

JANUARY 21, 2021

# Bronchiolitis in the Urgent Care

Evidence-based management and when  
to expand your diagnosis

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# Conflict of Interest Disclosure

-I have nothing to disclose



**2019** “By nature, bronchiolitis is a self-limited disease with a relatively good prognosis...The main treatment plan for bronchiolitis is supportive care.”

**1965** “Since acute viral bronchiolitis is thus a self-limited disease of relatively good prognosis, the principle of *primum non nocere* should temper frustrated anxiety to do something—anything—to relieve severe dyspnea...[the infant’s] energies should not be frittered away by the annoyance of unnecessary or futile medications and procedure. **Rest should be treasured.**”

# Scope of Bronchiolitis

## Numbers (US)

RSV alone accounts for 2 million outpatient visits a year (CDC)

Hospitalizations are decreasing, but still over 100k/year, 17% of all inpatient stays for age

## Cost

~\$4,000 per admission, \$1.7 billion/year

Increased utilization of resources increases LOS and other resources

## Variation In Practice

From 2007-2012, 50% bronchodilators, 30% antibiotics, 50% CXR, 30% CBC, 40% viral testing

# Learning Objectives

- Discuss evidence-based diagnosis of bronchiolitis
- Describe evidence-based interventions for bronchiolitis in the urgent care
- Determine disposition for bronchiolitis patients
- Identify uncommon conditions that present like bronchiolitis

# Diagnosis

- **“Clinicians should diagnose bronchiolitis and assess disease severity on the basis of history and physical examination.”**
- Signs and symptoms: “rhinitis, tachypnea, wheezing, cough, crackles, use of accessory muscles, and/or nasal flaring in infants”

# Diagnosis

Age < 2 years

Excludes those with recurrent wheezing

Increased odds of asthma in kids <3 years with (frequent) wheezing PLUS

- 1) Diagnosis of asthma or atopic dermatitis OR
- 2) Two of following: allergic rhinitis, eosinophilia, wheezing without illness

# Diagnosis

## Chest X-ray

- Ordering radiographs makes providers more likely to start antibiotics regardless of results, increases length of stay, adds cost
- CXR may be beneficial in children requiring ventilation or if not following expected course



# Diagnosis

## Viral testing

- At CHCO, patients with viral testing 60% more likely to get CXR, 48% longer stay (2014-2015)
- Febrile infants with RSV are at lower risk of SBI, but still have significant rates of UTI
- Infants on palivizumab with RSV may be able to stop injections

## SARS CoV-2 ????????

# Treatment

## Supportive Care

- Suction
- Antipyretics
- Hydration
- Oxygen

# Treatment

## Suction

- Prior to anything else
  - Nasal suctioning can increase pulse oximetry by almost 4%
- At least every 4 hours
  - For hospitalized patients, lapses in suctioning increased LOS by a day
- Nasal vs. deep?
  - One study showed correlation between deep suction and increased LOS

## Antipyretics

- “Comfort care” decreased HR and RR by 4 points each

# Treatment

Hydration (NG or IV)

- NG requires fewer attempts
- No increase in adverse events
- Parents and providers prefer
- IF using IV, use isotonic fluids

Oxygen—to maintain sats>90%

# Treatment

**Albuterol, Epinephrine, Hypertonic, oh my!**



# Treatment

## Bronchodilators

- ~~Short-term symptomatic improvement~~
- ~~Spectrum with asthma~~
- ~~Perception of “low risk”~~
- No change in sx resolution, O2 sat, hospitalization
- Use risk stratification, suction
- Risks of increased hospitalization, diagnosis of asthma, decrease in symptom care

# Treatment

## Racemic epinephrine

- Possibly some short-term benefit, but no change in hospitalization or LOS

## Steroids

- 1 study showed combination of epi/steroids reduced hospitalizations

## Hypertonic saline

- Not beneficial in outpatient setting or when LOS is less than 3 days

# Treatment

## HHFNC

- Often used as bridge between standard LFNC O2 and CPAP
- Safety is pretty well-established; no significant change in LOS, duration of O2, intubation
- Cost-effective to use a step-wise approach
- Need more research





# Disposition

## Risk factors for severe disease

- Age <6-12 weeks
- Prematurity (<35 weeks)
- BPD, CHD, immunodeficiency
- Dehydration
- Respiratory rate > 70, moderate retractions, grunting, apnea
- O<sub>2</sub><90%

# Disposition

Oxygen Level—How low is too low?

