MedStar Health

Management of Bronchitis in Adults

Clinical Practice Guideline
MedStar Health
Antibiotic Stewardship

"These guidelines are provided to assist physicians and other clinicians in making decisions regarding the care of their patients. They are not a substitute for individual judgment brought to each clinical situation by the patient's primary care provider-in collaboration with the patient. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication but should be used with the clear understanding that continued research may result in new knowledge and recommendations."

INTRODUCTION:

1. Acute bronchitis is one of the most common conditions encountered in clinical practice. Accounts for 10% of ambulatory care visits in the United State or 100 million visits per year.
2. Typically self-limited, resolving in one to three weeks. Most frequently caused by viruses. Bacteria causes <10%.
3. Apart from testing for COVID-19 during the pandemic, testing is generally reserved for cases in which pneumonia suspected, when the clinical diagnosis is uncertain, or when results would change management (e.g., treatment of pertussis or influenza in a high-risk patient early in the course of illness).
4. Treatment should be focused on supportive care and patient education. Antibiotics are not indicated for most patients but are often overused for this condition.
5. Reducing antibiotic use for acute bronchitis is a national and international health care priority.

Diagnostic Evaluation and Treatment for Acute Bronchitis: (See Figure 1)

1. The evaluation of adults with acute cough or with presumptive diagnosis of uncomplicated acute bronchitis should focus on ruling out pneumonia with chest radiography.
2. Consider for chest radiography:
   a. Fever (temperature greater than 100.3 F or 38.0 C)
   b. Tachycardia (heart rate > 100 bpm)
   c. Tachypnea (respiratory rate > 22 breaths per minute)
   d. Hypoxemia (pulse oxygenation < 95%)
   e. Asymmetrical lung sounds (rales, egophony, fremitus). Pleuritic chest pain. New onset wheezing.
   f. Cough lasting 3 weeks or longer.
   g. Moderate to severe dyspnea or hemoptysis.
   h. Known or suspected viral illness (covid or influenza) with worsening symptoms.
   i. Mental status or behavioral changes in patients >75 years old, who may not mount a fever.

The decision to obtain a chest radiograph or other imaging should always take the full clinical picture into consideration.

Initial Approval Date and Reviews:	**Most Recent Revision and Approval Date:**	**Next Scheduled Review Date:**
Effective 11/1/2014, Revised 09/01/2015, 6/21/16, 6/19/18, 6/16/2020, 6/21/2022, 6/18/2024	6/18/2024	6/2026 Condition: Bronchitis Adult

3. Empiric antibiotic therapy:
   a. Acute Uncomplicated Bronchitis: Routine antibiotic treatment of uncomplicated bronchitis is not recommended, regardless of duration of cough. The presence of purulent sputum is NOT predictive of bacterial infection or response to antibiotics.
   b. COPD: appropriate antibiotics and adjunct therapies should be prescribed as outlined in the COPD management guideline.
   c. Complicated Presentations: Consider empiric treatment for pneumonia in high-risk clinical scenarios, including geriatric patients, immunocompromised patients, patients with abnormal vital signs and an abnormal pulmonary examination.

4. Consider/Manage Alternatives Diagnoses:
   a. Influenza – when influenza is suspected, appropriate diagnostic testing and treatment should be utilized as clinically indicated.
   b. Pertussis – when pertussis infection is suspected (paroxysms of cough with inspiratory whoop or post tussive emesis particularly during know outbreaks, or unvaccinated patients), empiric antimicrobial therapy should be initiated with a macrolide (azithromycin 500 mg on day 1 followed by 250 mg on days 2-5 or clarithromycin 500 mg bid for 7 days). For patients unable to tolerate a macrolide, trimethoprim-sulfamethoxazole one DS tablet bid for 14 days is acceptable (See Figures 2 and 3).
   c. COVID 19—During the pandemic, appropriate testing for COVID-19 should be performed in all patients presenting with possible respiratory tract infections. The patient should self-isolate, treat symptomatically, monitor for clinical worsening, and follow treatment recommendations as per current CDC guidelines.
   d. Bacteria are uncommon causes of acute bronchitis accounting for <10% of cases. The bacteria most associated with acute bronchitis are Bordetella pertussis, Mycoplasma pneumonia and Chlamydia pneumonia. Antibiotics that treat these bacteria include doxycycline, macrolides, and fluoroquinolones.
   e. Other diagnoses: consider postnasal drip, GERD, Asthma, ACE inhibitor use, Pulmonary embolism, or CHF. Lung cancer is an uncommon cause of acute cough but should be considered in any current or prior smoker.

