Children's Hospitals and Clinics of Minnesota

Practice Update

The Center for Professional Development & Practice

Jan. 2016

New Bronchiolitis Guideline

Changing Care with National Standards

The American Academy of Pediatrics (AAP) released evidence-based guidelines for the care of patients with bronchiolitis in 2014. These include:

Recommended	Not Recommended
o Diagnose clinically o Give oxygen if hypoxic o Give fluids if dehydrated o Suction nose if snotty o Ask about smoking o Wash your hands! Possible: o Hypertonic saline if inpatient o Intermittent pulse-ox	o **Antibiotics** o **CXR** o **Albuterol (not even trial)** o **R. Epi** o **Steroids** o **Chest physiotherapy** o **Viral testing**

How does our practice compare to other children's hospitals?

Data from 1/1/15 to 3/31/15, looking at Children's patients hospitalized with bronchiolitis, were compared to data from 41 other children's hospitals. While all the hospitals have opportunities to better meet the guidelines, data shows that here we use more viral testing, systemic steroids (30% for Children's vs. 10% for other hospitals), and albuterol (67% for Children's vs. 39% for other hospitals).

What changes are being made?

A new guideline and order set will be implemented in late Jan/Feb (date to be finalized) to better meet these guidelines. Data will be collected on patients with uncomplicated bronchiolitis < 2 years of age in ED, SPS, ICC and med surg. Data will be collected on the use of bronchodilators, systemic steroids, viral testing, chest x-rays, antibiotics, use of the WARM respiratory score (see below), compliance for screening for smoking in the home, and ED throughput.

Key changes for ED

- Separate suction from other therapies (i.e. bronchodilators)
  - Will allow clinicians to determine if improvement is from suctioning or medication
- Decrease use of bronchodilators
  - Decrease use in wheezing without other asthma risk factors (wheezing is an expected finding in bronchiolitis)
  - May institute a formal "albuterol trial" with pre & post therapy WARM scoring (see below)
  - Documentation by RN/RT of objective response
- Less use of CXR, viral testing
- Screen caregivers for smoking & provide info on cessation (education handout) if screen + (any exposure, even "only outside") – **more to come on this process**

Key changes for inpatient units

- WARM score pre & post suctioning and bronchodilator
  - If no improvement in score, may not continue albuterol use
  - WARM (see below) to be used pre & post interventions. Continue PEWS with VS and changes in patient condition.
- Change to intermittent (spot check with vitals) pulse-ox once off O2
  - Including while sleeping
- Suctioning preference is per bulb suction/nasal aspirator (vs. deep NP suctioning)
- Screen caregivers for smoking & provide info on cessation (education handout) if screen + (any exposure, even "only outside") – **more to come on this process**
- Less viral testing
  - Rarely changes management, no longer required for 'cohorting'

See the ED and inpatient guideline algorithms.

What is WARM scoring?

The WARM score looks at four elements that help to measure the effectiveness of interventions for bronchiolitis, such as suctioning and nebs. WARM stands for **W**heeze, **A**ir exchange, **R**espiratory rate and **M**uscle use (retraction).

A WARM score should be documented pre & post interventions (e.g. nebs, suctioning) and prn for increased work of breathing. The WARM score will appear in the EMR with the Jan. release. Please see the **screenshots** for details.

Notes: For "Air exchange" the tool asks for assessment on "Left Front", "Right Front", "Left Back" and "Right Back". Decrease in any chest area, either side front or back, should be noted.

Use respiratory rates in tool for scoring tachypnea, not standard EMR norms.

ED Guideline Bronchiolitis (age <2 yo)

Patients EXCLUDED from this guideline:
- Cardiac disease
- Chronic lung disease
- Critically ill
- Neurologic impairment
- Immunodeficiency
- Dysgenetic/syndromic

Aim: To improve compliance with AAP published guidelines for the management of bronchiolitis in infants.

Disclaimer: This treatment pathway is designed for general use with most patients. It should never replace clinical judgement, and practice may need to be adapted to meet the unique needs of a specific patient.

