Acute Bronchiolitis

Reference: 312
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Purpose
This is a guide for the admission criteria, in patient management and discharge criteria for children with acute bronchiolitis

Intended Audience
Nursing and medical staff dealing with children with bronchiolitis
1. Introduction
Bronchiolitis is a common cause of hospital attendance and admission in the first year of life.

2. Intended Audience
All medical staff and medical staff are likely to look after children with bronchiolitis.

3. Guideline Content
   A. Aetiology
      - Respiratory syncytial virus (RSV) is the pathogen in 75% of cases but there are multiple other viral causes including parainfluenza, influenza and adenoviruses.
      - It is a seasonal condition peaking from November to February
      - 1/3 of all infants develop bronchiolitis in their first year and 3% of infants under a year are admitted to hospital with bronchiolitis.
      - It affects children under the age of 2 with a peak between 3 and 6 months of age.

   B. Clinical features
      - Acute lower respiratory tract symptoms generally develop 2-3 days after a coryzal illness.
      - This can lead to feeding difficulties, increasing respiratory distress, hypoxia and respiratory failure and exhaustion.
      - After the onset of bronchiolitic symptoms respiratory distress may worsen for the first 72 hours before showing signs of improvement, usually peaking between day 3 and 5 of the illness.
C. Examination

- Fever: Often low grade. If >39 °C other causes should be considered (See 1.9 Febrile child). It is unusual for infants to appear “toxic” and other causes should be sought and treated.
- Rhinorrhea and cough: Often the first symptoms to appear
- Increased respiratory rate (refer to PEWS chart to assess rate for age)
- Increased work of breathing – Intercostal, subcostal and rarely sternal recession. Head bobbing and grunting may be signs of more significant work of breathing.
- Crackles and wheeze: Fine inspiratory crackles in all lung fields are common. High pitched wheeze also commonly heard. Both can appear independently of each other
- Apnoea: More common in very young, low birth weight and preterm infants.
- Hypoxia and exhaustion: in more severe cases. Routine assessment of oxygen saturation is mandatory

D. Differential Diagnosis

- Pulmonary causes of bronchiolitis like symptoms include asthma/viral induced wheeze, pneumonia, congenital lung disease, cystic fibrosis or inhaled foreign body.
- Non-pulmonary causes include congenital heart disease, myocarditis, sepsis or severe metabolic acidosis

E. Risk Factors for severe disease

- Significant co morbidities
  - Prematurity: less than 35 weeks gestation
  - Congenital heart disease (account for 9-12% of bronchiolitis admissions)
  - Chronic lung disease of Prematurity

- Social factors
  - Breast feeding reduces the risk for hospitalization and should be supported
  - Parental smoking - increases the risk of hospitalization. Parents should be informed and offered information on smoking cessation.

F. Assessment and criteria for considering admission

- Severe disease will need admission
  - poor feeding (<50% of usual fluid intake in preceding 24 hours)
  - lethargy
  - history of apnoea
  - respiratory rate >70/min
  - presence of nasal flaring and/or grunting
  - severe chest wall recession
  - cyanosis (SaO2 less than 90%) in air
  - Toxic or uncertainty about the diagnosis
• Moderate disease - require a period of assessment
  – Risk factors for severe disease
  – Respiratory rate 50-70/min
  – SaO2 90-95% in air
  – Mild to moderate respiratory distress
  – Parental anxiety/social concerns

• Mild disease – fit for discharge with “safety netting”
  – Minimal respiratory distress
  – Respiratory rate within normal range for age
  – SaO2 > 95%
  – Feeding >50% of requirements
  – No risk factors and >3/12 age
  – Parents happy for discharge and no significant social concerns

• Indications for high dependency/intensive care unit consultation include
  – Failure to maintain oxygen saturations of greater than 90% with increasing oxygen therapy
  – Deteriorating respiratory status with signs of increasing respiratory distress and/or exhaustion
  – Recurrent apnoea

See Bronchiolitis - Guidelines for Severe Cases and Admission to PICU

G. Investigations

• Bronchiolitis is a clinical diagnosis.
• Pulse oximetry (see above for criteria for considering admission)
• Blood Gases are not indicated unless signs of increasing respiratory failure
• CXR- should not be performed in those with typical disease. Consider if persistent fever >39°C or doubt about diagnosis
• Rapid testing for RSV- only for infants requiring admission. This is to aid cohort nursing. PCR for respiratory viruses is automatically performed subsequently.
• Blood and urine culture - not routinely required but consider in febrile infants less than 2 months of age or if concerns about sepsis.
• FBC and CRP- are not indicated
• U+E- is not indicated in typical bronchiolitis but should be considered in severe disease and where IV fluids are utilised (note risk of SIADH).

H. Management

There is no evidence for the use of the following drugs and they should not be used for simple bronchiolitis

• Oral/inhaled corticosteroids, bronchodilators (β2 agonists and anticholinergics),
antibiotics, ribavirin, hypertonic saline, leukotrine receptor antagonists and nebulised adrenaline.

Supportive treatment
- Oxygen to maintain SaO2 above 90% either by nasal prongs or facemask
- Fluid support- NG feeding in those taking less than 50% of requirements, or if significant respiratory distress and consider IV fluids in those with severe/worsening disease. Restriction of fluids to 2/3 maintenance (100ml/kg if oral/NG and 66ml/kg if IV) is mandatory as there is a risk of SIADH and hyponatraemia.
- Nasal saline drops/suction may be helpful if infants desaturate during feeding
- Physiotherapy is not indicated
- High flow Oxygen therapy (guideline: 1847)
- CPAP- discussion with PICU if apnoeas, severe respiratory distress/rapidly worsening disease or triggering PEWS.
- Keep patient handling to a minimum and review patients regularly

I. Infection control
- All admitted infants with a clinical diagnosis of bronchiolitis are admitted to an untested bay before being cohort nursed as RSV positive or non RSV bronchiolitis bay, or in a cubicle
- Bronchiolitis is spread by droplets, it is highly contagious and aprons should be worn whenever in a bronchiolitis area. Hands should be washed or cleaned with alcohol gel as per normal hand hygiene guidance. Stethoscopes should also be cleaned after patient usage.

J. Symptom duration and discharge criteria
- The median duration of illness is 12 days
- 10% will still have a cough at 3 weeks
- Ciliary damage persists for 13-17 weeks
- Discharge criteria
  - Oxygen saturation
    - 8 hours off supplemental oxygen including a sleep (this does not have to be overnight)
    - Saturation >90% in room air
  - Feeding- ideally taking 75% of recommended daily intake

K. Information for parents at discharge
- Notify them of “red flag symptoms” and how to professional seek help
- Worsening work of breathing (increased recession, grunting)
- Fluid intake less than 50% of normal or no wet nappies for over 12 hours
- Apnoea or central cyanosis
- Exhaustion (including lack of responsiveness)
• Avoidance of exposure to cigarette smoke

4. References
   NICE(NG9)- Bronchiolitis in Children 2015, SIGN 91 Bronchiolitis in Children 2006