**Keywords**: bronchitis vs. pneumonia

**Problem**: According to the NIH, diagnostic errors related to respiratory illnesses are a common cause of preventable harm. Clinicians must perform appropriate tests so that patients receive prompt treatment.

**Solution**: This article highlights the following:

1. Statistics related to diagnostic errors and respiratory conditions
2. The similarities and differences between pneumonia and bronchitis.
3. How appropriate diagnostic testing and diagnoses improve outcomes

# Bronchitis vs. Pneumonia: Diagnostic Errors Causing Harms

*Diagnostic errors are the culprit for the majority of medical errors. According to the National Institute of Health (NIH), diagnostic errors related to respiratory illnesses are a common cause of preventable harm. Symptom overlap, inadequate health history, and varying levels of severity make diagnosing acute respiratory illnesses challenging. Misdiagnosis of respiratory conditions is most common in the pediatric and geriatric populations. In primary care settings, pneumonia and bronchitis are commonly misdiagnosed.*

*The NIH defines a diagnostic error as "the failure to make an accurate and timely explanation of the patient's health problem or to communicate that explanation to the patient." The World Health Organization (WHO) claims that diagnostic errors related to respiratory conditions are a global health priority. So, what are these organizations observing, and how can we change the trend?*

## Key Takeaways

- Diagnostic errors negatively impact approximately 1 million Americans annually.
- Respiratory illnesses are among the top misdiagnosed conditions. Consequently, the WHO claims misdiagnosed respiratory conditions are a global health priority.
- Symptom overlap, insufficient assessments, inconsistent findings, and varying risk stratification make diagnosing acute respiratory illnesses challenging.
- Patients with pneumonia typically have more pronounced symptoms and a high fever. However, elderly patients may present without a fever.
- Careful evaluation and imaging improve recovery time, reduce cost, and lessen antibiotic overuse.

# Diagnostic errors: a global health priority

Approximately 1 million Americans experience harm from a misdiagnosis annually. **Eighty-six percent of these harms result in moderate to severe problems.** Medical errors cost the United States roughly $19.5 billion every year. In a prospective, single-blind study, researchers enrolled 620 pediatric patients. The study aimed to identify the rate of diagnostic errors for acute childhood respiratory conditions. Of these children, medical staff missed 41% of radiologically confirmed consolidation.

Clinical pneumonia presents with mild symptoms and can be diagnosed without radiological imaging. This study showed that clinical pneumonia was diagnosed correctly in 63.9% of patients. Focal pneumonia shows new consolidation or pleural effusion on a chest x-ray. These findings are evident even with limited or no auscultatory concerns. This type of pneumonia was correctly diagnosed 54.8% of the time. Many medical staff find auscultation and assessments difficult in a busy, noisy atmosphere like the emergency department (ED). So, how can medical staff improve these statistics?

# Bronchitis vs. pneumonia

**Bronchitis and pneumonia are two commonly misdiagnosed respiratory conditions.** Bronchitis is inflammation and swelling of the bronchi's lining. Bronchitis is usually caused by a virus and almost always presents after a cold or the flu. Patients typically report having had a runny nose, congestion, or scratchy throat. Over time, the virus spreads to the bronchi, causing airway narrowing.

Pneumonia can be viral, bacterial or fungal. It causes infiltration and inflammation of the alveoli in one or both lungs.

## Symptoms

Bronchitis and pneumonia have similar symptoms. Without proper assessment and imaging, providers can easily misdiagnose these conditions. Symptoms associated with bronchitis and pneumonia are the following:

- Cough
- Discomfort in chest
- Fatigue
- Shortness of breath (SOB) that worsens with physical activity
- Wheezing, especially people with asthma

Bronchitis does not typically cause a fever. However, people with pneumonia usually present with a high fever and chills, more pronounced symptoms, and SOB. **Fever is not always present in older patients.** Respiratory conditions can quickly develop into a medical

emergency for patients advanced in age. That is why physicians need to be alert to this symptom variation.

## Laboratory tests

Providers diagnose bronchitis by ruling out other respiratory conditions. However, clinical **findings and infiltrates on a chest x-ray are sufficient to diagnose pneumonia.** Merck Manual recommends the following when dealing with a possible community-acquired pneumonia:

- Chest x-ray
- Risk Stratification to categorize severity
- Consideration of other conditions when findings are inconsistent

Providers may have a high suspicion of pneumonia, but the chest x-ray does not show an infiltrate. In this situation, performing computed tomography (CT) or a repeat x-ray in 24 to 48 hours is recommended.

Clinicians can perform risk stratification to estimate pneumonia severity. This quantitative scoring system evaluates complete blood count, oxygen saturation, and metabolic profile. Clinicians can utilize the information to direct care and improve outcomes.

When findings are inconsistent, providers should consider other possible conditions like the following:

- Heart failure
- Organizing pneumonia
- Hypersensitivity pneumonitis
- Pulmonary embolism

Pulmonary embolism (PE) is the most severe repercussion of a misdiagnosis in adults. Patients with PE typically present with acute-onset SOB, minimal sputum, no other upper respiratory symptoms, and risk factors associated with thromboembolism.

## Interventions

Bronchitis typically resolves without prescription medication in a healthy patient. Although a cough may linger for a few weeks, patients are normally infection-free after a week. **Bronchitis is a significant cause of antibiotic overuse.** Physicians can recommend pain relievers, expectorants, mucolytics and immune-boosting nutrients to treat bronchitis.

In addition to these over-the-counter interventions, antibiotics are vital in treating pneumonia. Because pathogen identification is timely and challenging, clinicians prescribe an antibiotic regimen based on likely pathogens and condition severity.

## The impact of early recognition

**Early recognition and appropriate diagnosis are essential, especially for pediatric and geriatric patients.** Children have small respiratory airways. A misdiagnosis in a child is frustrating at best and life-threatening at worst. Geriatric patients often have comorbidities and suppressed immune responses. By reducing respiratory misdiagnoses, clinicians can boast these positive outcomes:

- Quicker recovery
- Less physical and emotional strain
- Reduced medical expense
- Decreased overuse of antibiotics

Delayed recognition, diagnosis and treatment puts patients at risk for severe respiratory complications. With thorough evaluation and imaging, everyone benefits.

## Quality care accessible to patients and providers

Quality care depends on conscientious clinicians who carefully consider clinical findings. Respiratory conditions are challenging to diagnose. However, our providers work collaboratively, providing patients with reliable diagnoses and interventions.

Our hospital functions unitedly by supporting and sharpening one another. As a result, you gain access to resources and imaging tools to help make your practice soar. If you are looking for a conscientious group of healthcare providers, we are your partner in care. Click the "Refer" button to get started.

## Resources

“Diagnostic Errors Are Common in Acute Pediatric Respiratory Disease: A Prospective, Single-Blinded Multicenter Diagnostic Accuracy Study in Australian Emergency Departments.” NIH: National Library of Medicine, 2021, Diagnostic Errors Are Common in Acute Pediatric Respiratory Disease: A Prospective, Single-Blinded Multicenter Diagnostic Accuracy Study in Australian Emergency Departments - PMC.

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