DRIVING CHANGE 2023
THE URGENT CARE CONVENTION

The Pediatric Urgent Care Conference
PUCC @ UCA

Bronchiolitis

Management & Frequent Mismanagement

URGENT CARE ASSOCIATION®

COLLEGE OF URGENT CARE MEDICINE

Financial Disclosures

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- I have no financial disclosures.

- I have no actual or potential conflict of interest in relation to this program/presentation

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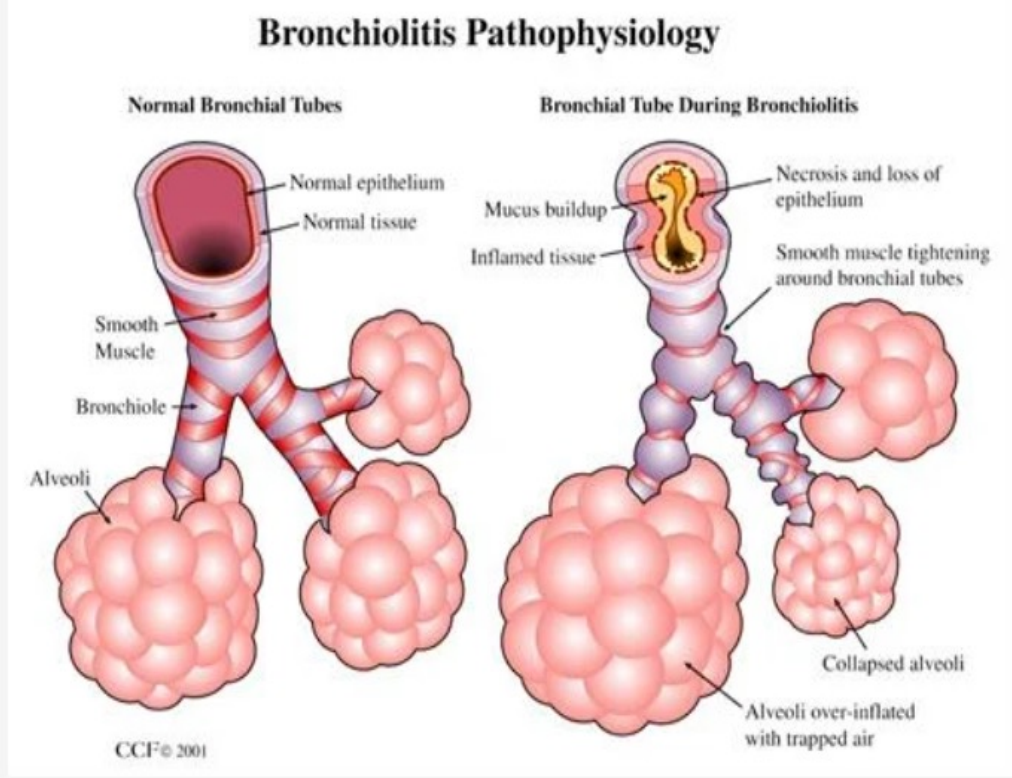
Bronchiolitis

- **Bronchiolitis** (course variable and dynamic)
  - Acute inflammation
  - Edema, and necrosis of epithelial cells lining small airways
  - Increased mucus production
- **Signs and symptoms**
  - Rhinitis and Cough →
    - Can progress to tachypnea, wheezing, rales, and retractions



Question

Question 1: RSV infection causes lifelong immunity.

