended. Direct evidence supporting this approach is limited to a single randomized trial that showed no difference in cough in patients given erythromycin compared with patients given placebo [[81](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/81)].

There are limited data to guide the best treatment approach for patients with the rare diagnosis of bronchitis due to *B. bronchiseptica*. Tetracyclines and fluoroquinolones have been used in most cases reported in the literature with success [[22,82](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/22,82)]. However, resistance profiles vary [[15,22](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/15,22)], and selection of antibiotic should be based on susceptibility testing results. Emergence of resistance while on therapy has also been reported in immunocompromised patients [[16](https://www.uptodate.com/contents/acute-bronchitis-in-adults/abstract/16)].

FOLLOW-UP — Most patients with acute bronchitis recover without complications within 1 to 3 weeks and do not require follow-up but should be educated on features that warrant concern such as new-onset fever, difficulty breathing, symptoms lasting >3 to 4 weeks, or bloody sputum.

INFORMATION FOR PATIENTS — UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5th to 6thgrade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10th to 12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

●Basics topics (see "Patient education: Acute bronchitis (The Basics)" and "Patient education: Cough in adults (The Basics)" and "Patient education: What you should know about antibiotics (The Basics)" and "Patient education: Coughing up blood (The Basics)")

●Beyond the Basics topic (See "Patient education: Acute bronchitis in adults (Beyond the Basics)".)

SUMMARY AND RECOMMENDATIONS

●Acute bronchitis is a common clinical condition characterized by cough, with or without sputum production, which lasts for at least five days. It is typically self-limited, resolving within one to three weeks. By definition, patients with acute bronchitis do not have underlying chronic obstructive pulmonary disease (COPD). (See 'Definitions' above.)

●The majority of cases of acute bronchitis are caused by infection with respiratory viruses, such as rhinoviruses, coronaviruses, influenza viruses, and respiratory syncytial virus. Bacteria are rare causes, accounting for <10 percent of cases. The most common bacterial causes are *Bordetella pertussis, Mycoplasma pneumoniae,*and*Chlamydia pneumoniae.*(See 'Microbiology' above.)

●For most patients, the diagnosis can be made based on history and physical examination, and additional testing is not needed. (See 'Clinical diagnosis' above.)

●Chest radiographs are indicated when acute bronchitis cannot be clinically distinguished from pneumonia. Reasonable indications for suspecting pneumonia and obtaining imaging include abnormal vital signs (pulse >100/minute, respiratory rate >24 breaths/minute, or temperature >38°C [100.4°F]), signs of consolidation on lung examination (rales, egophony, or tactile fremitus), and mental status changes in patients >75 years old. (See 'Chest radiograph' above.)

●Treatment should focus on patient education and supportive care. We encourage having a discussion on the expected course of illness and treatment plan with all patients. Reassuring patients that acute bronchitis typically resolves without specific therapy can help improve patient satisfaction and reduce inappropriate antibiotic use. (See 'Treatment' above.)

●For patients who desire treatment for cough, we suggest offering over-the-counter (OTC) medications, such as dextromethorphan or guaifenesin rather than other medications (**Grade 2C**). We reserve use of inhaled beta-agonists, such as albuterol, for patients with wheezing and underlying pulmonary disease. (See 'For cough' above.)

●For patients with clinically diagnosed acute bronchitis, we recommend NOT treating with empiric antibiotic therapy (**Grade 1B**). Acute bronchitis is a leading cause of antibiotic overuse; reducing inappropriate antibiotic use for this indication is global healthcare priority. (See 'Avoiding antibiotic overuse' above.)

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