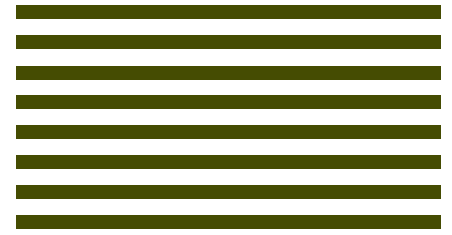


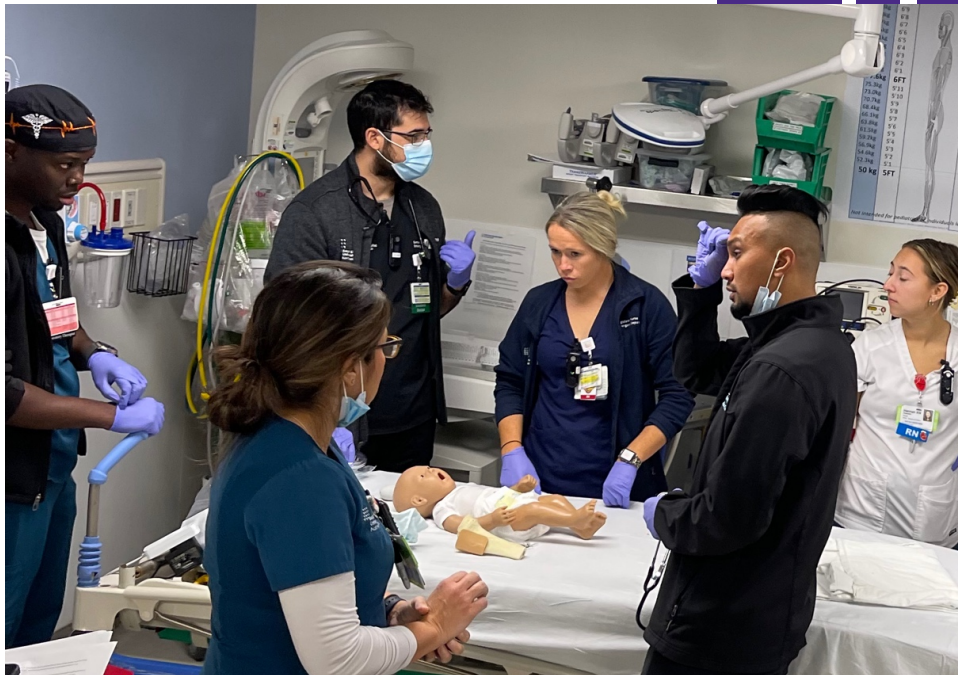
SOUTH SHORE SIMFLUENCER



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WINTER IS COMING...

And that means
bronchiolitis is around
the corner!

WHAT IS THE RESPIRATORY SEVERITY SCORE?

How do we use this?

OPTIONS FOR RESPIRATORY SUPPORT IN PEDIATRIC PATIENTS

Our respiratory therapists, resident physicians, and registered nurses came together to resuscitate a simulated case of an infant with bronchiolitis

WELCOME TO THE SSUH SIMFLUENCER!

Welcome to the 2nd issue of The SSUH Simfluencer! This monthly newsletter will serve as an educational tool for all faculty, staff, and learners in the emergency department (ED) at South Shore University Hospital. We will go over lessons learned, latent safety threats, and review best practices for managing critically ill patients in the ED.

This month, we discuss takeaways from our most recent pediatric simulation, review bronchiolitis, respiratory severity score, and options for respiratory support in a child with respiratory distress.

Once again, I would like to thank each person who participated in these simulations. Your enthusiasm has made this initiative a success!

What is bronchiolitis?

- URI affecting infants and young children
- Clinical diagnosis
- Often caused by RSV

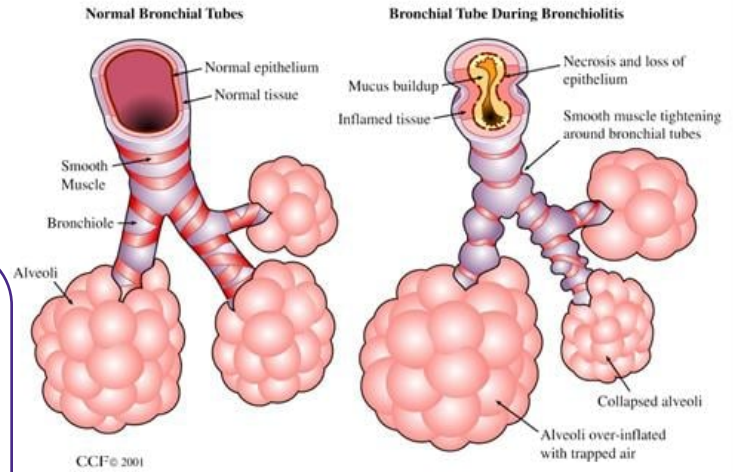
What are the symptoms and signs of bronchiolitis?

