

Evidence Based Practice Guideline:

Initial Evaluation & Management of Bronchiolitis

Purpose & Background

Bronchiolitis is a disorder commonly caused by viral lower respiratory tract infections in infants. Bronchiolitis is characterized by acute inflammation, edema, necrosis of epithelial cells lining small airways, and increased mucus production. The most common etiology of bronchiolitis is respiratory syncytial virus (RSV), with the highest incidence of infection occurring between December and March in North America. Other viruses that cause bronchiolitis include human rhinovirus, human meta-pneumovirus, influenza, adenovirus, coronavirus, and parainfluenza viruses. Bronchiolitis is the most common cause of hospitalization among infants during the first 12 months of life.¹ The purpose of this guideline is to reduce variation in the initial evaluation and management of bronchiolitis and to reduce the use of therapies shown to be ineffective in the first 24 hours of care.

Treatment Algorithm for Suspected Bronchiolitis in Urgent Care/Primary Care Physician

Treatment Algorithm for Suspected Bronchiolitis in the Emergency Department

Treatment Algorithm for Suspected Bronchiolitis with Inpatient Admission

Summary of Key Management Statements

- ❖ Clinicians should diagnose bronchiolitis and assess disease severity based on history and physical examination. Radiographic and laboratory studies should not be obtained routinely during an initial evaluation.
- ❖ Clinicians should assess risk factors for severe disease when making decisions about evaluating and managing bronchiolitis. Family and social circumstances that may affect the ability to follow up and/or provide supportive care should also be considered when making decisions regarding disposition.
- ❖ The treatment for bronchiolitis is largely supportive, focusing on nasal suctioning, maintaining hydration, and delivering oxygen as indicated.
- ❖ The following interventions are not routinely recommended: albuterol, nebulized hypertonic saline, or systemic corticosteroids. Antibiotics should not be administered unless there is a concomitant bacterial infection or a strong suspicion of concomitant bacterial infection.

Inclusion – Exclusion Criteria

- ❖ This guideline is intended for physicians, nurse practitioners, physician assistants, and nurses caring for pediatric patients with suspected bronchiolitis in the emergency department or inpatient care setting.
- ❖ Signs and symptoms typically begin with rhinitis and cough, which may progress to tachypnea, wheezing, rales, use of accessory muscles, and/or nasal flaring.
- ❖ Risk factors for severe disease include: current age of less than 12 weeks, a history of prematurity (born between 32-37 weeks), and immunodeficiency or immunocompromised.
- ❖ Infants with failure to thrive or malnourished, poor feeding (defined as 50% reduction in oral intake), or risk of dehydration require additional consideration for admission.

INCLUSION CRITERIA

- a. 30 days to 23 months of age with viral symptoms +/- wheezing & increased work of breathing

EXCLUSION CRITERIA (excluded patients are at risk of deteriorating rapidly and require escalation of care, therefore, these pathways may not be appropriate)

- a. Born < 32 weeks gestation
- b. Cardiac disease requiring home medications
- c. Chronic lung disease or on home oxygen or requires airway clearance support at baseline for any reason
- d. Significant neuromuscular disease (requires assistance with breathing and/or feeding); known or suspected dysphagia
- e. Presenting with apnea
- f. Patient requiring immediate HFNC, CPAP, BiPAP or intubation for respiratory failure

Clinical Bronchiolitis Score (CBS)

- ❖ No bronchiolitis score is accepted as a gold standard for assessing disease severity. Despite the importance and variety of tools that have been developed, few have been validated or are partially validated.²
- ❖ The Clinical Bronchiolitis Score (CBS) was developed locally to assess disease severity and assist staff in recognizing the need for additional treatment interventions, escalation of care, or readiness for discharge.
- ❖ The CBS below is intended to be performed at presentation/admission, clinical change/deterioration, or preparation for care transitions according to care setting treatment algorithms. A modified version is used for urgent care/PCP settings.

