Augusta University
Policy for the Management of Acute Bronchiolitis on General Inpatient Pediatric Services at Children’s Hospital of Georgia

PURPOSE

The purpose of this policy is to enhance and standardize the care of patients with bronchiolitis as well as delineate the processes related to diagnosis, evaluation, treatment, and monitoring.

BACKGROUND

- **Definition**
  - Bronchiolitis is a self-limited viral infection of the bronchioles, marked by edema without smooth muscle contraction.
- **Peak:** January and February (Winter Months)
- **Pediatric patients at risk**
  - Bronchiolitis occurs almost exclusively in children aged 1-23 months.
  - Infants normally have a high airway resistance and, as such, are prone to experience significant complications of the disease process (e.g., respiratory distress and apnea).
  - Children can get bronchiolitis more than once.
- **Most common viruses implicated**
  - Respiratory syncytial virus (RSV)
  - Rhinovirus
  - Influenza virus
- **Symptoms**
  - Initial: Copious rhinitis and cough
  - Progression:
    - Tachypnea
    - Wheezing
    - Rales
    - Use of accessory muscles (i.e., retractions)
    - Nasal flaring
  - Severity often peaks at days 3-5 of illness.
- **Duration**
  - Illness can last anywhere from 5 days to three weeks.
  - Cough may persist for multiple months.
CLINICAL DIAGNOSIS OF BRONCHIOLITIS

- **Determinants of disease severity:**
  - Work of breathing (e.g., one area of retraction versus multiple areas, grunting, nasal flaring, etc.)
  - Respiratory rate (RR) counted on exam for one complete minute
    - Mild: 50-60 breaths per minute
    - Moderate: 60-70 breaths per minute
    - Severe: >70 breaths per minute
  - Pulse oximetry completed intermittently (i.e., spot check) and before and after suctioning/treatment.
    - Normal: >94% on room air while awake
    - Mild: 90-94% on room air while awake
    - Moderate/severe: <90% on room air while awake
  - Color change
    - Normal versus mottled versus cyanotic
  - Feeding
    - Feeding normally versus feeding decreased > 85% of normal age-appropriate amount of formula/milk

INITIAL EVALUATION AND MANAGEMENT OF BRONCHIOLITIS

- **Assessment of risk factors for severe disease should be done when making decisions about evaluation and management of children with bronchiolitis**
  - Age <12 weeks
  - A history of prematurity (i.e., gestational age of less than 38 weeks at birth)
  - Underlying cardiopulmonary or respiratory disease
  - Immunodeficiency

- **Radiographic or laboratory studies should not be obtained routinely**
  - Chest x-ray, CBC, CRP/ESR, blood culture (unless febrile, refer to fever guidelines), and RPP (respiratory pathogen panel) not necessary for diagnosis or severity determination
  - RPP may be required upon admission
    - Used in PICU for contact precautions.
    - May be used on general floor admission for epidemiologic purposes.

- **Inclusion criteria for treatment**
  - Children less than 24 months old, diagnosis of bronchiolitis, first episode of bronchiolitis, birth greater than 37 weeks gestation, no congenital comorbidities, no PICU hospital stay.
  - Children less than 24 months of age with rhinorrhea and/or preceding upper respiratory illness who present with signs of respiratory distress.
• **Exclusion criteria for treatment**
  - Birth less than 37 weeks gestation, congenital heart disease, congenital anatomical malformations, congenital neurologic disease, age > 24 months, hospital stay in PICU at any point, known history of asthma, history of cardiopulmonary disease, prior hospitalization for bronchiolitis, known immunodeficiency, toxic appearance, need for PICU care, age less than 1 month, suspicion of foreign body aspiration.
  - Children presenting with bronchiolitis and a toxic appearance may be better served by evaluation and treatment for sepsis and/or meningitis.

• Patients who meet inclusion criteria and who do not meet exclusion criteria will be ordered to enter the Bronchiolitis Protocol upon admission to the hospital. Assessment intervals and anticipated interventions are determined upon initial assessment by the respiratory therapist (RT). This assessment is assigned a numeric value based on the severity of symptoms exhibited by the infant. This number is the Clinical Bronchiolitis Score (CBS).

