

Guidelines for the management of bronchiolitis in children

Assessment

1. **A B C** – identify severe disease (table 2)
2. History & Examination
 - Coryza
 - Cough
 - Poor feeding
 - Pyrexia
 - Respiratory distress
 - Apnoea
 - Hyperinflation
 - Widespread inspiratory crackles & expiratory wheeze

Investigations

The diagnosis is usually a clinical one and investigations are not generally needed to confirm it. Similarly, the majority of tests DO NOT contribute to immediate management; the patient's clinical status will guide this. Consider the following if the child is to be admitted (Table 1):

- 1) Capillary blood gas if saturations <92% in $FiO_2 > 0.5$ or severe respiratory distress clinically.
- 2) NPA for RSV immunofluorescence (IF) and other respiratory viral pathogens if admitted. Consideration can be given to cohorting the infants, but it should be born in mind that a negative RSV IF does *not* mean the child is not shedding either RSV or other viruses.
- 3) A CXR only if concern as to the diagnosis, complications are suspected or FiO_2 exceeds 0.5. The CXR in bronchiolitis will show signs of hyperinflation, peribronchial thickening and often patchy collapse and consolidation.
- 4) Bloods do not contribute to diagnosis but should be considered in the clinical context, for example: UEs in context of clinically significant dehydration where IV fluids are planned.
- 5) Blood cultures if features of sepsis (*i.e. a diagnosis other than bronchiolitis is suspected*).

Table 1.

Admission Criteria

- Apnoea
- Requiring oxygen to maintain $SpO_2 > 92\%$
- Requiring support with hydration/nutrition

Lower Threshold

- Pre-existing lung disease, congenital heart disease, neuromuscular weakness, immune-incompetence
- Age < 6 weeks (corrected)
- Prematurity
- Family anxiety
- Reattendance

Table 2. Severe Disease - Bristol Paediatric Early Warning (PEW) system ⇒ Senior/PICU review early if concerns

- ❖ $SpO_2 < 93\%$ in any amount oxygen
- ❖ $SpO_2 < 76\%$ in any amount oxygen (CHD)
- ❖ Persistent tachypnoea
 - $RR > 70$ under 6 months old, $RR > 60$ in 6 to 12 months old, $RR > 40$ in 1 to 5 years old
- ❖ Apnoea +/- bradycardia
- ❖ Severe respiratory distress
- ❖ Any child whose condition is worrying

Ref : Tibballs J, Intensive Crit Care Nurs. 2006 Dec;22(6):315-6, Haines C. Promoting care for acutely ill children-development and evaluation of a paediatric early warning tool. Intensive Crit Care Nurs. 2006 Apr;22(2):73-81

Treatment

- 1) Oxygen to maintain saturations in the target range 92-96%, preferably via a humidified circuit:
 - a. Nasal cannula up to 2 l.p.m. flow
 - b. Head box for higher requirements

Remember the importance of hand-washing

Once in the convalescent phase oxygen supplementation needs to be actively weaned every four hours to maintain the target saturation range.

2) Respiratory support with CPAP or very rarely ventilation is managed on PICU.

The VapoTherm® (a device capable of delivering high flow of up to 8 l.p.m. of humidified oxygen) is hopefully to undergo a safety and feasibility study but is available for rescue therapy if thought appropriate by the consultant in charge of the child's care.

3) Nutrition and hydration

- a. Smaller and more frequent feeds either by breast or bottle-feed, calculated to a 2nd to 3rd hourly amount, which should be specified in the notes.
- b. Nasogastric / Orogastric feeds are an effective and safe method if used appropriately. It is indicated in those who are unable to take sufficient oral intake to maintain or correct hydration status. A referral to the dietician should be made.
- c. Intravenous fluids indicated if child is vomiting or has severe respiratory distress, which may be worsened by enteral feeds.
 - i. 0.45% saline (as **minimum** concentration) and 5% dextrose with 10mmol KCl per 500mls
 - ii. 75% 'maintenance' requirements.
 - iii. Check UEs within 24hours of commencing, in particular to monitor for hyponatraemic fluid overload.

4) Drug therapy

In normal, immunocompetent patients with bronchiolitis a large number of trials have not found drug therapy to be of significant benefit.

Do not routinely prescribe bronchodilators, antibiotics or steroids.

- a. Bronchodilators including nebulised epinephrine – systematic reviews (complicated by the use of different agents and different outcomes) show only modest benefit in short term clinical scores, which are not regarded as clinically significant; but no improvement in admission rates, oxygen need or length of stay.

A trial of 6 actuations of a salbutamol MDI, administered via spacer may be tried on the advice of senior medical staff but if no clinical improvement ensues in 20 minutes it should not be continued.

- b. Antibiotics – controlled trials show not indicated routinely.
- c. Steroids (inhaled or oral) – systematic review, no evidence of benefit acutely or in preventing future wheezing.
- d. Ribavirin – not routinely recommended.
- e. RSV immunoglobulin – not routinely recommended.

5) Physiotherapy – no evidence to support the use of chest physiotherapy

Discharge criteria

- ✓ Stable and improving
- ✓ SpO₂ maintained >92% in air for period of 8-12 hours including a period of sleep
- ✓ Feeding adequately (more than 2/3 normal feeds)
- ✓ Family confident in their ability to manage

Discharge advice & education:

- Refrain from smoking
- Symptoms may persist for 10-14 days
- Re-infection may occur
- Increased risk of wheezing after bronchiolitis

Selected References

Meates-Dennis M., AoDC Educ Pract Ed 2005; 90: ep81-ep86
Smyth R. L., Lancet 2006; 368: 312-321
SIGN guideline 91, Bronchiolitis in Children, Nov 2006

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