5. Symptomatic therapy: (See Figure 4)
   a. Non-pharmacologic therapy such as throat lozenges, tea, honey
   b. OTC medications such as dextromethorphan (cough suppressant) and guaifenesin (mucolytic).
   c. Increase fluid intake and breathing humidified air (steam baths, humidifiers, saline nebulizer).
   d. Avoid codeine due to addictive potential and side effect profile. Consider prescribing benzonatate.
   e. Limit use of inhaled beta-agonist except for patients wheezing or underlying pulmonary conditions.
   f. Avoid oral corticosteroids due to lack of efficacy and safety concerns unless acute exacerbation of asthma.
   g. Consider inhaled corticosteroids especially if patient with bronchospasm.

6. Smoking cessation: All smokers should receive smoking cessation counseling and interventions.

7. Avoiding antibiotic overuse:
   a. Recommend having explicit discussion on risks and benefits of antibiotics with patients.
   b. Multiple high-quality trials and meta-analyses have shown that antibiotics do NOT provide substantial benefit and use can result in adverse effects (nausea, vomiting, diarrhea, rash, headache, vaginitis, rash, and anaphylaxis).
   c. Antibiotics can alter the patient's microbiome and may induce resistance in both individuals and the community.
   d. Antibiotic use comes at an increased financial cost.
   e. Consider delayed prescribing where prescription provided but patient agrees not to fill for defined period unless symptoms worsening or not improving.
   f. Recommend reevaluation if not improving or develop new fever, dyspnea, bloody sputum or symptoms > 3 weeks.

MEDCONNECT RESOURCES

A bronchitis specific power plan is present in MedConnect to facilitate appropriate treatment orders:

PATIENT EDUCATION

Choosing wisely: http://www.choosingwisely.org/patient-resources/treating-sinus-problems-aaaai/