- Cough, fever, congestion
- Apnea in neonates
- Exam findings: Retractions, tachypnea, wheezing, crackles, increased work of breathing
- Symptoms usually peak at day 4-5
- **Respiratory severity score:**
 - Used to assess effectiveness of treatments.
 - Is NOT used to predict disease progression!

Treatment

- **"Score- treat-score:"** Obtain RSS before and after interventions
- **Helpful:** Fever control, hydration, suctioning, and supportive care
- **Not helpful:** Albuterol, racemic epinephrine, steroids, antibiotics, nebulized saline

Bronchiolitis Pathophysiology



*Bronchiolitis Respiratory Severity Score (B-RSS)		Score-Treat-Score		
		1 point	2 points	3 points
RESPIRATORY RATE (Bronchiolitis)	0-2 m.	= 70	71 - 80	> 80
	2-6 m.	= 60	61 - 70	> 70
	6-12 m.	= 50	51 - 60	> 60
	1-2 y.	= 40	41 - 44	= 45
Supplemental O2 required to maintain SpO2 = 90% (Bronchiolitis)		Room air	21% - 45% FiO2	> 45% FiO2
RETRACTIONS		None OR Intercostal	Intercostal and Substernal	Intercostal, Substernal, and Supraclavicular
AUSCULTATION		No crackles/wheezing, clear to mild end expiratory crackles/wheeze, scattered crackles/wheeze	Coarse crackles/wheez throughout expiratory phase	Inspiratory and expiratory coarse crackles/wheeze or little to no audible air movement

*Tally score from each category to get the total RSS. Min RSS = 4, Max = 12.

B-RSS should be used before and after a nebulized respiratory treatment. The B-RSS is not a validated tool to predict disease progression and should not be used for admission and discharge decisions.

HOW CAN I SUPPORT MY PEDIATRIC PATIENT'S BREATHING?



High flow nasal cannula (Vapotherm)



BIPAP/CPAP

- Helps to oxygenate
- Maintain SpO₂ >90%
- Does not help with ventilation

- Helps improve work of breathing
- 2L/kg/min for <10kg, +0.5L/kg/min for every kg over 10kg
- Flow rates >6L/min generate PEEP of 2-5cm H₂O

Nasal cannula/
Non-rebreather

High flow nasal cannula

Endotracheal intubation

CPAP/BIPAP

•Indications:

- Apnea,
- Persistent or worsening respiratory distress despite NIPPV
- Hemodynamic instability
- Loss of protective reflexes/AMS
- Useful tools:
 - Pediatric airway box
 - Code cart
 - Broselow tape
 - Green bins in trauma closet

- Nasal devices are best tolerated in infants
- BIPAP used for greater respiratory support
- EPEP 5, IPAP 8-10
- Adjust FiO₂ to maintain SpO₂>90%

TAKEAWAYS

- Use your available resources!
 - Broselow
 - Pediatric code calculator
 - PediSTAT
- Bronchiolitis is a CLINICAL diagnosis
- Treatment largely consists of SUPPORTIVE CARE
 - Suction
 - Fever control
 - Hydration
 - Respiratory support
- Review your RSS!!!
 - "Score-Treat-Score"
- Review your options for respiratory support in pediatrics
 - High flow nasal cannula
 - CPAP/BIPAP
- All airway equipment should be in TRAUMA CLOSET in **GREEN BINS**



Date of approval 9/23/2022

1 Typical Presentation:
Viral URI that progresses to cause increased work of breathing, tachypnea, coarse rales, wheezing, and fever.