	0 – None	1– Mild	2 – Moderate	3 – Severe
Heart Rate	<2 mos: <160 bpm 2-11 mos: <150 bpm 1-2 yrs: <140 bpm	<2 mos: 160-180 bpm 2-11 mos: 150-170 bpm 1-2 yrs: 140-160 bpm	<2 mos: 181-200 bpm 2-11 mos: 171-180 bpm 1-2 yrs: <161-170 bpm	<2 mos: >201 bpm 2-11 mos: >181 bpm 1-2 yrs: >171 bpm
Respiratory Rate	< 2 mos: < 60 bpm 2-11 mos: < 50 bpm 1-2 yrs: < 40 bpm	< 2 mos: 60-70 bpm 2-11 mos: 50-60 bpm 1-2 yrs: 40-50 bpm	< 2 mos: 71-80 bpm 2-11 mos: 61-70 bpm 1-2 yrs: 51-60 bpm	<2 mos: > 81 bpm 2-11 mos: > 71 bpm 1-2 yrs: > 61 bpm
Oxygenation	SpO2 ≥93% on room air	SpO2 90-92% on room air	SpO2 88-89% on room air or SpO2 ≥ 93% on low flow/supplemental O2	SpO2 < 88 % on room air or SpO2 < 93% on low flow/supplemental O2
Work of Breathing	None	Belly breathing or mild subcostal retractions	Nasal flaring and/or moderate retractions (intercostal, tracheosternal, or subcostal)	Any severe retractions, head-bobbing, and/or grunting
Auscultation			Diminished breath sounds, diffuse wheeze, or marked prolonged expiration	Severe diffuse wheeze breath sounds becoming inaudible

Management & Treatment Guideline Statements

(See “How was this guideline developed?”)

Guideline statements are followed by level of evidence quality and strength of recommendation.

- ❖ When clinicians **diagnose bronchiolitis** based on history and physical examination, **radiographic or laboratory studies** should not be obtained routinely.¹ (*Evidence Quality: B; Strength: Moderate*)
- ❖ Evidence supporting scheduled **nasal suction** is limited. Bulb nasal suctioning with or without suction tip (ex: Neosucker®) may be helpful before feeding or sleep or can be performed to alleviate work of breathing. Nasopharyngeal (deep) suctioning should be reserved for patients with moderate-severe distress.^{1,4,7} (*Evidence Quality: Very Low; Strength: Strong [local consensus statement]*)
- ❖ Clinicians should not administer **albuterol** to infants 1-12 months of age with bronchiolitis.^{1,3} (*Evidence Quality: High; Strength: Strong*)
 - Clinicians can consider an albuterol trial in infants > 12 months with features suggestive of possible asthma, such as recurrent wheeze, family history of asthma, and prior inhaled corticosteroid use.^{1,3,4} (*Evidence Quality: Low; Strength: Weak*)
- ❖ Clinicians should initiate **supplemental oxygen** if the oxyhemoglobin saturation is persistently < 90% when awake or persistently less than 88% when sleeping.^{1,4} (*Evidence Quality: Very Low; Strength: Weak [local consensus statement]*)
 - Clinicians should not initiate continuous pulse oximetry for pediatric patients that do not require oxygen supplementation. Discontinue continuous pulse oximetry monitoring with maintained SpO2 > 90% for 4 hours once off supplemental O2.^{1,7} (*Evidence Quality: Very Low; Strength: Strong [local consensus statement]*)
- ❖ Clinicians should administer **nasogastric or intravenous fluids** for infants diagnosed with bronchiolitis who cannot maintain hydration orally.¹ (*Evidence Quality: High; Strength: Strong*)
 - Neither fluid modality is superior. Enteral tube insertion is more successful at first attempt and intravenous fluid group is more likely to change therapy modality and have local complications.⁵
 - Give intravenous fluids to infants clinically dehydrated requiring volume resuscitation, concern for safe feeding due to escalating respiratory distress, and/or necessitating admission to pediatric intensive care unit.⁵ (*Evidence Quality: Moderate; Strength: Strong*)
 - Give enteral fluids in infants unable to take oral fluids. Give intravenous hydration if not tolerating enteral hydration. (*Evidence Quality: Moderate; Strength: Weak*)
- ❖ When **High Flow Nasal Cannula (HFNC)** is warranted for infants with bronchiolitis and initiated outside of the ICU setting use a weight-based protocol, with a starting flow of 1.5 L/kg/min (max 20 LPM).⁶ (*Evidence Quality: Moderate; Strength: Strong*)
- ❖ Clinicians should not administer **systemic corticosteroids** to infants with a diagnosis of bronchiolitis in any setting.^{1,4,7} (*Evidence Quality: A; Strength: Strong*)
- ❖ Clinicians should not administer **nebulized hypertonic saline** in any care setting.^{1,4,7} (*Evidence Quality: Low; Strength: Strong*)
- ❖ Clinicians should not administer **antibacterial** medications to infants and children diagnosed with bronchiolitis unless there is a concomitant bacterial infection, or a strong suspicion of one.^{1,4,7} (*Evidence Quality: B; Strength: Strong*)