A) True

B) False

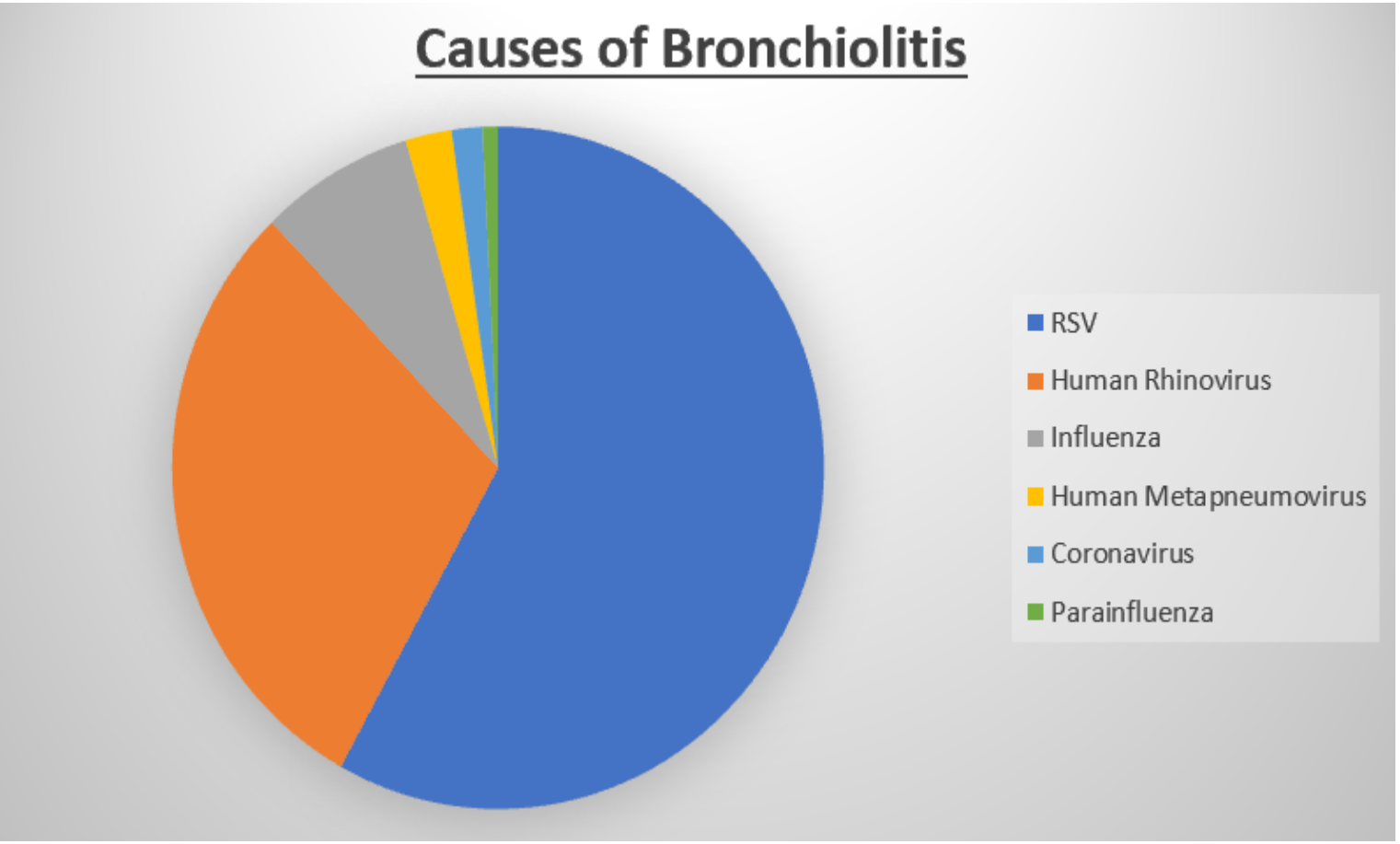
Question

Question 2: RSV causes >90% of Bronchiolitis

A) True

B) False

Causes of Bronchiolitis



Causes of Bronchiolitis	
RSV	76%
Human Rhinovirus	39%
Influenza	10%
Human Metapneumovirus	3%
Coronavirus	2%
Parainfluenza	1%

RSV

By age 2, 90% of patients had RSV

40% of first-time infections have lower airway disease

No lifelong immunity

Management

- **Diagnosis** (Clinical)
  - Based on History and Physical
    - Rule out other respiratory disease processes
- **Severity**
  - Severity Index
- **Disease Progression**
  - Risk factors for severe disease
    - Age less than 12 weeks
    - History of prior wheezing
    - History of prematurity
    - History of cardio and or pulmonary disease
    - History Immunodeficiency