In the ED, low SpO<sub>2</sub> was associated with increased hospitalization and costs without change in unscheduled subsequent visits, use of O<sub>2</sub> in ED, or duration of ED stay

During hospitalization, supplemental O<sub>2</sub> above 90% was as clinically effective as 94% and decreased duration of stay and time on O<sub>2</sub>

Intermittent pulse oximetry is acceptable

# Disposition

Home oxygen—

- Low rate of return/admission
- Reduces hospitalization
- High caregiver satisfaction
  - ~90% of families/providers

	Study Design	Subjects N	Admission N (%)	Adverse Events N (%)
Bajaj, et al.	Prospective RCT	37	1 (3%)	0
Halstead, et al.	Retrospective	649	38 (6%)	0
Flett, et al.	Retrospective	234	22 (9%)	0
Freeman, et al.	Prospective Obs	225	11 (5%)	1 (0.4%)

# PEDIATRIC VIRAL BRONCHIOLITIS

ALGORITHM: Emergency

Triage/Bedside RN: Vital signs, Suction as needed beginning persistent respiratory distress

December 2020  
Review: December 2025

For questions concerning this pathway, contact:

[bronchiolitis@seattlechildrens.org](mailto:bronchiolitis@seattlechildrens.org)

If you are a patient with questions contact your medical provider, [Medical Disclaimer](#)



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## Bronchiolitis Pathway v12.0: ED Management

Related Pathway  
[Bronchiolitis Inpatient Treatment](#)

Goals

### SUPPORTIVE CARE

- Suction
- Hydration, nutrition
- Supplemental oxygen
- Pulse oximetry
- Fever Management

[Guidance for Oral or Feeding in Bronchiolitis Patients](#)



### Inclusion Criteria

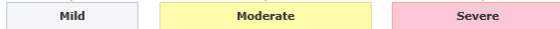
- Age <2 years
- Prematurity and/or age <12 weeks may be included, but expect a more severe course of illness
- Viral upper respiratory symptoms & lower respiratory symptoms that may include: increased work of breathing, cough, feeding difficulty, tachypnea, wheeze, fever

### Exclusion Criteria

- Cardiac disease requiring baseline medication
- Anatomic airway defects
- Neuromuscular disease

### Therapies Not routinely recommended

- Albuterol
- Racemic Epinephrine
- Corticosteroids
- Chest Physiotherapy
- Montelukast



Consider Suction bulb Suction Bulb Suction Bulb

# Clinical Practice Guidelines

Multiple studies have shown effectiveness of clinical practice guidelines, provider education/pledge in reducing unnecessary interventions

Multiple studies have shown decreased costs of care without change in outcomes (~\$100k/year or more, ~\$200/patient)

# Considering Alternate Diagnoses

- Respiratory
- Cardiac
- Metabolic/Other

# Other Respiratory Dx

- Croup (inspiratory wheeze, stridor, less secretions)
- Pertussis (apnea, unvaccinated, whoop)
- Asthma (history wheezing, atopy)
- Bacterial pneumonia (fever, PCT, unvaccinated)



# Cardiac Dx

## Myocarditis

### Presenting signs/symptoms

Fever (30-60%), tachypnea/dyspnea (25-52%), tachycardia (>50%),  
GI/feeding (13-45%), lethargy/hypoperfusion (20%)

### EKG non-specific but usually abnormal

nonspecific ST-T wave changes, ST-segment elevation, low voltage in the limb leads, and AV conduction delays

## Cardiomyopathy

Tachycardia/tachypnea out of proportion to other viral symptoms, HSM, decreased perfusion, feeding difficulty

# Other Dx

## Inborn errors of metabolism

- Often present with lethargy, seizures, poor feeding, vomiting, respiratory distress
- Hepatomegaly, dysmorphic features, abnormal tone

## Sepsis

- Especially in neonatal period
- Decreased perfusion, fevers

## Foreign Body

- Focused exam
- Lack of improvement with supportive care

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# Questions

Which of the following is NOT a result of getting CXR in bronchiolitis patients?

- A. Increased costs of care
- B. Increased use of antibiotics
- C. Improved outcomes
- D. Increased length of stay

True or false? Albuterol should be trialed if the patient has wheezing on exam.

Which of the following exam findings suggests a diagnosis besides bronchiolitis?

- A. Tachypnea
- B. Tachycardia
- C. Poor feeding
- D. Hepatomegaly