1. Initial assessment
- Resp score: score-nasopharyngeal suction-score
- Contact/droplet precautions
- Start O2 for sustained sats < 90
- IVF/NG if poor PO, high *WOB, dehydrated

The following are NOT routinely recommended:
- **Viral testing
- 3% saline
- Antibiotics
- Chest Physiotherapy
- Corticosteroids
- CXR
- Racemic epinephrine

Consider one-time albuterol trial if:
- Persistent wheezing and/or increased *WOB after suctioning
- Age > 6 mo & personal history of wheezing or eczema
- Age > 6 mo & immediate family history of asthma

Albuterol trial: score-albuterol-score

Post albuterol score decreased by >1 and/or clinical improvement per provider? (if unclear response consider retrial with score-albuterol-score)

Yes / No

"Albuterol responsive"
- Consider albuterol prn

"Non-responder"
- No further bronchodilators
- Continue on bronchiolitis pathway

2. Any of the following present after step 1?
- High *WOB
- O2 sats < 90
- IVF/NG
- Barrier to outpatient management
- History of apnea at home
- Clinical bronchiolitis, ≤ 5 kg *AND* either < 6 wks *OR* BW ≤ 2 kg

No / Yes

Discharge home (follow-up with PCP)
- consider albuterol for home use only if "responder"
- Complete smoking screen/ counseling

Consider HFNC if:
- Persistently high *WOB after suctioning & after albuterol (if indicated)
- Hypoxia not responding to regular nasal cannula
- Elevated pCO2

Any of the following present?
- Multiple apnea episodes or required interventions
- Persistently high *WOB on HFNC
- Concern for impending respiratory deterioration

No / Yes

Admit to med-surg/observation

Consider admitting to PICU

Once the decision has been made to admit the patient please discuss additional tests/treatments with admitting provider

Consider CXR if:
- High *WOB or O2 < 90 despite HFNC
- High fever late in illness
- Hepatomegaly or concern for cardiac disease

**Consider RSV testing for infants <28 day with fever

***High WOB =** RR > 60, retractions, poor air movement (WARM score)

Last reviewed 12/18/15

Inpatient Guideline Bronchiolitis (age <2 yo)

Initial management:
- Contact/droplet precautions
- Assess q2h by RN/RT until stable/improving O2 needs and WOB X2 assessments
- IVF/NG if insufficient PO and/or unsafe to feed due to high WOB
- Continuous pulse-ox if on O2 support
- Provide O2 support for sustained sats < 90
- Consider 3% saline nebs per provider
- Consider albuterol trial if previously responsive

Stable/improving?

Yes

- Wean O2 to keep sats ≥ 90
- Intermittent spot checks (including while asleep) when not on O2 support
- Discontinue IVF if taking good PO
- Bulb suction prn
- Begin discharge planning and education

Consider discharge if all completed:
- *Off O2 support unless going home on O2
- No apnea > 24 hours
- Taking adequate PO
- Discharge teaching (parent comfortable with suctioning)
- Smoking screen/counseling

No

- Increase respiratory support
- Consider CXR, CBG, albuterol
- Consult with PICU if continues to worsen

The following are NOT routinely recommended:
- Albuterol
- Antibiotics
- Chest Physiotherapy
- Corticosteroids
- CXR
- Racemic epinephrine
- Viral testing

Disclaimer: This treatment pathway is designed for general use with most patients. It should never replace clinical judgement, and practice may need to be adapted to meet the unique needs of a specific patient.

***Consider discharge on home oxygen if the following criteria are met:**
- Patient requires < 1 L/min 100% oxygen to maintain O2 sats ≥ 90%
- WARM score consistently ≤ 4 for 24 hours
- Hydration supportable by oral intake
- Private transportation, family phone, & outpatient follow-up guaranteed. Contact pulmonary as early as possible to arrange for home oxygen and follow-up.

Patients EXCLUDED from this guideline:
- Cardiac disease
- Chronic lung disease
- Critically ill
- Neurologic impairment
- Immunodeficiency
- Dysgenetic/syndromic