High Flow Nasal Cannula Initiation Pause (HIP)

- A HIP is similar to a timeout or huddle and is recommended for a bronchiolitis score of 5-8.
- During the huddle, the team discusses need for escalation and attempts other interventions before initiating HFNC.
- The goal of the HIP is to reduce premature or unnecessary HFNC use.

Discharge Criteria and Discharge Education

- ❖ In general, infants may be safely discharged home with a bronchiolitis score 0-4, able to maintain oxygen saturation, \geq 90% on room air, and able to maintain hydration.
- ❖ The following components of discharge education are recommended to be delivered to families prior to discharge:
 - Bulb suction
 - Need for frequent, small feeds
 - Return precautions
 - Smoking cessation handout as indicated
 - When/how to follow up with PCP

Major References:

1. Ralston et al. Clinical Practice Guideline: The Diagnosis, Management, and Prevention of Bronchiolitis. *Pediatrics* (2014) 134 (5): e1474–e1502. <https://publications.aap.org/pediatrics/article/134/5/e1474/75848/Clinical-Practice-Guideline-The-Diagnosis>
2. Rodriguez-Martinez, CE. et al. Systematic review of instruments aimed at evaluated the severity of bronchiolitis. *Pediatr Respir Rev*. 2018; 25:43-57. doi:10.1016/j.prrv.2016.12.006
3. Gadowski AM, Scribani MB. Bronchodilators for bronchiolitis. *Cochrane Database of Systematic Reviews* 2014, Issue 6. Art. No.: CD001266. doi: 10.1002/14651858.CD001266.pub4
4. Bronchiolitis in children: diagnosis and management. NICE. NG9. 2021. <https://www.nice.org.uk/guidance/ng9>
5. Gill PJ, Anwar MR, Kornelsen E, Parkin P, Mahood Q, Mahant S. Parenteral versus enteral fluid therapy for children hospitalised with bronchiolitis. *Cochrane Database of Systematic Reviews* 2021, Issue 12. Art. No.: CD013552. DOI: 10.1002/14651858.CD013552.pub2.
6. Dafydd C, Saunders BJ, Kotecha SJ, et al. Efficacy and safety of high flow nasal oxygen for children with bronchiolitis: systematic review and meta-analysis. *BMJ Open Res* 2021; 8:e000844.
7. Australasian Bronchiolitis. PREDICT.2022. <https://www.predict.org.au/bronchiolitis-guideline>

How was this guideline developed?

- ❖ This guideline was developed by a multi-disciplinary group of caregivers and subject matter experts experienced in the management of infants with bronchiolitis.
- ❖ The team first reviewed three high quality published national/international guidelines conducted in the US, Europe, and Australia/New Zealand from the AAP, NICE, and PREDICT, respectively.
- ❖ The team also reviewed two Cochrane systematic reviews and other primary literature to supplement the guidelines where further evidence was sought. Key references are cited.
- ❖ Guideline statements directly adopted from national guidelines are cited, and the original evidence levels and recommendation strengths were retained according to the group's guideline framework. See reference links for additional detail.
- ❖ The local guideline team used the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework to assign evidence levels and recommendation strengths when evidence was sufficient. Local consensus statements that are not graded should be interpreted as low-level evidence.