DEFINITIONS

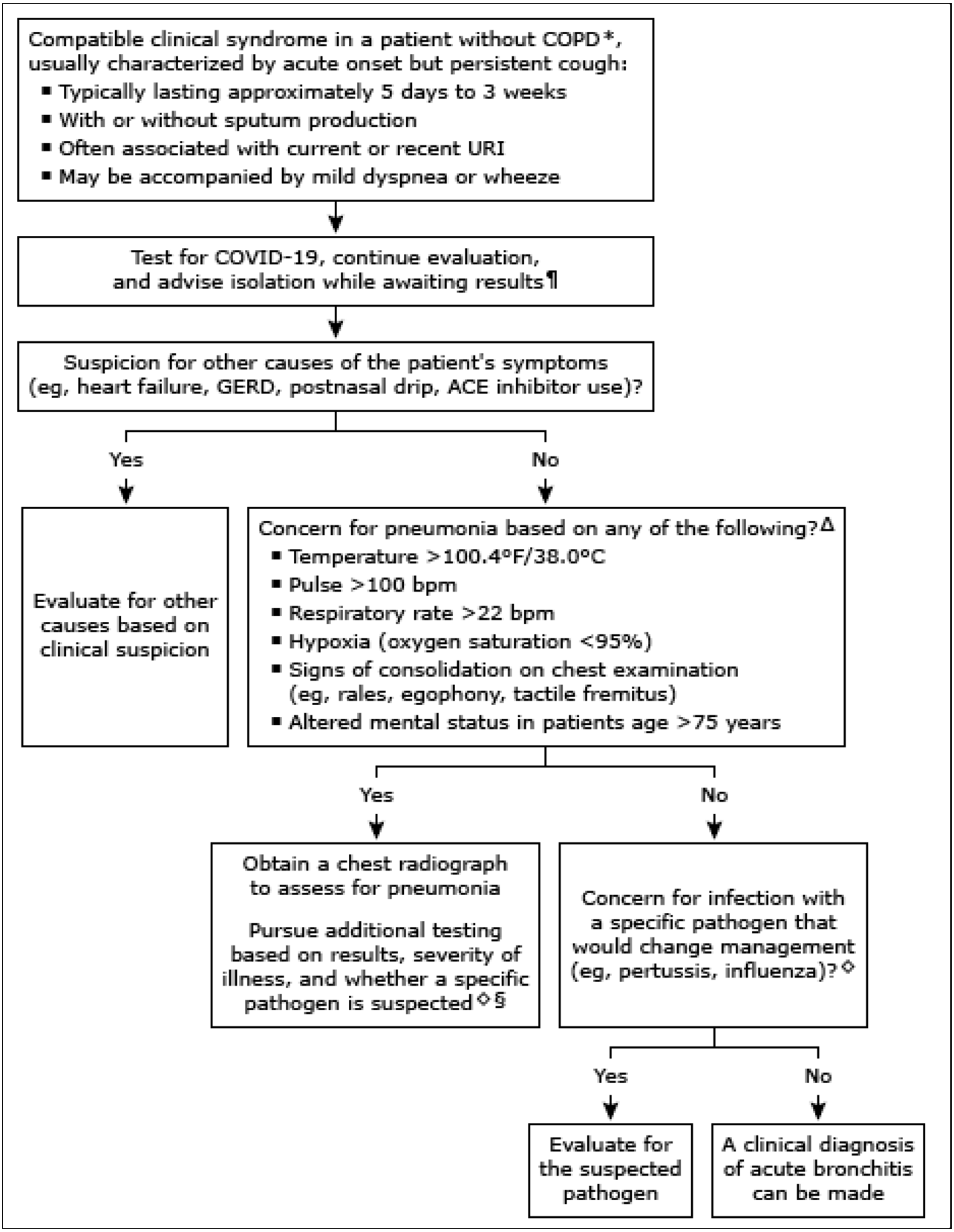
Antimicrobial stewardship refers to coordinated interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial drug regimen, dose, duration of therapy, and route of administration. Antimicrobial stewards seek to achieve optimal clinical outcomes related to antimicrobial use, minimize toxicity and other adverse events, reduce the costs of health care for infections, and limit the selection for antimicrobial resistant strains. - See more at: https://www.idsociety.org/policy--advocacy/antimicrobial-resistance/

REFERENCES:

- Up to Date: Acute Bronchitis in Adults, January 2022 February 2024
- CHEST Expert Panel Report: Acute Cough Due to Acute Bronchitis in Immunocompetent Adult Outpatients. CHEST May 2020; 157 (5): 1256-1265.
- Bronchitis. Emedicine.medscape.com March 24, 2021.
- Centers for Disease Control (CDC), Antibiotic Use in the United States, 2024 Update: Progress and Opportunities Retrieved from https://www.cdc.gov/antibiotic-use/stewardship-report/current.html
- Infectious Disease Society of America (ISDA), 2024. Antibiotic Resistance. Retrieved from https://www.idsociety.org/public-health/antimicrobial-resistance/antimicrobial-resistance/

Initial Approval Date and Reviews:	**Most Recent Revision and Approval Date:**	**Next Scheduled Review Date:**
Effective 11/1/2014, Revised 09/01/2015, 6/21/16, 6/19/18, 6/16/2020, 6/21/2022, 6/18/2024	6/18/2024	6/2026 Condition: Bronchitis Adult