Severity Score	0 points	1 point	2 points	3 points
Resp Rate				
<3 months		<60	61-69	≥70
3-12 months		<50	51-59	≥60
>12 months		<40	41-44	≥45
Auscultation	No wheezing	End expiratory wheeze	Full expiratory wheeze	Insp/Exp wheeze
Retractions	None	Subcostal or intercostal	2 of following: subcostal, intercostal, substernal, nasal flaring	3 of following: subcostal, intercostal, substernal, nasal flaring
Dyspnea	Normal feeding, vocalizations, activity	Difficulty feeding, ↓ vocalizations, or agitated	2 of following: difficulty feeding, ↓feeding or agitated	Stops feeding, no vocalization, drowsy

Management: Urgent Care Setting

- Radiographic or Laboratory studies
- Albuterol, Racemic Epinephrine, Nebulized Hypertonic Saline, Corticosteroids
- Continuous Pulse Oximetry
- Antibiotics
- Nasal Gastric, or Intravenous Fluid if RR,<60-70 and good oral intake
- Oxygen if SpO2 >90

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Management

- **Bulb/Acorn/Parent assisted suction**
  - At regular intervals
  - Temporary relief of nasal congestion or upper airway obstruction
- **Hydration/Nutrition**
  - Decreased 24 hour intake associated with pulse oximetry value <95%
- **Fever Management**
- **Cool-Mist Humidifer**
- **Transferring**
  - HFNC humidified heated oxygen
    - Improves respiratory effort
    - Continuous positive airway pressure may decrease WOB and need for intubation
    - Risk of pneumothorax

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- **Laboratory Test:**
  - PCR test:
    - Not recommended
    - May detect prolonged viral shedding in rhinovirus
    - RSV does usually associate with active disease
    - Individual patient level: test has no benefit
  - WBC Count:
    - Abnormal WBC ≠ Predict concurrent serious bacterial infection
- **Chest Radiography:** (25% Xray + Atelectasis)
  - Abnormal CXR ? risk of disease severity
  - Abnormal CXR = Antibiotic treatment yet no difference in outcomes

RVP Panels

- Cohorting
- Community surveillance

CXR

- Severe disease with possible ICU
- Airway complication (pneumothorax)

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- **Albuterol**
  - No consistent benefit.
  - Clinical scores may improve but no improvement in disease resolution
  - **Risk**
    - Tachycardia and Tremors
  - Trials of albuterol ≠ recommended in new guidelines
  - BUT a small group with reversal airway obstruction may benefit for albuterol due to improved smooth muscle constriction
  - Consider in patients:
    - History of wheezing, hx of strong response to albuterol
  - Maybe helpful in rapidly deteriorating patients

Evidence Quality: B
Recommendation Strength: Strong

Length of stay:
No improvement
Need for Hospitalization:
No improvement

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- **Epinephrine**
  - Study:
    - Shows slight, non statistically significant benefit in need for hospitalization when given with steroids
  - May improve symptoms in an acute clinical setting
    - Not a readily available home medication
  - Albuterol = Epinephrine=Placebo
  - Consider in patients as recue medication in rapidly deteriorating patient

Evidence Quality: B
Recommendation Strength: Strong

Length of stay:
No improvement or increased if fixed schedule
Need for Hospitalization:
No improvement
Revisit Rates:
No improvement

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- **Hypertonic Saline**
  - Mechanism of Action: increase mucociliary clearance
  - May help mild to moderate bronchiolitis after 24 hours of use in prolonged stays
  - Study:
    - Show it may decrease length of stay 1-3 days
      - In severe and prolonged length of stay 5-6 days
  - United States Average length of stay for Bronchiolitis: 2.5 days
    - Not a readily available home medication
  - Consider in patient as recue medication in rapidly deteriorating patient