Acronyms and Abbreviations

AAP	American Academy of Pediatrics
BS	Bronchiolitis Score
GRADE	Grading of Recommendations Assessment, Development, and Evaluation
HFNC	High Flow Nasal Cannula
HIP	High Flow Nasal Cannula Initiation Pause
NG	Nasogastric
NICE	National Institute for Health and Care Excellence
PREDICT	Paediatric Research in Emergency Departments International Collaborative

Disclaimer: Practice recommendations are based upon the evidence available at the time the clinical practice guidance was developed. Clinical practice guidelines (including summaries and pathways) do not set out the standard of care and are not intended to be used to dictate a course of care. Each physician/practitioner must use his/her independent judgement in the management of any specific patient and is responsible, in consultation with the patient and/or the patient's family, to make the ultimate judgement regarding care.

If you have questions about any of the clinical practice guidelines or about the guideline development process please contact the Rainbow Evidence Practice Program at RainbowEBPprogram@uhhospitals.org

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Child Presents to Primary Care or Urgent Care with Suspected Bronchiolitis
Inclusion Criteria: Age 30 days – 23 months with viral respiratory symptoms +/- wheezing & increased work of breathing
 (See Box 1 for Exclusion Criteria)

- Box 1: Exclusion Criteria**
- Born < 32 weeks gestation
 - Cardiac disease requiring home medications
 - Chronic lung disease or on home oxygen or requires airway clearance support at baseline for any reason
 - Significant neuromuscular disease (requires assistance with breathing and/or feeding); known or suspected dysphagia
 - Presenting with apnea
 - Patient requiring immediate HFNC, CPAP, BiPAP or intubation for respiratory failure

Perform Bronchiolitis Assessment

Severity Indicator	Low Concern	Moderate Concern	Severe Concern
Heart Rate	<2 mos: <160 bpm 2-11 mos: <150 bpm 1-2 yrs: <140 bpm	<2 mos: 160-180 bpm 2-11 mos: 150-170 bpm 1-2 yrs: 140-160 bpm	<2 mos: > 181 bpm 2-12 mos: > 171 bpm 1-2 yrs: <161 bpm
Respiratory Rate	< 2 mos: < 60 bpm 2-11 mos: < 50 bpm 1-2 yrs: < 40 bpm	< 2 mos: 60-70 bpm 2-11 mos: 50-60 bpm 1-2 yrs: 40-50 bpm	< 2 mos: > 71 bpm 2-11 mos: > 61 bpm 1-2 yrs: > 51 bpm
Oxygenation	SpO2 ≥93% on room air	SpO2 90-92% on room air	SpO2 < 89% on room air
Work of Breathing	Comfortable, Mild or no retractions	Uncomfortable, use of accessory muscles, retractions, or nasal flaring	Distressed, severe retractions with grunting or head-bobbing
Feeding	Normal to mildly decreased	Decreased (~50% of usual)	Refusing to feed
Auscultation			Diminished breath sounds, diffuse wheeze, or marked prolonged expiration

Albuterol is not recommended for bronchiolitis

Place patient in concern category severity based on highest indicator in any single category

- Box 2: Additional Considerations for Admission**
- Immunodeficiency/immunosuppression
 - Age < 3 months (10-12 weeks)

Low Concern
Review Mild Supportive Care

Moderate Concern
Trial Moderate supportive care measures *in office* if clinical capacity allows

Severe Concern

Counsel on outpatient supportive therapy options

- Suggested in office supportive care options:**
- Administer antipyretic if febrile
 - Nasal suction with bulb syringe and saline
 - Feeding trial

Refer to ED[^]

Discharge Criteria

- Low concern
- May consider discharge for patients with O2 saturation 90-92% on RA on case by case basis
- Able to feed to maintain hydration
- Discharge education

Suctioning	Schedule follow-up
Frequent feeding	Return precautions
Smoking cessation	Provide written handouts when applicable

After supportive therapy trial (if any), repeat bronchiolitis assessment

- [^]When to Use EMS for Transport**
- Severe tachypnea
 - Bradypnea or apnea
 - Severe retractions, nasal flaring, or grunting
 - Mental status changes or decrease level of alertness from respiratory effort
 - Pulse oximetry < 90 (Consider < 93% dependent on family circumstances and travel time)
 - Any infant on supplement oxygen

Discharge criteria met?