FIGURE 1: EVALUATION OF ACUTE BRONCHITIS IN ADULTS



Acute bronchitis should be suspected in patients with an acute onset but persistent cough (often lasting approximately five days to three weeks) who do not have clinical findings suggestive of pneumonia and do not have COPD. For most patients, the diagnosis can be based the history and physical examination. Apart from testing for COVID-19 during the pandemic, testing is generally reserved for cases in which pneumonia suspected, when the clinical diagnosis is uncertain, or when results would change management (eg, treatment of pertussis). As multiplex molecular assays become increasingly available and include testing for SARS-CoV-2, they will likely be used to make specific microbiologic diagnoses in patients with respiratory tract infections, but they have not had proven benefit at this juncture.

COPD: chronic obstructive pulmonary disease; URI: upper respiratory infection; COVID-19: coronavirus disease 2019; GERD: gastroesophageal reflux disease; ACE: angiotensin converting enzyme; bpm: beats per minute; RT-PCR: reverse-transcription polymerase chain reaction.

* By definition, acute bronchitis occurs in the absence of COPD. Similar symptoms in a patient with COPD would be considered a COPD exacerbation.

¶ RT-PCR on an upper respiratory tract specimen is the preferred text. Refer to UpToDate content on COVID-19 for additional detail on clinical features, testing, treatment, and infection control.

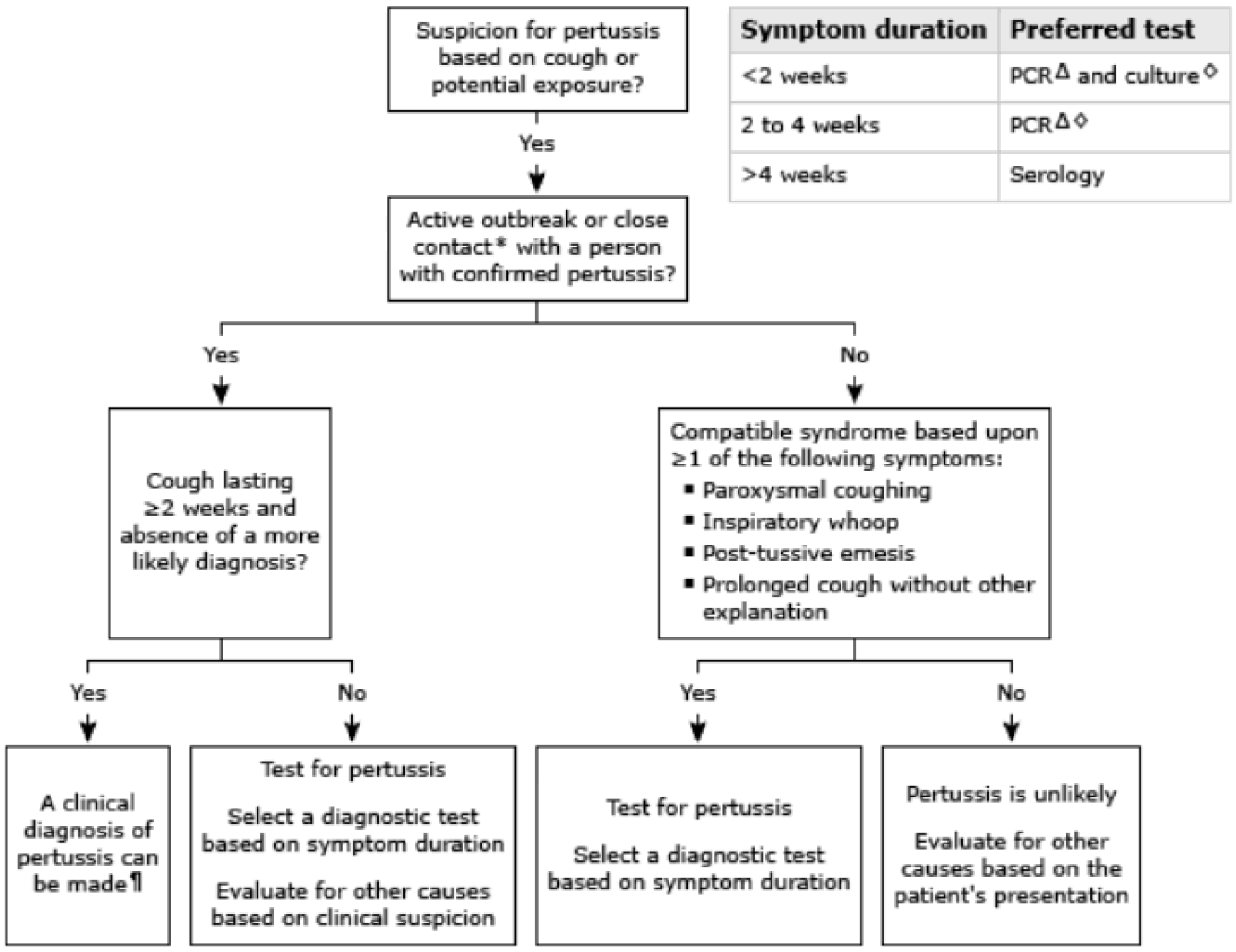
Δ Additional factors, such as moderate/severe dyspnea, hemoptysis, older age, and/or dementia, may raise the likelihood of pneumonia or other underlying pulmonary disorders.

