

ISSN 2063-5346



ACUTE BRONCHITIS IN ADULTS: EVIDENCE-BASED GUIDELINES

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Article History: Received: 01.02.2023

Revised: 07.03.2023

Accepted: 10.04.2023

Abstract

Obstetricians and gynecologists are increasingly involved in primary care. While acute bronchitis is primarily caused by viruses, antibiotics are prescribed to 50-70% of patients, despite their limited effectiveness due to bacterial resistance, high cost, and potential side effects. Additionally, inhaled bronchodilators, which can provide symptomatic relief, are underutilized. It is important to improve physician awareness of appropriate management for acute bronchitis in order to reduce unnecessary antibiotic use. Prescribing antibiotics is often driven by patient satisfaction, but satisfaction should be focused on patient education rather than antibiotic prescription. This review focuses on the diagnosis, differential diagnosis, and management of acute bronchitis.

KEYWORDS: Acute bronchitis, upper respiratory infection, evidence-based guidelines

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DOI:10.31838/ecb/2023.12.s1-B.460

INTRODUCTION:

Acute bronchitis is a common respiratory condition characterized by inflammation of the bronchial tubes, typically caused by viral infections. Obstetricians and gynecologists, who are increasingly involved in primary care, encounter patients presenting with acute bronchitis. However, despite its predominantly viral nature, a significant number of patients are treated with antibiotics. This practice is concerning due to the increasing bacterial resistance, high cost, and potential adverse reactions associated with antibiotic use¹. Furthermore, the underutilization of inhaled bronchodilators for symptomatic relief contributes to suboptimal management of acute bronchitis.

In order to address these issues, it is crucial to improve physician awareness and adherence to evidence-based guidelines for the diagnosis and management of acute bronchitis. By doing so, unnecessary antibiotic use can be reduced, leading to better patient outcomes and more cost-effective healthcare delivery². Additionally, it is important to recognize that patient satisfaction should not solely drive antibiotic prescription, but rather be focused on patient education regarding the nature of acute bronchitis and appropriate management strategies. This review aims to provide a comprehensive overview of the diagnosis and evidence-based management of acute bronchitis, highlighting the need for improved awareness among physicians³. By addressing the shortcomings in current management practices, we can enhance patient care and contribute to the effective and efficient use of healthcare resources.

CAUSE AND PATHOGENESIS

Acute bronchitis is an inflammation of the bronchial airways caused by respiratory viruses, with symptoms including coughing, wheezing, and difficulty breathing. The condition shares similarities

with asthma, such as heightened airway reactivity, but the inflammation in acute bronchitis is temporary and resolves with the clearance of the infection⁴. Common viral causes include rhinovirus and coronavirus, while less common viruses and bacteria can also be responsible. Spirometer studies show lung function abnormalities similar to mild asthma, but these typically return to normal within five weeks⁵. Despite the reversible nature of these abnormalities, individuals with acute bronchitis are more likely to be diagnosed with asthma later on, indicating a potential link between the two conditions.

CLINICAL PRESENTATION AND DIAGNOSIS

Due to the lack of precise diagnostic criteria, the diagnosis of acute bronchitis can vary among physicians, including family physicians⁶. While textbooks and studies provide differing descriptions, most physicians generally define acute bronchitis as the presence of a cough along with symptoms of an upper respiratory infection (URI), such as a runny nose and sore throat. A clinically useful definition would be the sudden onset of cough without a history of chronic lung disease, pneumonia, or sinusitis⁷. This definition helps in identifying patients with underlying medical conditions and ruling out other potential causes of acute cough, such as pneumonia and sinusitis.

The majority of outpatient cases of acute cough are categorized as "uncomplicated acute bronchitis," with over 90% of cases having a nonbacterial cause. Symptoms typically associated with acute bronchitis include cough (dry or productive with clear to yellow-green sputum), chest tightness, and sensations of wheezing or burning. Additional symptoms of viral syndrome may include headache, low-grade fever, runny nose, sore throat, fatigue, and muscle aches. The duration of the cough is usually around 7 to 14 days but can persist for over a month in some patients.⁸⁻⁹

During physical examination, signs of airway constriction, such as wheezing or prolonged expiration, may be present but are not consistently observed. To elicit wheezing, auscultation during forced expiration in a prone position is recommended. Focal changes on auscultation, such as crackles, fremitus, or ego phony, would not typically be found in acute bronchitis. Diagnostic tests are not routinely recommended, as there is no definitive test for acute bronchitis. Instead, tests are primarily used to rule out other potential diseases¹⁰⁻¹². For instance, chest X-rays may be helpful in suspected cases of pneumonia. The presence of a productive cough, with or without pus, does not indicate bacterial infection, and sputum examination or culture is generally uninformative. Spirometer studies, although they may show abnormalities during an acute bronchitis episode, should only be performed if asthma or chronic obstructive lung disease is suspected and after the acute illness has resolved.¹³⁻¹⁴