Refer to ED[^]

Recommended Supportive Therapy Options:

Feeds	<ul style="list-style-type: none"> • Recommend lower volume, more frequent feedings • If vomiting, consider electrolyte drink (e.g Pedialyte®)
Suction	<ul style="list-style-type: none"> • Bulb suction
Fever Management	<ul style="list-style-type: none"> • First line: acetaminophen 15mg/kg/dose every 6 hours prn for temp ≥ 38 C • Second line (only if > 6 months of age): ibuprofen 10mg/kg/dose every 6 hours prn for temp ≥ 38 C and inadequate response 60 minutes after first line dose
Diagnostics and Therapeutics Not Routinely Recommended	
Antibiotics	<ul style="list-style-type: none"> • Do NOT prescribe antibiotics without evidence of bacterial infection (e.g. otitis media, pneumonia)
Albuterol	<ul style="list-style-type: none"> • Studies have shown NO benefit for albuterol treatment in infants with typical bronchiolitis. (An albuterol trial may be considered in children with features suggestive of possible asthma, such as: recurrent wheezing, age > 12 months, family history of asthma, prior inhaled corticosteroid use)
Other Therapeutics	<ul style="list-style-type: none"> • Corticosteroids and nebulized hypertonic saline are NOT recommended for bronchiolitis
Viral Testing	<ul style="list-style-type: none"> • Viral testing is NOT routinely recommended but may be considered for infection control purposes and shared decision making with family
Chest X-ray	<ul style="list-style-type: none"> • Chest X-ray is NOT recommended in initial evaluation of uncomplicated bronchiolitis

Child Presents to Emergency
Department with Suspected Bronchiolitis
Inclusion Criteria: Age 30 days – 23 months with viral respiratory symptoms +/- wheezing & increased work of breathing
 (See Box 1 for Exclusion Criteria)

- Box 1: Exclusion Criteria**
- Born < 32 weeks gestation
 - Cardiac disease requiring home medications
 - Chronic lung disease or on home oxygen or requires airway clearance support at baseline for any reason
 - Significant neuromuscular disease (requires assistance with breathing and/or feeding); known or suspected dysphagia
 - Presenting with apnea
 - Patient requiring immediate HFNC, CPAP, BiPAP or intubation for respiratory failure

Assess patient using **Clinical Bronchiolitis Score (CBS)**

	0 – None	1– Mild	2 – Moderate	3 – Severe
Heart Rate	<2 mos: <160 2-11 mos: <150 1-2 yrs: <140	<2 mos: 160-180 2-11 mos: 150-170 1-2 yrs: 140-160	<2 mos: 181-200 2-11 mos: 171-180 1-2 yrs: <161-170	<2 mos: >201 2-11 mos: >181 1-2 yrs: >171
Respiratory Rate	< 2 mos: < 60 2-11 mos: < 50 1-2 yrs: < 40	< 2 mos: 60-70 2-11 mos: 50-60 1-2 yrs: 40-50	< 2 mos: 71-80 2-11 mos: 61-70 1-2 yrs: 51-60	<2 mos: > 81 2-11 mos: > 71 1-2 yrs: > 61
Oxygenation	SpO2 ≥93% on room air (RA)	SpO2 90-92% on RA	SpO2 88-89% on RA or SpO2 ≥ 93% on low flow/supplemental O2	SpO2 < 88 % on RA or SpO2 < 93% on low flow/supplemental O2
Work of Breathing	None	Belly breathing or mild subcostal retractions	Nasal flaring and/or moderate retractions (intercostal, tracheosternal, or subcostal)	Any severe retractions, head-bobbing, and/or grunting
Auscultation			Diminished breath sounds, diffuse wheeze, or marked prolonged expiration	Severe diffuse wheeze breath sounds becoming inaudible

