

# HOSPITAL PHYSICIAN®

## INFECTIOUS DISEASES BOARD REVIEW MANUAL

### STATEMENT OF EDITORIAL PURPOSE

The *Hospital Physician Infectious Diseases Board Review Manual* is a study guide for fellows and practicing physicians preparing for board examinations in infectious diseases. Each manual reviews a topic essential to current practice in the subspecialty of infectious diseases.

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## Bronchiolitis; Acute Infectious Diarrhea

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## Bronchiolitis

Diana R. Quintero, MD, and William M. Gershan, MD

### INTRODUCTION

Bronchiolitis is a common condition that affects 80% of the pediatric population in the United States younger than 12 months of age. Of affected children, 123,000 (2%–3%) will require hospitalization.<sup>1</sup> The most common etiology for bronchiolitis is respiratory syncytial virus (RSV) infection.<sup>2</sup> The virus has a worldwide distribution and infects almost all children by age 2 years. Children at high risk for developing complications and severe disease include premature infants; babies with history of chronic lung disease, immunodeficiencies, or congenital heart disease; infants with neurologic diseases; and healthy babies younger than 6 weeks.<sup>3,4</sup> Exposure to postnatal maternal smoking has been associated with increased severity.<sup>5</sup> The mortality resulting from RSV in the late 1990s was 2.0 per 100,000 live births in the United States,<sup>6</sup> whereas in the United Kingdom it was 1.82 per 100,000 in the year 2000.<sup>7</sup>

### CLINICAL PRESENTATION

Typical findings in children with bronchiolitis include coryza, nasal obstruction with or without rhinorrhea, fever, wheezing, and cough.<sup>8</sup> However, there are no standardized criteria for making a diagnosis. In a review of 65 studies by Bordley et al,<sup>9</sup> most identified wheezing and tachypnea as the prominent diagnostic features. Mulholland et al<sup>10</sup> found that crackles and cyanosis correlate more with severity of disease than does respiratory rate, indicating that findings suggestive of bronchiolitis may not be as evident as thought. Auscultatory findings are variable and may include fine inspiratory crackles, expiratory wheeze, and prolonged expiration. Caution needs to be taken, as reliability of auscultation may be inconsistent among observers.<sup>11</sup>

Patients with RSV bronchiolitis tend to have the worst symptoms on day 3; symptoms may last for 7 to 10 days.<sup>12</sup> Hypoxia may be present for several weeks. In very young infants, prematures, and low-birth weight babies, bronchiolitis may present with apneic episodes.

### DIAGNOSIS

In most cases, bronchiolitis is a clinical diagnosis and no further investigation is necessary.<sup>13,14</sup> Most children with bronchiolitis present with mild symptoms and are managed as outpatients with no routine diagnostic testing. However, children who develop significant shortness of breath may require continuous observation in the hospital. There is no consensus on when to admit children, and the decision is usually made in the emergency department.

Chest radiographs are not needed to make the diagnosis and their use has not been shown to improve outcomes. They often yield nonspecific findings, including hyperinflation and areas of atelectasis. Atelectasis may be difficult to distinguish from a bacterial consolidation and may be seen in approximately 25% of patients with bronchiolitis.<sup>15</sup> Despite this, chest radiographs are done in 61% of emergency department visits in the United States for suspected bronchiolitis. A survey done by Christakis et al<sup>16</sup> revealed varied use of chest radiographs for diagnosis of bronchiolitis across 30 large hospitals. The test was associated with a longer length of stay as well as a more frequent use of antibiotics. In South Africa, Swingler et al<sup>17</sup> reviewed outcomes in a randomized study of children aged 2 to 59 months presenting with the World Health Organization definition of pneumonia who were randomly assigned to have a chest radiograph done or not. Even though bronchiolitis was the most common diagnosis in both groups, those who had a chest radiograph done were more frequently diagnosed with pneumonia and treated with antibiotics than those who did not have a chest radiograph.

Rapid viral tests are available in the United States. Direct immunofluorescence and enzyme immunoassays are commonly used in most hospitals, with a sensitivity of 80% to 90%. The use of these tests has helped to decrease the use of antibiotics.<sup>16,18</sup> RSV is found in 70% of patients with bronchiolitis, although other viral pathogens may be found.<sup>2</sup> Coexistence of more than 1 virus causing symptoms has been described. Human metapneumovirus has been reported as a cause of infection