• **Determination of the clinical bronchiolitis score (CBS):**
  - Clinical scores are intended to establish trends and to determine success or failure of a therapy based on these trends. Evaluation of trends may be helpful in determining frequency and effectiveness of treatments and, potentially, readiness for discharge.
  - CBS can be obtained and documented by both respiratory therapists and nurses. Since nurses typically assess patients more frequently than respiratory therapists, nurses will play an integral part in determining the success or failure of the interventions provided by the healthcare team.
  - Respiratory therapists will document the CBS on bronchiolitis flowsheet with each assessment.
<table>
<thead>
<tr>
<th>CBS</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signs/Symptom</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
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<tr>
<td>Respiratory rate (breaths/min)</td>
<td>0-6 m/o: 40-50</td>
<td>0-6 m/o: 50-60</td>
<td>0-6 m/o: &gt; 70</td>
</tr>
<tr>
<td></td>
<td>6-12 m/o: 30-40</td>
<td>6-12 m/o: 50-60</td>
<td>6-12 m/o: &gt; 60</td>
</tr>
<tr>
<td></td>
<td>12-24 m/o: 30-40</td>
<td>12-24 m/o: 40-50</td>
<td>12-24 m/o: &gt; 50</td>
</tr>
<tr>
<td>Work of breathing</td>
<td>Unlabored, Mild intercostal retractions</td>
<td>Moderate intercostal &amp; substernal retractions, moderate grunting, nasal flaring</td>
<td>Severe intercostal &amp; substernal retractions, marked nasal flaring &amp; grunting</td>
</tr>
<tr>
<td>Breath sounds/air exchange</td>
<td>Minimal wheezes/rales, bilateral air entry</td>
<td>Diffuse wheezes/rales, decreased air entry, prolonged expiratory phase</td>
<td>Diminished breath sounds and severely impaired air entry</td>
</tr>
<tr>
<td>Oxygen saturation on room air, while awake</td>
<td>&gt; 92%</td>
<td>90-92%</td>
<td>&lt; 90%</td>
</tr>
<tr>
<td>Secretions</td>
<td>Rhinorrhea</td>
<td>Frequent cough, gag, increased secretions</td>
<td>Inability to clear secretions</td>
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**RESPIRATORY THERAPY (RT) STANDING ORDERS**

- RT will assess the patients’ CBS upon admission, after nasal suctioning and 30-60 minutes after any respiratory intervention.
- For CBS > 3, RT will assess the patient q4hr or more frequently.
- For CBS ≤ 3, RT will assess the patient q8hr and as requested by nurse or physician. Supportive care and assistance with maintaining airway patency are all that is required. No medications are necessary at this time.
- Educate caregivers on proper suctioning and airway maintenance techniques on admission and as requested.
- Educate caregivers on proper handling of respiratory secretions to decrease likelihood of transmission to others.
- Respiratory therapists will document the CBS on bronchiolitis flowsheet with each assessment or q4hr and PRN for desaturation, nasal congestion or wheezing.

**NURSING STANDING ORDERS**

- Monitor oxygen saturation (SPO₂) on spot-checks with vital sign measurement, every 4 hours.
- All patients less than 3 months of age require continuous pulse oximetry and cardiorespiratory monitoring.
- Assess airway patency q4hr and PRN for desaturation, nasal congestion or wheezing.
• Suction nares with bulb suction device or wall suction device prior to each feeding or q4hr and PRN for desaturation or nasal congestion.
• Allow patient to feed ad lib if RR is in moderate or mild ranges on CBS table.
  o If RR is in severe range consistently, must be NPO until RR decreases to at least moderate range.
• Educate caregivers on proper suctioning and airway maintenance techniques on admission and PRN for parental request.
• Educate caregivers on proper handling of respiratory secretions to decrease likelihood of transmission to others.
• Nurse for each patient will document CBS at each assessment.
• Nurse for each patient will document parental input after education to ascertain parents’ level of confidence caring for child.

MEDICATIONS

• Nasal saline and suction on admission and throughout hospital stay as needed for nasal congestion/rhinorrhea.
  o Assess for improvement in work of breathing, respiratory rate, etc.
• Do not routinely use hypertonic saline, nebulized albuterol, or nebulized racemic epinephrine.
• Oxygen supplementation (via low-flow nasal cannula)
  o May be used if patient not responding to nasal saline/suction + jet nebulizer treatment, pending respiratory therapist’s suggestion.

CRITERIA FOR TRANSFER TO A HIGHER LEVEL OF CARE

• Consider transfer to PICU if:
  o In severe category or moderate category with minimal response to multiple medical therapies.
  o CBS score of > 6 on any one assessment.
  o CBS score of 2 in at least 2 individual categories.

DISCHARGE CRITERIA (ALL MUST BE MET):

• Patient is able to maintain adequate PO intake and level of hydration.
• Respiratory rate is < mild level described for age level in CBS chart.
• Infant is on room air or at baseline oxygen requirement and oxygen saturation on spot-checks are > 90% for at least 2 vital checks consecutively q4hr.
• Caregiver education regarding bulb suctioning.
• When indicated, home health care and durable medical equipment arrangements are completed.
REFERENCES


