

HFNC - Choosing Wisely

Bronchiolitis is a common respiratory syndrome in children less than 2 years old. The mainstays of treatment are hydration support, oxygen supplementation and respiratory support. Evidence shows that high flow nasal cannula (HFNC) use has increased significantly in the last 20 years, particularly for bronchiolitis, but not always with clear evidence of improved outcomes. This has led to quality improvement strategies aimed at using HFNC more thoughtfully. One such strategy is the IWK Choosing Wisely QI project.

WHAT IS HFNC?:

- High flow nasal cannula oxygen therapy provides warmed, humidified oxygen at flow rates that exceed minute volume requirements.
- It can deliver higher oxygen concentrations more accurately.
- Typically start with flow rates 1-2L/kg/min to a max of 50L/min.

HOW HFNC WORKS:

- HFNC oxygen therapy minimizes or eliminates the inspiration of room air and the subsequent dilution of FiO₂ gas using high flow rates.
- The high flow rates “wash out” anatomic dead space and are well tolerated as the gas is heated and humidified.
- HFNC provides a constant, steady flow of gas. Reduces both upper and lower airway resistance.
- Improves ciliary function and mucous clearance.
- Provides some degree of positive intrathoracic airway pressure.

BENEFITS:

- Ability to deliver 100% oxygen and is well tolerated.
- Provides comfort, reduces heart rate.
- Washout of anatomic dead space in the upper and intrathoracic airways reduces respiratory rate and work of breathing.
- Improved clearance of carbon dioxide.
- Improved oxygenation in cases of hypoxemia in bronchiolitis.
- Limited data to support the benefit of its use in asthma and pneumonia.

HFNC FOR BRONCHIOLITIS - BOTTOM LINE:

- Consider other comfort measures that may achieve the desired outcome (see next pg).
- Consider HFNC oxygen therapy if failure of low flow oxygen and/or persistent moderate to severe respiratory distress.
- Does not improve clinical outcomes with routine or early initiation.
- Prolonged length of stay, increased workload for staff and increased cost are important considerations.
- **NOT** an alternative to NIV or intubation for hypercapnic respiratory failure.



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The IWK Choosing Wisely committee is working on adopting the Pause and Holiday approach, as implemented by the AAP VIP Network.

HFNC INITIATION PAUSE (HIP):

- Intentionally re-assessing the need for HFNC oxygen therapy before it's initiation.
- Ensure basic supportive care has been optimized first. This includes nasal suctioning, attempting PO feed (if safe to do so), encourage parent to hold the patient/bundling, dim the lights, antipyretics for comfort, assessing hydration needs, administration of low-flow oxygen therapy.
- Monitor the patient for 15-30 minutes following these interventions.
- Team huddle to assess HIP outcome.
- **PASS** - remain on room air or low-flow O₂ and document HIP outcome in the chart.
- **FAIL** - escalate care to HFNC or NIV as indicated and document HIP outcome in the chart.

HFNC HOLIDAY:

- After initiation, regularly re-assessing whether the patient still needs HFNC.
- Assess q4h for clinical improvement and Holiday readiness.
- If patient has O₂ sats >92%, is on less than or equal to 40% FiO₂, and has a HR within normal limits when calm - remove HFNC (regardless of flow rate) and monitor at the bedside for 5-15 minutes. Holiday performed at least twice per day.
- Reassess within 30-60 minutes to evaluate Holiday outcome and document outcome in the patient's chart.
- **PASS** to room air - HR, RR and WOB acceptable with O₂ sats >92%. Maintain on room air with attention to suctioning and hydration.
- **PASS** to low-flow O₂ - HR, RR and WOB acceptable but O₂ sats < 92%. Place patient on LFNC and continue weaning efforts.
- **NO PASS** - clinical decompensation. Severe WOB with increased RR and/or HR. Return to previous HFNC settings. Continue weaning efforts and assess for readiness for next HFNC Holiday.

EVIDENCE:

- American Academy of Pediatrics - [Multicenter Quality Collaborative to Reduce Overuse of High Flow Nasal Cannula in Bronchiolitis.](#)
- 71 hospitals participated. 30 in the PAUSE arm (5746 patients) and 41 in the HOLIDAY arm (7903 patients).
- PAUSE results: relative reduction in mean HFNC initiation of 32%.
- HOLIDAY results: relative reduction in mean HFNC duration of 28%.
- No mean increase in ED or hospital LOS due to interventions for either group.

Choosing Wisely Canada Bronchiolitis - Less is Best



IWK Pediatric Grand Rounds

Feb 4th 0900-1000: Rheumatic Heart Disease - Improving Global Outcomes Through Innovative Approaches.

Meeting ID: 817 1067 5567

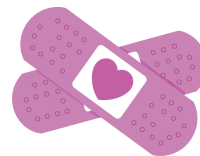
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Feb 18th 0900-1000: Urticaria: What It Is, What It Isn't, and How to Manage It.

Meeting ID: 817 1067 5567

Passcode: 443679

Comfort Corner



[ID Card to print](#)

- O**ne voice leads
- N**eed parent involvement
- E**ducate patient before
- V**alidate child
- O**ffer comfort techniques
- I**ndividualize game plan
- C**hoose appropriately
- E**liminate extra people



The ONE VOICE approach encourages everyone involved in a procedure or healthcare encounter to evaluate their surroundings, communicate effectively, and develop a cohesive plan. By implementing these strategies, healthcare staff and families can enhance the emotional well-being of pediatric patients, ensuring they feel safe and supported. This preparation is a step that reduces negative events during potentially painful events. This benefits the children and creates a more positive and collaborative atmosphere for care teams. The ONE VOICE approach identified multiple common practices that cause children anxiety and replaced them with ways healthcare professionals could minimize those stressors.

References

- AAP (2024). *Multicenter Quality Collaborative to Reduce Overuse of High-Flow Nasal Cannula in Bronchiolitis*.
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- CPS (2018). *Use of High-Flow Nasal Cannula Oxygen Therapy in Infants and Children*.
<https://cps.ca/en/documents/position/nasal-cannula>
- Gardner, K. (2025). *High-Flow Nasal Cannula in Pediatrics: Helpful Tool, Smarter Use*. [PowerPoint Slides]

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