Children's Hospital of Pittsburgh
Guidelines for Clinical Effectiveness

Bronchiolitis Guideline
Narrative

Bronchiolitis is an acute infection of the lower respiratory tract that results in inflammation and edema of the small airways (bronchioles). The usual cause is a respiratory virus, the most common of which is respiratory syncytial virus (RSV). An identical clinical syndrome can be caused by parainfluenza, influenza and adenoviruses. Typically, bronchiolitis in infants is a self-limited disease; the natural history of the illness is not dramatically altered by specific therapies. The median duration of illness for children < 24 months with bronchiolitis is 12 days; after 21 days approximately 18% will remain ill, and after 28 days 9% will remain ill.[1] Most infants with bronchiolitis recover without sequelae; however, approximately 10-15% will have wheezing episodes after age five.[2] Hospitalization rates for RSV in U.S. infants < 1 year of age have been increasing over the last decade. The average duration of hospitalization is 3-7 days.

Several studies of the use of clinical guidelines for the management of bronchiolitis in infants have shown a reduction in unnecessary resource utilization with a streamlining of medical care and no untoward effects.[3-5] This document provides a practical, evidence-based approach to the diagnosis and management of acute bronchiolitis in infants < 1 year of age.

This guideline is intended for infants < 1 year of age presenting with their first episode of wheezing (with or without a family history of wheezing) usually in the context of an upper respiratory infection (nasal discharge and nasal congestion) acquired from a toddler-age sibling or attendance at day care (or a comparable group setting). Children excluded from this guideline are patients with:

- Cystic fibrosis
- Bronchopulmonary dysplasia or chronic lung disease
- Congenital heart disease
- Immunodeficienies

1. General — The basic management of typical bronchiolitis is anchored in the provision of therapies that assure that the patient is clinically stable, well oxygenated and well hydrated. The main benefits of hospitalization of infants with acute bronchiolitis are the careful monitoring of clinical status, maintenance of a patent airway (through positioning, suctioning and mucus clearance), maintenance of adequate hydration and parental education. Before assessing the infant, it is beneficial to carefully suction out the nose. Saline nose drops may be used to facilitate (nasal suctioning) the cleaning process. Often nasal obstruction is a major contributor to the level of distress.

2. Clinical Assessment — Bronchiolitis is a clinical diagnosis. There are a wide range of clinical symptoms and severity from a mild URI to respiratory failure. Most infants will have a preceding URI or rhinorrhea and signs of respiratory illness that may include: wheezing,

retractions, shortness of breath, low O_2 saturation, tachypnea, color change and nasal flaring. Infants will often be dehydrated because the nasal congestion keeps them from feeding well. Admission to the hospital is usually based on hypoxemia or dehydration or both.

3. Laboratory and Radiologic Studies such RSV swab, chest X-rays, cultures and arterial blood gases to determine RSV status or to rule out serious bacterial infection are not generally helpful and may result in increased rates of unnecessary admission, further testing and unnecessary therapies.[6-8]

The routine confirmation of RSV by lab testing is not recommended unless the infant presents with apnea or has illness suggestive of sepsis (i.e., toxic appearance, profound lethargy, high fever > 39º). In these cases a specific diagnosis may reduce the need for antibiotic therapy. In general, knowing whether the illness is caused by RSV or parainfluenza does not alter management.[7]

The routine performance of blood, urine or CSF cultures is not recommended unless the patient presents with apnea (before the onset of respiratory symptoms) or an illness suggestive of sepsis (i.e., toxic appearance, profound lethargy, high fever > 39º). The only common secondary bacterial infection in children with bronchiolitis is acute otitis media.[7, 9]

Chest X-rays are not routinely recommended. Bronchiolitis may be accompanied by patches of RSV pneumonia or areas of atelectasis from plugging of the bronchioles. Abnormal xrays are not necessarily an indication for antibiotics. Secondary bacterial pneumonias are extremely rare.[1, 6]

4. Medications — Oxygen therapy is required when the saturation is consistently < 91%. Bronchodilator therapy is not prescribed routinely. Two meta-analyses and several randomized controlled trials have not shown dramatic effects on clinical scores or hospitalization rates from therapy with nebulized albuterol.[10-12] The major pathogenesis of wheezing is inflammation and edema rather than bronchospasm. However, because 10-15% of patients may respond to bronchodilators, a trial of nebulized racemic epinephrine may be considered. It may reduce mucosal edema through its vasoconstrictive properties. Nebulized racemic epinephrine has been shown to reduce hospitalization rates in one trial and has shown improvement in pulmonary physiology and clinical scores in several others.[13-16] Because deterioration has been associated with inhalation therapies, if between 15-30 minutes after a trial of inhalation therapy, there is no significant improvement in clinical appearance, it is recommended that the therapy not be continued nor be repeated.

Antihistamines, oral decongestants and nasal vasoconstrictor are not recommended for routine therapy.

Steroid therapy given as inhalations, intravenously, orally or intramuscularly is not recommended due to a lack of effect on clinical status or absolute length of stay. [3, 7, 17]

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