Evidence Quality: B
Recommendation Strength: Moderate

Length of stay:
Improved if prolonged
Need for Hospitalization:
No improvement

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- **Corticosteroids**
  - No clinical benefit if given alone
  - Study
    - may show slight non statistically significant benefit
      - If given with racemic epinephrine due to a synergistic effect ?
  - **Risk**:
    - Corticosteroids may prolong viral shedding in bronchiolitis
  - Due to onset of timing not helpful in rapidly deteriorating patient

Evidence Quality: A
Recommendation Strength: Strong

Length of stay:
No improvement
Need for Hospitalization:
No improvement

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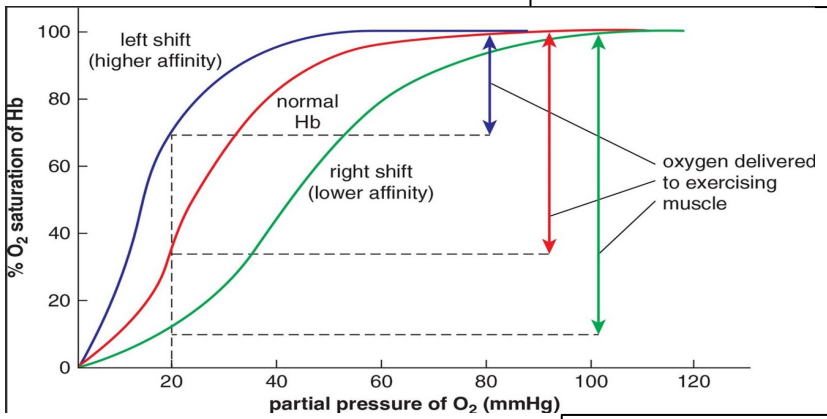
- **Oxygen**
  - If Oxyhemoglobin saturation >89% → risk of hypoxemia **(minimal)**
  - Apnea:
    - Large study, No apnea noted if :
      - Low risk patients
      - Age >1 month of age
      - >48 weeks postconceptional age for preterm
      - No prior apneic episode
  - Viral cause ≠ risk of apnea
  - Helpful in rapidly deteriorating patients

Evidence Quality: D
Recommendation Strength: Weak



Length of stay:
Increased
Need for Hospitalization:
Increased

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- **Continuous Pulse Oximetry**
  - Helpful for patients that are noted to have normal physical exam
  - Pulse oximetry is no a good proxy for resp distress in bronchiolitis
  - **Risk**
    - Alarm Fatigue (increased in-hospital M&M, dec sleeping)
    - Delayed weaning of oxygen
  - Pulse Oximetry between 76-90% is highly unreliable
  - CO2 better monitor of respiratory drive
  - Transient Hypoxemia at age 2week to 6 month <90 is common.
  - Outpatient setting pulse oximetry <95% with 1+ retractions may predict disease progression or need for close follow up
  - Helpful in rapidly deteriorating patients

Evidence Quality: C
Recommendation Strength: Weak

Length of stay:
Increased
Need for Hospitalization:
Increased
ICU Admission
Increased
Mechanical Ventilation
Increased

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Question

Question 3: Deep suctioning should be your mainstay of treatment for mild bronchiolitis.

A) True

B) False

Question

Question 4: Deep suctioning has been shown to _____ on LOS and need for admission.

A) Decrease

B) Increase

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- **Deep Nasal suctioning**
- Routine deep nasal suctioning may not be beneficial
- Temporary relief of nasal congestion or upper airway obstruction
- **Risk**:
  - Nasal edema may develop in repeated suctioning
- For severe respiratory distress not improved with olive(acorn)tip nasal suction

Evidence Quality: B
Recommendation Strength: Moderate

Length of stay:
Increased
Need for Hospitalization:
Increased

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- **Antibiotics**
- **Usually given because:**
  - Febrile, young age, and concern for secondary infections
- **Febrile infant**
  - No identifiable source 7% risk of bacteremia
  - Identifiable viral source <1% risk of bacteremia
- **Bronchiolitis patients with fever**
  - SBI workup from 30-90 days no bacteremia and 1 % UTI
  - ~50% of bronchiolitis patient show signs of AOM