◇ Most pathogens that cause acute bronchitis do not require specific treatment; thus, testing is not needed. Circumstances that might warrant testing include suspicion for pertussis (based on characteristic cough or known exposure), COVID-19 during the pandemic, or influenza (in a high-risk patient early in the course of illness). Refer to UpToDate text for additional detail on when suspect specific pathogens.

§ Refer to UpToDate content for detail on when additional testing is needed for patients with known or suspected pneumonia.

Graphic 131527 Version 2.0

FIGURE 2: DIAGNOSIS OF PERTUSSIS



Symptom duration	Preferred test
<2 weeks	PCRΔ and cultureᵒ
2 to 4 weeks	PCRΔᵒ
>4 weeks	Serology

PCR: polymerase chain reaction.

* Close contact is defined as face-to-face exposure within three feet of a symptomatic patient and/or direct contact with the respiratory, nasal, or oral secretions of a person with active pertussis.

¶ Testing is not required for diagnosis and the initiation of treatment. However, we generally test patients for public health surveillance.

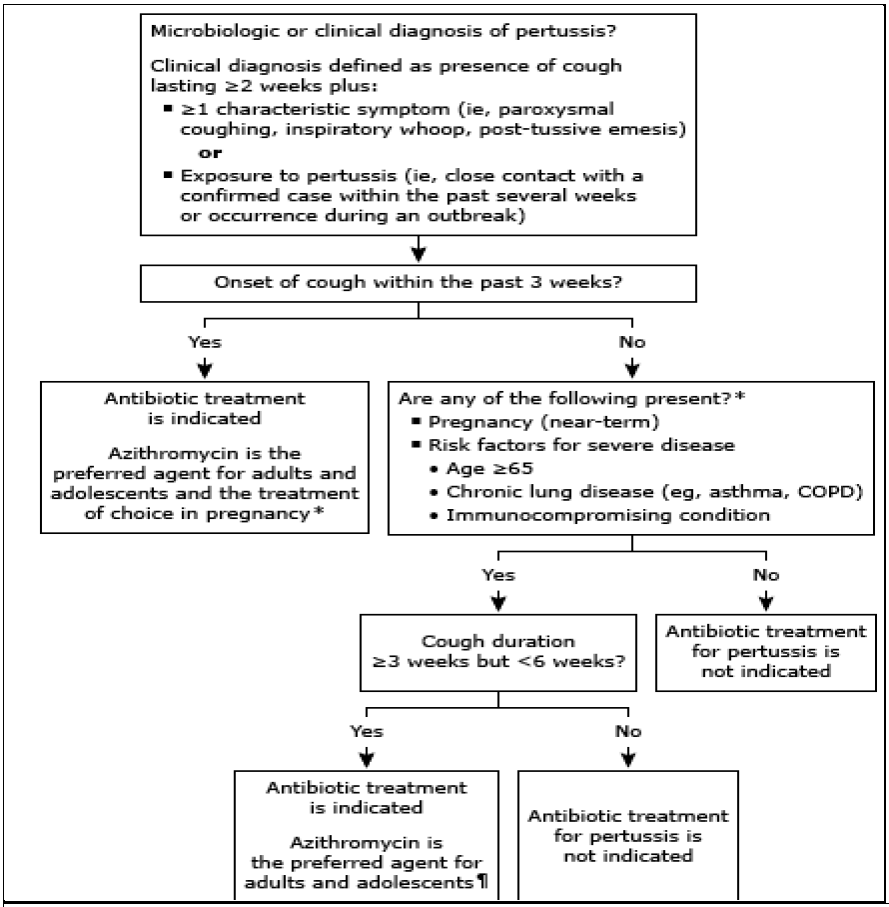
Δ Direct PCR is more accurate and reliable than PCR performed as part of a multiplex assay.

◊ PCR and culture should be performed on a nasopharyngeal specimen.

Graphic 132607 Version 3.0

Initial Approval Date and Reviews:	**Most Recent Revision and Approval Date:**	**Next Scheduled Review Date:**
Effective 11/1/2014, Revised 09/01/2015, 6/21/16, 6/19/18, 6/16/2020, 6/21/2022, 6/18/2024	6/18/2024	6/2026 Condition: Bronchitis Adult

FIGURE 3: ANTIBIOTIC TREATMENT OF ADOLSCENTS AND ADULTS FOR PERTUSSIS



Antibiotic treatment is indicated in all patients with a clinical or microbiologic diagnosis of pertussis who present within three weeks of cough onset because this is the highest risk period for transmission. After this period, cough may persist but is thought to be caused by tissue damage rather