Albuterol is not recommended for bronchiolitis. See Additional Treatment Considerations (Pg 2) for further guidance

- Box 2: Additional Considerations for Admission**
- Immunodeficiency/immunosuppression
 - Age < 3 months
 - Prematurity (32-36 weeks gestation)
 - Poor feeding (50% reduction of oral intake)/risk of dehydration
 - Failure to thrive or malnourished

Place patient on carepath based on **Clinical Bronchiolitis Score (CBS)**

CBS 0-4
Start **Mild Supportive Care**

CBS 5-8
Start **Moderate Supportive Care**

CBS ≥ 9
Go to **Severe Algorithm (Pg 2)**

- Administer antipyretic if febrile
- Nasal suction with bulb syringe and saline
- Consider using suction tip (i.e. Neosucker®) if severe congestion or significant work of breathing
- Oral hydration if indicated
- Re-score in 1 hour

- HFNC Initiation Pause (HIP)**
Bedside huddle (MD/RT/RN) to assess patient and trial interventions prior to HFNC
- Nasal suction with syringe tip (NeoSucker®) and saline if not done recently
 - Administer antipyretic for comfort if not already given
 - Address hydration needs; consider IV bolus if clinically dehydrated
 - Trial administration of humidified low-flow nasal cannula (for saturation ≤90% and/or severe work of breathing requiring intervention)

Clinical judgement supersedes CBS, may initiate HIP if clinical concern at any score

CBS ≤ 4

CBS ≤ 4 on RA: Assess parental readiness for discharge, social circumstances for follow-up and ability to care. (See Box 2: Additional Considerations for Admission and Box 3: Discharge Criteria)
CBS ≤ 4 on supplemental O2: Consider RA trial for 1 hr.

Successful Room Air Trial (SpO2 ≥ 90%)	Assess readiness and consider for discharge; Go to Box 3: Discharge Criteria
Failed Room Air Trial	Go to Box 4: Initiate Admission to PCRS

Medical Team Determine HIP Outcome 30 min later:
 Is the CBS improved?
 No signs of clinical deterioration?

FAIL

- Go to Severe Algorithm and initiate HFNC protocol or non-invasive positive pressure ventilation
- Document HIP outcome (MD in note; RT/RN in flowsheet)
- Admit to PICU

PASS

- Remains on RA or low-flow nasal cannula
- Document HIP outcome (MD in note; RT/RN in flowsheet)
- Re-score in 1 hour and determine disposition

CBS ≤ 4?

Box 4: Initiate Admission to PCRS (for any of the following):

- Patient requires inpatient supportive measures and observation
- Concern for parental readiness and social circumstances
- CBS 5-8 with **PASS** HIP

Box 3: Discharge Criteria

- CBS 0-4, and
- O2 saturation ≥ 90% on room air, and
- Able to feed to maintain hydration

Discharge Education

Educate family on suctioning; dispense bulb suction (if available)	Provide bronchiolitis discharge brochure (if available)
Need for frequent feeding	Follow up with PCP (schedule preferably)
Smoking cessation handout as indicated	Return precautions

Pediatric Inpatient Admission for Bronchiolitis

Inclusion Criteria: Age 30 days – 23 months with viral respiratory symptoms +/- wheezing & increased work of breathing (See Box 1 for Exclusion Criteria)

Exclusion Criteria:

- Born < 32 weeks gestation
- Cardiac disease requiring home medications
- Chronic lung disease or on home oxygen or requires airway clearance support at baseline for any reason
- Significant neuromuscular disease (requires assistance with breathing and/or feeding); known or suspected dysphagia
- Presenting with apnea
- Patient requiring immediate HFNC, CPAP, BiPAP or intubation for respiratory failure

Assess with Clinical Bronchiolitis Score (CBS) on admit, transfer, or change in status (Ex: concern for clinical deterioration or change in PEWS)