Evidence Quality: B
Recommendation Strength: Strong

Length of stay:
Increased
Need for Hospitalization:
Increased

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- **Hydration IV or NG**
- Hydration is important associated SpO2<95% with patient that have <50% of normal intake in last 24 hours
- Hydration needed for RR >60-70
- Oral feeding may increase retractions, nasal flaring, and prolonged expiratory wheezing and may increase risk for aspiration
- Hypotonic fluid associated with hyponatremia
  - Despite possible increased production of ADH
- **Risk**
  - Infection, hyponatremia, aspiration, or overhydration
  - If needed, no difference in NG vs IV in safety or family satisfaction
- May be helpful in rapidly deteriorating patient

Evidence Quality: X
Recommendation Strength: Strong

Length of stay:
No improvement
Need for Hospitalization in ICU:
No improvement

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Clinical Guideline

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SPECIALIZED URGENT CARE PM Pediatrics
Care when you need us.™

Bronchiolitis version 2.21.22

Quick Reference Guide for Medical Providers

DIAGNOSIS

Diagnosis is CLINICAL. Consider in child <2y.o. presenting with cough, symptoms of viral URI AND symptoms of LRT infection, including:

- Tachypnea
- Wheezing/Rales/rhonchi
- Increased work of breathing

Consider diagnosis of asthma (and asthma pathway treatment) if >1y.o OR h/o of previous wheeze

Rapid Viral testing is **NOT** routinely recommended in the outpatient setting. *Consider* rapid RSV testing if bronchiolitis symptoms and:

- Age < 1 m.o. (risk of apnea)
- Age 1-3 m.o. with fever (may impact decision to LP)
- Persistent fever*, diagnostic uncertainty (send-out recommended)

X-Ray is **NOT** routinely recommended. *Consider* X-Ray if:

- Severe presentation (significant hypoxia or moderate/severe respiratory distress)
- Asymmetric breath sounds

*Note – a positive RSV test does not eliminate the risk of serious bacterial infection (e.g.UTI)

TREATMENT

2014 AAP Guidelines *DO NOT* recommend use of albuterol, racemic epinephrine, or steroids in the majority of cases

May *consider* Albuterol trial if:

- Significant respiratory distress OR
- Worsening respiratory distress WITH any of the below:
  - Age >1 y.o.
  - History of recurrent wheezing/atopy
  - Wheezing without rales/rhonchi
  - Strong family hx of asthma
- Consider Albuterol effective if improvement in severity score by >2 points

- Consider racemic epinephrine ONLY if severe respiratory distress
- Deep suction should be avoided unless severe symptoms. Bulb suction for mild or moderate symptoms as needed

NOTES

Consider transfer to ED if:

- Persistent moderate to severe respiratory distress OR score >7
- Hypoxia (<92%) when awake
- Poor PO intake
- Age < 1 m.o. or history of prematurity (risk of apnea)

Note: RSV test not recommended prior to hospital transfer

No proven benefit of saline or hypertonic saline neb treatments – do not use in any circumstances

Severity Score	0 points	1 point	2 points	3 points
Resp Rate				
<3 months		<60	61-69	≥70
3-12 months		<50	51-59	≥60
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Auscultation	No wheezing	End expiratory wheeze	Full expiratory wheeze	Insp/Exp wheeze
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Disposition

- **Discharge**
  - Oxygen saturation > 90% awake
  - Adequate oral intake
  - Mild/moderate work of breathing
  - Reliable caretaker
  - Able to obtain follow-up care
- **Transfer**
  - Respiratory distress or clinical deterioration
  - Poor oral intake
  - Hypoxemia (<92% or <90%) when awake
  - Consider Transfer
    - Age <1 m.o. or Postconceptional age <48 weeks

How you can drive change:

- Takeaway: Less is more! Most interventions had no clinical impact.
- Takeaway: Remember, objective evaluations are important (Severity Scores)!
- Takeaway: When in distress you can try the kitchen sink.

Session Evaluation

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- Your feedback is valuable, take a moment to complete the survey for this session.
- To claim CME, you must complete a separate survey available after the convention.