

# Bronchiolitis: Clinical Spectrum, Risk Factors, and Evidence-Based Management.

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## Introduction

Bronchiolitis is a common respiratory illness predominantly affecting infants and young children, characterized by inflammation and obstruction of the small airways (bronchioles). It is most commonly caused by viral infections, with respiratory syncytial virus (RSV) being the leading etiological agent. Bronchiolitis typically presents with symptoms of upper respiratory tract infection, followed by wheezing, cough, and respiratory distress, which can range from mild to severe [1].

Despite its frequent occurrence, bronchiolitis remains a significant cause of hospitalization and healthcare utilization in infants worldwide, particularly during the winter months when viral respiratory infections are prevalent. The burden of bronchiolitis extends beyond the acute illness, as affected infants may experience recurrent wheezing and asthma-like symptoms in later childhood [2].

The clinical spectrum of bronchiolitis varies widely, ranging from mild, self-limiting disease managed at home to severe cases requiring hospitalization and respiratory support. Infants at higher risk of severe bronchiolitis include premature infants, those with underlying cardiopulmonary conditions, and immunocompromised individuals [3].

Understanding the risk factors associated with severe bronchiolitis is essential for identifying high-risk infants and implementing preventive measures. While viral etiology is the primary risk factor, other factors such as young age, prematurity, exposure to tobacco smoke, and crowded living conditions also contribute to disease severity [4].

Evidence-based management of bronchiolitis focuses on supportive care, including hydration, oxygen supplementation, and monitoring for respiratory distress. Despite the widespread use of bronchodilators and corticosteroids, their efficacy in improving outcomes remains controversial, and guidelines recommend against routine use in the management of bronchiolitis [5].

In recent years, novel therapeutic approaches such as hypertonic saline and nebulized epinephrine have gained attention for their potential benefits in reducing hospital length of stay and severity of symptoms in select cases. Additionally, preventive strategies such as palivizumab prophylaxis for high-risk infants and vaccination against RSV hold promise for reducing the burden of severe bronchiolitis [6].

This review aims to provide a comprehensive overview of bronchiolitis, including its clinical spectrum, risk factors for severe disease, and evidence-based management strategies. By synthesizing current knowledge and emerging research findings, we aim to guide healthcare providers in delivering optimal care to infants with bronchiolitis and reducing the associated morbidity and healthcare burden [7].

## Risk factor

**Age:** Infants younger than 6 months old are at increased risk of developing severe bronchiolitis due to their immature immune systems and narrower airways, which can lead to more significant airway obstruction [8].

**Prematurity:** Premature infants, especially those born before 32 weeks of gestation, have underdeveloped lungs and weaker immune systems, making them more susceptible to severe bronchiolitis and its complications [9].

**Viral Etiology:** Respiratory syncytial virus (RSV) is the most common cause of bronchiolitis and is associated with more severe disease. Other viruses such as rhinovirus, influenza, and human metapneumovirus can also cause bronchiolitis, with varying degrees of severity [10].

## Conclusion

Bronchiolitis represents a significant respiratory illness affecting infants and young children worldwide. It is characterized by inflammation and obstruction of the small airways, primarily caused by viral infections, with respiratory syncytial virus (RSV) being the most common etiological agent. Throughout this review, we have explored the clinical spectrum, risk factors, and evidence-based management strategies for bronchiolitis.

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