	0 – None	1– Mild	2 – Moderate	3 – Severe
Heart Rate	<2 mos: <160 bpm 2-11 mos: <150 bpm 1-2 yrs: <140 bpm	<2 mos: 160-180 bpm 2-11 mos: 150-170 bpm 1-2 yrs: 140-160 bpm	<2 mos: 181-200 bpm 2-11 mos: 171-180 bpm 1-2 yrs: <161-170 bpm	<2 mos: >201 bpm 2-11 mos: >181 bpm 1-2 yrs: >171 bpm
Respiratory Rate	< 2 mos: < 60 bpm 2-11 mos: < 50 bpm 1-2 yrs: < 40 bpm	< 2 mos: 60-70 bpm 2-11 mos: 50-60 bpm 1-2 yrs: 40-50 bpm	< 2 mos: 71-80 bpm 2-11 mos: 61-70 bpm 1-2 yrs: 51-60 bpm	<2 mos: > 81 bpm 2-11 mos: > 71 bpm 1-2 yrs: > 61 bpm
Oxygenation	SpO2 ≥93% on room air	SpO2 90-92% on room air	SpO2 88-89% on room air or SpO2 ≥ 93% on low flow/supplemental O2	SpO2 < 88 % on room air or SpO2 < 93% on low flow/supplemental O2
Work of Breathing	None	Belly breathing or mild subcostal retractions	Nasal flaring and/or moderate retractions (intercostal, tracheosternal, or subcostal)	Any severe retractions, head-bobbing, and/or grunting
Auscultation			Diminished breath sounds, diffuse wheeze, or marked prolonged expiration	Severe diffuse wheeze breath sounds becoming inaudible

CBS ≤ 6 with ongoing need for hospitalization

Maintain [Inpatient Supportive Measures](#)
See [Additional Treatment Considerations](#)
Scheduled rescore not required unless concern for clinical deterioration or assessing for discharge readiness
(See Box 5: Assessing Discharge Readiness)

CBS ≥ 7, ANY score with concern for deterioration, or PACT Called (@St. John – notify hospitalist)

Initiate HIP/PACT within 15-30 minutes and obtain full set of vitals

Clinical judgement supersedes CBS, may initiate HIP if clinical concern at any score

HFNC Initiation Pause (HIP)

- Bedside huddle (MD/RT/RN) to assess patient/trial interventions prior to HFNC
- Nasal suction with neo sucker and saline
- Administer an antipyretic for comfort if not already given
- Address hydration needs, consider bolus if clinically dehydrated
- Trial administration of humidified low-flow nasal cannula or increase to floor max (for saturation ≤90% and/or severe work of breathing requiring intervention)

Medical Team Determine HIP Outcome 30 min later:
Is the CBS improved? No signs of clinical deterioration?

YES

NO

PASS

- Remains on division
- Continue low-flow cannula, if started
- Document HIP outcome (MD in note; RT/RN in communication notes)
- Continue bronchiolitis care per [Inpatient Supportive Measures](#)

FAIL

- Initiate PACT (if not already done) OR direct transfer to PICU
- Place on CR monitor
- Document HIP outcome (MD in note; RT/RN in communication notes)

Box 5: Assessing Discharge Readiness
Begin to score patient more frequently to assess for discharge, when:

- SpO2 ≥ 90% on room air
- None or only mild work of breathing
- CBS ≤ 4 (or expected score ≤ 4 on assessment)
- Using bulb syringe and improved suctioning burden
- Family received education and demonstrates ability to care for patient
- Able to maintain hydration

Discharge Criteria

- CBS 0-4
- O2 saturation ≥ 90% on room air
- Able to feed to maintain hydration
- Home-going education provided

Discharge Education

Educate family on suctioning; dispense bulb suction (if available)	Provide bronchiolitis discharge brochure (if available)
Need for frequent feeding	Follow up with PCP (schedule preferably)
Smoking cessation handout (as indicated)	Return precautions

Oxygen Delivery Outside of ICU
See [Patient Care Guideline: Oxygen Administration](#)

Low Flow Nasal Cannula	Infants (0-10 kg) on ≤ 2 LPM Pediatric patients (10-20 Kg) on ≤4 LPM
High Flow Nasal Cannula	May be initiated in ED or PICU only; may be initiated on general divisions at discretion of PICU service while awaiting transfer to PICU