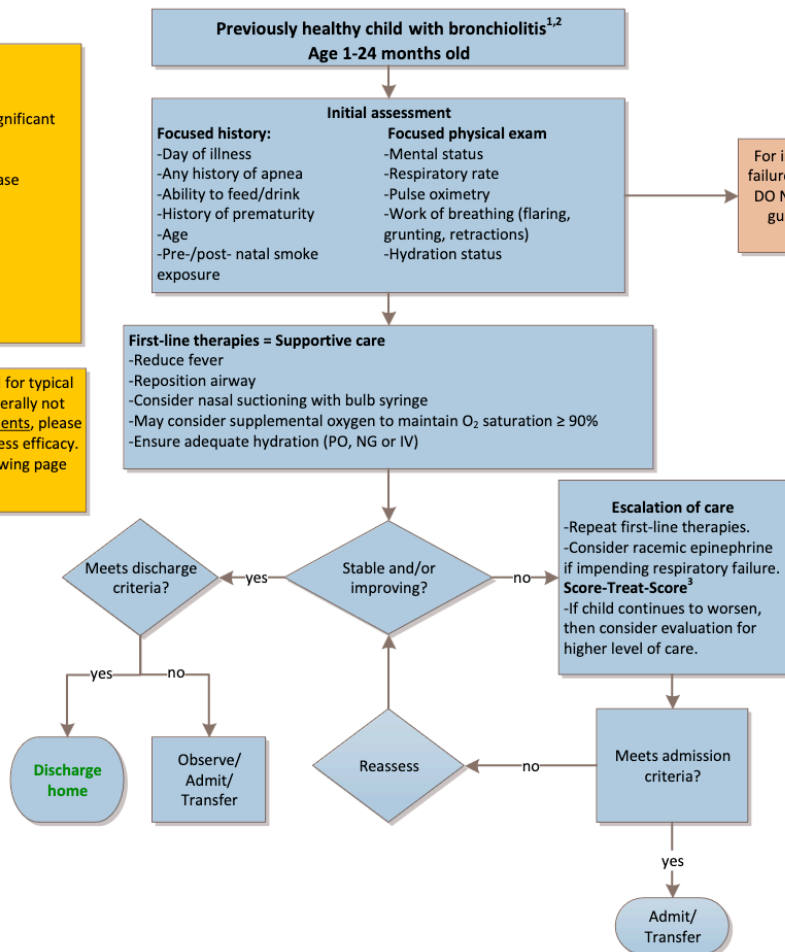
Consider the **asthma pathway** if:
-Recurrent wheeze
-Age > 12m
-Parental history of asthma
-Clinician diagnosed eczema
-Eosinophilia (≥4%), wheezing without cold, and/or allergic rhinitis (2 of 3)

2 Exclusion Criteria:
-Known asthmatic
-PICU admission
-Hemodynamically significant heart disease
-Chronic lung disease
-Neuromuscular disease
-Immunodeficiency

3 Score-Treat-Score: Bronchodilators are not recommended for typical bronchiolitis because reversible bronchoconstriction is generally not present. When evaluating the efficacy of **nebulized treatments**, please document a B-RSS before and after the intervention to assess efficacy. Discontinue treatment if no change in B-RSS. See the following page for B-RSS.

Discharge Criteria
--Decision is based upon repeated assessments, response to therapy, and stage of illness.
-Can maintain SpO₂ ≥ 90% on room air and is well appearing
-No history of apnea with this illness
-Able to maintain adequate oral hydration
-Completed screening for second hand smoke exposure, and offered tobacco cessation material if indicated
-Appropriate PMD follow up
-Reliable caregiver who has received education (feeding, suctioning, etc.)

Bronchiolitis – ED Pathway



For impending respiratory failure or prolonged apnea, DO NOT proceed with this guideline and manage accordingly.

NOT RECOMMENDED
-Albuterol
-Racemic epinephrine (may be trialed for impending respiratory failure, use "score-treat-score" assessment, available on next page)
-Hypertonic saline
-Normal saline (nebulized)
-Corticosteroids
-Magnesium sulfate
-CXR, CBC, blood culture
-Deep nasal suctioning
-Antibiotics (unless bacterial illness is suspected)
-Respiratory viral panel (unless considering influenza)

ADMISSION CRITERIA
-Discharge criteria not met
-Supplemental oxygen required to maintain SpO₂ ≥ 90%
-Dehydration present and unable to maintain adequate oral hydration
-Significant respiratory distress concerning for further decompensation

***For more comprehensive details and references, please see accompanying guideline technical report, "Emergency Department Management of Bronchiolitis," which can be found [here](#).

This document is intended as a general guideline.
The healthcare professional must use the appropriate judgment dependent on the particular clinical situation

**QUESTIONS?
CONCERNS?
TOPICS YOU WOULD LIKE TO SEE
ADDRESSED USING SIMULATION?**

Please reach out to us and let us know!

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Thanks!

-Lauren, Will, and Debby



@DRLOCOSPODO

Check out some media from our
recent simulation activities on
instagram!