than active infection. Because shedding can persist for 6 weeks, the treatment window is extended for pregnant women who are near term to prevent transmission to neonates. We also extend the treatment window to 6 weeks in patients at increased risk for pertussis-related morbidity (eg, age ≥65, immunocompromise, chronic lung disease).

Because pertussis is highly transmissible, post-exposure prophylaxis is warranted within 21 days of exposure for household contacts as well as for close contacts who are at high risk for severe pertussis themselves or who are in close contact with others who at high risk for severe pertussis. Antibiotic regimens for prophylaxis are identical to those for treatment. Patients with B. pertussis infection should avoid contact with young children, infants, and other vulnerable populations until they have completed at least 5 days of antibiotic therapy. Refer to UpToDate text for detail.

COPD: chronic obstructive pulmonary disease.

* The Centers for Disease Control and Prevention (CDC) recommends extending the treatment window in pregnant women but not other populations. Although limited, emerging data indicate that pertussis-related morbidity, including the risk for hospitalization, is highest in these specific subgroups.

¶ Azithromycin is the treatment of choice in pregnancy and is also the preferred agent for most other adults and adolescents. Clarithromycin can be used when azithromycin is not available. Dosage and duration of treatment for adults and adolescents are:

- Azithromycin orally for five days (500 mg once daily on day 1, followed by 250 mg once daily on days 2 to 5)
- Clarithromycin 500 mg orally twice daily for seven days
- Trimethoprim-sulfamethoxazole (one double-strength tablet orally twice daily for 14 days) is an alternative for non-pregnant patients who cannot take a macrolide (eg, due to prolonged QT interval, allergy or other intolerance)