DIFFERENTIAL DIAGNOSIS

The broad definition of "acute bronchitis" based on cough and respiratory symptoms leaves room for potential misuse by clinicians. When examining patients, it is important to consider other possible causes of cough. One significant cause is postnasal drip, which is not associated with airway inflammation and can be caused by viral upper respiratory infections, acute sinusitis, or allergic rhinitis¹⁵⁻¹⁶. Pneumonia can also present with cough accompanied by fever, wheezing, and malaise, but these patients typically exhibit specific changes on lung auscultation and radiographs. Patients with asthma or chronic obstructive lung disease are more susceptible to developing obstructive airway symptoms in response to common triggers such as upper respiratory infections. Additionally, other conditions such as lung neoplasms, congestive heart failure exacerbations, and exposure to irritating substances or pollutants can lead

to airway irritation and cough. Chronic causes of cough include cystic fibrosis, gastro esophageal reflux, and certain medications such as angiotensin-converting enzyme inhibitors¹⁷. It is crucial to consider these alternative diagnoses in all patients, especially those over 65 years of age with significant lung impairment or other medical conditions, and to conduct appropriate evaluations to ensure accurate diagnosis and appropriate management.

MANAGEMENT

Studies consistently demonstrate minimal to no benefit, and at best, a modest benefit from using antibiotics for patients presenting with an acute cough without a history of chronic lung disease or evidence of other serious illnesses. Any observed benefit, such as a slight reduction in cough duration or sputum production by approximately one day, is not considered significant given that the illness typically resolves within 10 to 14 days on its own. Additionally, the cost of antibiotics, the risk of adverse effects, and the potential negative impact on antibiotic resistance patterns need to be considered.¹⁸

While certain subgroups may show some potential benefit from antibiotic therapy, the evidence supporting this is weak. Recent meta-analyses suggest that patients over 55 years of age without symptoms of crazy and sore throat may derive some benefit from antibiotics. Conversely, those with symptoms present for less than a week and a cough accompanied by upper respiratory infection symptoms are less likely to benefit.¹⁹

Considering the microbiological findings of acute bronchitis, it is not surprising that antibiotics have limited effectiveness. Antiviral agents, such as neuraminidase inhibitors like oseltamivir and zanamivir, as well as amantadine and rimantadine, are available for treating influenza, which is often associated with acute bronchitis. However, their use in treating acute bronchitis is hindered by their overall weak efficacy against influenza and the

challenges of accurate diagnosis. These agents are not routinely recommended for the treatment of acute bronchitis.

Patients with acute bronchitis primarily seek relief from their symptoms, especially coughing. Albuterol has been studied for its potential benefits in reducing cough duration and severity but -has shown inconsistent results. Ongoing meta-analysis by the Cochrane Collaboration aims to provide further insights. While preparations containing dextromethorphan and codeine, as well as airway humidification, may offer slight improvement in cough symptoms, the available evidence supporting their efficacy is limited. Decongestants may also help alleviate cough triggered by postnasal drip.¹⁹⁻²⁰

BARRIERS TO EVIDENCE-BASED PRACTICE

Patients often request antibiotics as a cure-all, but studies show no link between antibiotic prescriptions and patient satisfaction for respiratory infections. Educating patients about their condition and spending quality time with them correlate with higher satisfaction. Antibiotic prescriptions for acute bronchitis are influenced by clinical factors, despite the lack of differentiation between pneumonia and bronchitis symptoms²¹. This prescribing pattern is concerning given the wealth of information against routine antibiotic use. Physicians are more likely to prescribe antibiotics for cough to younger, white, non-Hispanic patients who may benefit the least. Antibiotic resistance poses risks to individuals and communities, driven by selective pressure from frequent antibiotic use. Studies demonstrate high levels of resistance, and the risk of adverse effects from antibiotics is comparable to the potential benefits. Routine antibiotic treatment for acute bronchitis in adults is not justified based on recent meta-analyses.²²

CONCLUSIONS

Acute bronchitis is a prevalent medical problem commonly encountered in ambulatory care practices. Despite its predominantly viral cause and numerous randomized controlled studies demonstrating no meaningful benefits from antibiotics, over 70% of patients presenting with acute bronchitis still receive antibiotic prescriptions. As a result, there has been an increase in penicillin resistance among bacteria, including *Streptococcus pneumoniae*, prompting calls for a reduction in unnecessary antibiotic use. The diagnosis and management of acute bronchitis remain flawed, even among healthcare providers heavily involved in ambulatory medicine. Obstetricians and gynecologists, who are increasingly involved in primary care, should have a thorough understanding of the causes and evidence-based management of acute bronchitis.

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