Acute bronchitis is a clinical syndrome produced by inflammation of the airway (trachea, bronchi, and bronchioles) of the lung that is characterized by cough, without pneumonia. Ninety percent of cases occur in association with a viral upper respiratory infection (URI), including the influenza virus and are rarely a primary bacterial infection in healthy individuals (10%) and nonsmokers. For this reason, antibiotics are almost never needed. Other causes include; inhalation and irritation from gas, smoke, dust particles, perfumes, or pollution. The disorder affects approximately 5% of adults annually, with a higher incidence observed during the winter and fall than in the summer and spring. In the United States, acute bronchitis is the ninth most common illness among outpatients. Generally, acute bronchitis is self-limiting, with complete healing and full return to normal function typically seen within 10-14 days following symptom onset.

Chronic bronchitis is recurring inflammation and degeneration/hypertrophy of the bronchial tubes that may be associated with an active infection. It is often part of an underlying disease process, such as asthma, recurrent aspiration, cystic fibrosis, or exposure to an airway irritant (allergies). There tends to be more mucous present in chronic bronchitis due to increased production or decreased clearance. The diagnosis of chronic bronchitis is reserved for patients who have cough and sputum production on most days of the month for at least 3 months (90 days) of the year during 2 consecutive years or a productive cough that lasts more than 2 weeks despite medical therapy. When chronic bronchitis occurs with decreased expiratory airflow, it is considered a defining characteristic of chronic obstructive pulmonary disease (COPD).

Subjective Findings and History

Acute:
- Recent or concurrent URI (fatigue, rhinorrhea, pharyngitis)
- Myalgias
- Cough typically persists for more than five days, occasionally up to 3 or more weeks
- Wheezing

Chronic:
- History of dry/productive coughs, asthma, COPD; with exacerbations
- Shortness of breath (SOB)
- Exposure to cigarette smoke or industrial pollution
- Can often be confused with an asthma diagnosis
- Cough and sputum production on most days
Objective Findings

Acute:
- Dry cough becoming productive (phlegm/mucus)
- Retrosternal pain during deep breathing or coughing
- Mild or no fever (unless bacterial or due to influenza when fevers may be higher)
- Signs of URI
- Pharyngitis
- May have audible breath sounds, with scattered and bilateral crackles and wheezes
- No consolidation

Chronic:
- Chronic cough may be intermittently productive
- Usually no fever
- May hear wheezing or crackles, scattered and bilateral
- No consolidation unless infection present

Assessment:
- Full pulmonary evaluation and vital signs
- Perform diagnostic tests in step-wise fashion for outpatient
- AP and lateral chest films indicated with the following indications: abnormal vital signs (pulse >100/min, respiratory rate >24 breaths/minute, or temperature >38º C), or rales or signs of consolidation on chest examination or age over 75 y.o.. CXR is usually generally normal in uncomplicated bronchitis.5,6
- Evaluate children for pertussis regardless of immunization history
- Testing for inhalant/food allergies if indicated
- Culture/gram stain of sputum if fever present or pronounced abnormal lung sounds. Bacterial cultures of expectorated sputum in patients with a negative chest radiograph are not recommended.
- Labs: CBC, sputum sample (culture and sensitivity) (difficult to obtain), procalcitonin to distinguish between bacterial and nonbacterial infection
- Pulmonary function tests may show airflow obstruction that is reversible using bronchodilators

Acute bronchitis should be differentiated from acute inflammation of the small airways – asthma or bronchiolitis, bronchiectasis and acute exacerbation of chronic bronchitis. The differential diagnosis should also include reactions to inhalants, pneumonia, and pleurisy. The differential diagnosis for chronic bronchitis includes: asthma, retained foreign body, COPD, malignancy, and pneumonia.

Plan

Treatment goals:
- Ensure patient is adequately oxygenating
- Reassurance and symptomatic treatment are key
- Management to prevent development of pneumonia or other secondary infection
- Identification and avoidance of known triggers (e.g. tobacco smoke, pollen)
- Proper management of any underlying disease process (asthma, COPD)
- Support immune function
Acute:

- Nutritional support and adequate hydration (to thin mucous)
- Cough syrups for symptomatic relief (especially when it interrupts sleep) (limited positive data)
- Expectorant medicines: botanicals (Mentha piperita, Thymus vulgaris) or OTC: Guaifenesin
- Avoidance of allergens (smoke, pollen), simple sugars, and mucus inducing foods
- Immune supporting supplements (vitamins A, B, C, D, zinc, quercetin
- Cool-mist humidifiers or steam vaporizers
- Glutathione and N-acetyl cysteine (NAC)
- Botanicals for lung tonification, expectoration or cough, anti-infective, analgesia, antipyretic, or anti-inflammatory effects
- Specific Botanicals –
  - EPs 7630 (derived from Pelargonium sidoides roots), in patients outside the strict indication for antibiotics demonstrated reduced bronchitis severity symptom scores in patients treated with EPs 7630, with good overall tolerability.
  - Menthol and other aromatics
- Corticosteroids in persistent coughs.
- In otherwise healthy individuals, the use of antibiotics has not demonstrated any consistent benefit in relieving symptoms or improving the natural history of acute bronchitis.

Chronic:

- Identification and treatment of underlying conditions: emphysema, assess for malignancy, COPD
- Treatment of acute exacerbations as above, with diagnostic evaluation as indicated
- Additional therapies dependent on underlying causative condition
- Consider instituting bronchodilator therapy (e.g. a beta-adrenergic agonist such as albuterol) or inhaled corticosteroids for persistent cough and airway hyperreactivity
- Antibiotics should not be the primary therapy unless a secondary bacterial infection is present
- Consider influenza and pneumococcal vaccinations in patients with chronic bronchitis and underlying conditions
- Acetylcysteine (Fabrol)
- Esberitox N (Schaper & Brummer, Saltzgitter, Germany)- a proprietary extract of Echinacea, Baptisia, and Thuya

Acute and Chronic Herbs:

- Ginseng (shown to improve forced vital capacity, maximum inspiratory pressure, and maximum oxygen consumption during exercise, consistent with increased strength and endurance of respiratory muscles)
- Dark honey

Physical Therapy

- Diathermy
- Postural drainage
• Mustard plaster or other poultices
• Hydrotherapy
• Breathing exercises
• Rest
• Appropriate homeopathic prescription
• Antibiotics if appropriate: with development of secondary bacterial infection

Length of Treatment
• Resolution of acute bronchitis should begin within 48-72 hours, but symptoms can last for several weeks
• Dependent upon cause

Referrals
• Criteria for referral or re-evaluation: high fever, acute episode unresponsiveness to therapy; unable to determine inciting cause; acute respiratory failure or unrelenting pneumonia; chronic infection due to immune deficiency. Patients with chronic bronchitis and established diagnoses of asthma, structural airway disease, or immunodeficiency need careful periodic monitoring to minimize further lung damage and progression to chronic irreversible lung disease.

Resources for Clinicians


Braman SS. Chronic cough due to acute bronchitis: ACCP evidence-based clinical practice guidelines. Chest 2006 Jan;129(1 Suppl):95S-103S.


Resources for Patients

Clinical Pathway Feedback
CHP desires to keep our clinical pathways customarily updated. If you wish to provide additional input, please use the e-mail address listed below and identify which clinical pathway you are referencing. Thank you for taking the time to give us your comments.