Graphic 132606 Version 5.0

Initial Approval Date and Reviews:	**Most Recent Revision and Approval Date:**	**Next Scheduled Review Date:**
Effective 11/1/2014, Revised 09/01/2015, 6/21/16, 6/19/18, 6/16/2020, 6/21/2022, 6/18/2024	6/18/2024	6/2026 Condition: Bronchitis Adult

FIGURE 4: SYMPTOMATIC MANAGEMENT OF COUGH IN ACUTE BRONCHITIS IN ADULTS

Agent or intervention	Dose/frequency	Comments
Pharmacologic therapies*		
Dextromethorphan¶ (OTC)	▪ Immediate release (liquids, lozenges, and capsules): 10 to 20 mg orally every 4 hours **or** 20 to 30 mg every 6 to 8 hours as needed ▪ Extended release (suspension): 60 mg orally twice daily as needed (maximum daily dose: 120 mg)	Cough suppressant: Temporary control of cough by interruption of central cough impulse and decreasing the sensitivity of respiratory cough receptors. ▪ Serotonin syndrome may occur when used with pro-serotonergic drugs (eg, SSRIs/SNRIs, linezolid), especially at higher doses ▪ Avoid use in patients at-risk for respiratory compromise (eg, acute asthma)
Guaifenesin¶ (OTC)	▪ Immediate release (liquids and tablets): 200 to 400 mg orally every 4 hours as needed ▪ Extended release (tablets): 600 mg to 1.2 g orally every 12 hours as needed (maximum daily dose: 2.4 g)	Expectorant: Helps loosen mucus/bronchial secretions. ▪ May reduce viscosity of secretions but does not suppress cough. Adequate hydration is required for maximal efficacy.
Albuterol	▪ Metered-dose inhaler or dry powder inhaler (90 mcg/actuation): 2 inhalations every 4 to 6 hours as needed	$Beta_2$ agonist: Treatment of bronchospasm in patients with reversible obstructive airway disease. ▪ Only appropriate in patients who have wheezing or underlying pulmonary disease ▪ For acute asthma exacerbation initial dosing is more frequent; refer to clinical topic
Benzonatate	▪ 100 to 200 mg orally 3 times per day as needed (maximum daily dose: 600 mg)	Cough suppressant: Suppresses cough by topical anesthetic action on respiratory stretch receptors. ▪ Swallow capsule whole; do not chew or break
Non-pharmacologic interventions		
Throat lozenges (oral)	As needed (per labelling instructions)	Lozenges (typically nonmedicated or with menthol) may relieve sore throat and reduce cough frequency and severity
Honey (oral)	As needed	Often taken in hot water or tea May reduce cough frequency and severity
Smoking cessation (and avoidance of second-hand smoke)	--	Smoke is an airway irritant

For adults with bothersome cough from acute bronchitis, we offer nonpharmacologic treatments (eg, honey, hot tea, nonmedicated throat lozenges). While high-quality evidence supporting their efficacy is lacking, patients may derive relief from these measures, and for most, the risk of harm is small.

OTC: over-the-counter (prescription not required); SSRI: selective serotonin reuptake inhibitor; SNRI: serotonin-norepinephrine reuptake inhibitor.

* We avoid the use of opioid cough suppressants (including codeine) in adults with acute bronchitis due their side effect profile and potential for dependency and addiction.

¶ Available guaifenesin-dextromethorphan combinations include: Liquids (guaifenesin 100 mg and dextromethorphan 5 mg per 5 mL) and pills (guaifenesin 200 mg and dextromethorphan 10 mg per capsule); alcohol-free preparations are preferred.

Graphic 138544 Version 3.0

Initial Approval Date and Reviews:	**Most Recent Revision and Approval Date:**	**Next Scheduled Review Date:**
Effective 11/1/2014, Revised 09/01/2015, 6/21/16, 6/19/18, 6/16/2020, 6/21/2022, 6/18/2024	6/18/2024	6/2026 Condition: Bronchitis Adult