

# PEM GUIDE – BRONCHIOLITIS

## INTRODUCTION

Bronchiolitis is an acute viral-induced inflammation of the airways of the lower respiratory tract resulting in airway obstruction. It is the most common lower respiratory tract infection in children under 2 years of age, with a peak age between 2 and 6 months. Reinfection can occur at any age. Each year approximately 12% infants develop bronchiolitis. RSV bronchiolitis is a leading cause of infant hospitalization each year. RSV bronchiolitis can lead to death, especially in infants aged less than 1 year. Respiratory syncytial virus (RSV) causes the majority of cases of bronchiolitis, especially during the winter and early spring months.

ETIOLOGY
Respiratory Syncytial Virus
Parainfluenza
Human metapneumovirus
Influenza
Adenovirus
Rhinovirus
Enterovirus
Herpes Simplex

## CLINICAL FINDINGS

Bronchiolitis usually presents with symptoms of an upper respiratory infection, such as coryza for 1-2 days. These symptoms progress to wheezing, cough and tachypnea. Fever may also be present. The degree of respiratory symptoms can cause poor feeding and lead to dehydration. Respiratory distress can be manifested by significant accessory muscle use, nasal flaring and head bobbing in younger infants. Apnea can occur prior to the development of respiratory symptoms in 20% of hospitalized infants. Infants born premature (< 37 weeks), neonates (< 6 weeks), those with congenital heart disease, or chronic lung disease such as cystic fibrosis, bronchopulmonary dysplasia, congenital pulmonary anomaly, immunocompromise such as immunodeficiency, immunosuppressant therapy and the use of corticosteroids, are at risk for a severe course of bronchiolitis. Severity of disease is associated with longer hospitalization stays, intensive care admission and mechanical ventilation.

Bronchiolitis is a clinical diagnosis based on signs and symptoms from the history and physical examination. There is no diagnostic test for bronchiolitis. Rapid viral testing may be done to identify possible etiologies of bronchiolitis. These have limited usefulness except for epidemiological surveillance, cohorting on inpatient wards to reduce nosocomial spread and perhaps for designating a patient at lower risk for concurrent serious bacterial infection. Chest radiographs are not indicated to diagnose bronchiolitis but can exclude other disease processes that may present with wheezing such as foreign body or congestive heart failure due to congenital heart disease. Other laboratory testing may not diagnose bronchiolitis but can be helpful in detecting co-infection with bacterial pathogens in febrile infants.

The differential diagnosis of bronchiolitis is large. Other disease processes that present with wheezing are asthma, pneumonia, cystic fibrosis and aspirated foreign body. Cyanotic congenital heart disease and congestive heart failure may present with wheezing. Gastrointestinal processes such as reflux or tracheoesophageal fistula can cause bronchospasm or pneumonia. Infections such as *Mycoplasma pneumoniae*, pertussis or *Chlamydia trachomatis* can cause paroxysmal cough and mild wheezing in some infants. Congenital rings, webs or pulmonary sequestrations can present similarly. Certain poisonings or toxins, such as organophosphates, can lead to pulmonary edema with wheezing as a presenting clinical sign.

## MANAGEMENT

There remains considerable controversy over the management of bronchiolitis. Historically, bronchiolitis is a self-limited illness, requiring only supportive care such as adequate oxygenation and hydration until the disease abates. Beta-agonists, bronchodilators, corticosteroids, antivirals and immunoglobulins have been studied in infants with bronchiolitis. There may be some suggestion for a benefit from nebulized epinephrine but larger well-designed studies are warranted to evaluate epinephrine in the treatment of bronchiolitis. Based on the literature, the use of nebulized bronchodilators, such as albuterol, does not alter clinical presentation or hospitalization rates. There is no data to support the use of steroids in bronchiolitis. There is controversy whether oral steroids, especially dexamethasone, may be of benefit early in the course of bronchiolitis. Ribavirin is currently not recommended due to conflicting reports in the literature. RSV intravenous immunoglobulin was not found to alter hospital courses of infants hospitalized with bronchiolitis. Intramuscular monoclonal antibody, palivizumab, is indicated as a preventative measure in high risk populations such as premature infants.

INDICATIONS FOR ADMISSION
Hypoxia
Signs of Dehydration
Poor Feeding
Altered Mental Status
Respiratory Distress
RR > 60/min
Accessory Muscle Use
Nasal Flaring
Head Bobbing
Unreliable caregiver
High Risk of Severe Disease
Prematurity
Congenital Heart Disease
Immunodeficiency
Chronic Lung Disease
Age < 6 weeks