

Pediatric SLP Guidelines for Swallowing Evaluation with Patients on High Flow Nasal Cannula or with Compromised Respiratory Status

Adapted by Sheryl Rosen, MA CCC-SLP with permission from Karen Sheffler, MS, CCC-SLP, SCS-S of Swallowstudy.com (December, 2020)
<https://swallowstudy.com/high-flow-nasal-cannula-hfnc-does-it-increase-dysphagia-aspiration-risk/>

Introduction: The following are internal guidelines for the SLP to use when consulted for a swallowing evaluation to assess children who are receiving high-flow nasal cannula (HFNC) either post-extubation or as primary treatment. If medical team requests evaluation, we should assess regardless of level of respiratory support, however, use the following guidelines to help determine if patient is ready for diet progression, pleasure feeds, or is not ready for po feeding.

Questions	Considerations	Yes	No			
1. Is the patient demonstrating respiratory distress (increased WOB, retractions)? Is the patient at risk for worsening respiratory status or need for increased respiratory support?	Do not orally feed if patient is demonstrating increased work of breathing or retractions at baseline.					
2. Has the patient required an increase in HFNC dose or is the current dose above following guidelines? <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; padding: 2px;"><i><4L under 6 months</i></td> <td style="width: 33%; padding: 2px;"><i><6L under 2 years</i></td> <td style="width: 33%; padding: 2px;"><i><8L above 2 years</i></td> </tr> </table>	<i><4L under 6 months</i>	<i><6L under 2 years</i>	<i><8L above 2 years</i>	Increased risk of aspiration, variability, and difficulty swallowing due to high airflow nasopharyngeal pressures. Proceed cautiously		
<i><4L under 6 months</i>	<i><6L under 2 years</i>	<i><8L above 2 years</i>				
4. Is respiratory rate fast for age? 4a. Greater than 60 bpm if under 6 mo? 4b. Greater than 40 bpm if 6 mo to 7 y? 4c. Greater than 25 bpm if 7 y or older?	RR above these levels per minute raises concern for safe PO intake. RR greater than 60 breaths per minute may be incompatible with safe swallowing because the time between breaths is shorter than the time needed to complete a pharyngeal swallow.					
5. Is the medical condition unstable? Chronic vs Acute?	Discuss with medical team					
6. Concern for adequacy of cognition/mental status to participate at mealtime with supervision and/or assistance? (Mark yes for category if more than 1 subcategory is a "yes").	Attention deficits/distractibility	Yes / No				
	Agitation	Yes / No				
	Impulsivity	Yes / No				
	Unable to follow 1 step commands	Yes / No				
	Disoriented	Yes / No				
	Pt not aware of cognitive deficits	Yes / No				
7. Is lingual range of motion impaired?	Sensorimotor exam. Impaired lingual range of motion was associated with aspiration (Leder, et al., 2013)					
8. Is pt. unable to tolerate/manage secretions? Do they have baseline congestion that would impair ability to determine aspiration concerns?	If unable to adequately manage secretions, may not be ready for oral intake					
9. Concern for ability to sit upright for prolonged period, demonstrate head and neck control?	Is physical strength and condition improving? Will they have pulmonary clearance if they have trace aspiration?					
10. Is oral hygiene inadequate with routine care?	Inadequate oral care increases risk of aspiration pneumonia					
11. Does the pt. have comorbidities? *	Medical and/or genetic comorbidities that increase aspiration risk at baseline (including but not exclusive to Down Syndrome, CP, hydrocephalus s/c shunt, brain tumor, CLD, LM/TM, HTN, hypotonia, muscular. Categories: pulmonary, GI, neuro, genetic, degenerative disease, cardiac, prematurity).					
12. Does the pt. have a recent diagnosis or condition known to cause dysphagia?	Acute or progressive neurologic condition, Head/Neck cancer or tumors, brain tumor, post extubation dysphagia, etc.					
13. Does the pt. have dysphagia at baseline? *	PMH, SLP notes previous admissions, instrumental swallowing evaluation results, pt./family report.					
14. Is the pt. unable to safely tolerate PO across a full meal? **	Fatigue across feed/meal, level & consistency of alertness across feed/meal.					

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15. Is the patient demonstrating intolerance for alternative nutrition (NG/NJ/ND/GT) ***	Discuss with nurse/medical team.	
Total Yes Answers		
<p>Additional considerations: How long has the patient been requiring HFNC with or without prior need for mechanical ventilation? Longer-term use of HFNC may desensitize larynx/pharynx. The airflow may initially heighten awareness of the region, but may eventually desensitize and potentially decrease the sensation of residue and aspiration.</p> <p>* If swallowing difficulties at baseline/before illness and/or other comorbidities -Wean from HFNC O2 supplementation (2L or less) -Continue alternative hydration/nutrition -Do not assess oral feeding until weaned from high flow If no comorbidities: -Trial small oral feeds with fatigue being monitored watching for respiratory and oxygen saturation rate to ensure stability --If WOB increases, reduce volume of feeds or stop feeding until WOB normalized for approx. 4-6 hours prior to retrying --If vomiting or concerns for aspiration, stop feeds until high flow discontinued and then reattempt once weaned from high flow</p> <p>** If pt. unable to maintain alertness or fatigues quickly, consider pleasure feeds or limited oral intake pending tolerance for short periods of time.</p> <p>*** If pt. unable to tolerate gastric tube feeds and/or requiring NG to drain/suction, may need to hold on PO trials until better tolerating.</p>		
<p>If answer to #1 is yes, do not assess for oral feeding until respiratory distress (WOB and retractions) has resolved. If few yes answers: Consider clinical swallowing evaluation monitoring work of breathing, respiratory-swallow coordination, and s/s of aspiration to determine if appropriate to advance to full or limited oral intake. If many yes answers: Strongly consider NPO and hold swallowing evaluation until patient improves. Potential for therapeutic swallowing only with SLP.</p>		
<p>Planning for reassessment: If it is recommended that the patient be NPO or have a limited diet, patient should be reevaluated daily as appropriate. Plan should be indicated in report and if daily reassessment is not appropriate, plan for when reassessment will happen should be indicated with reason given. Need for potential MBS should be indicated in recommendations.</p>		

Additional input and review provided by Lynn, Golightly, MS-CCC-SLP; Colleen Lyons, MS-CCC-SLP; Ericka Fink, MD.

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Resources:

1. *High Flow Nasal Cannula (HFNC): Does it increase dysphagia and aspiration risk*, blog post 12.8.20, by Karen Sheffler, MS, CCC-SLP, BCS-S, swallowstudy.com
2. *Noninvasive ventilation and swallowing: another factor to consider*. UPMC multidisciplinary grand rounds power point presentation 3.10.21, by Dr. James Coyle, PhD, CCC-SLP, BC-S, ASHA Fellow, Professor, Communication Science Disorders and Otolaryngology School of Health and Rehabilitation Sciences and School of Medicine University of Pittsburgh, UPMC Swallowing Disorders Center Evidence Based Practice & References for guidelines listed on swallowstudy.com
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- https://urldefense.com/v3/https://www.uptodate.com/contents/image/print?imageKey=EM*78097_lwl:INHLzugfkskQkuYmjupk7uj-Rjm3pPdpudQ1hdC1J4bgqdk5EQASylPaqEbzt4Bf8RylFA5
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8281783/#:~:text=The%20advantage%20of%20HFNC%20allows%20for%20the%20potential,and%20the%20safety%20and%20efficacy%20surrounding%20its%20use.>
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- ❖ Is patient in acute phase of illness or recovery phase (CLD)? More likely to need to delay if in acute phase.
- ❖ Are there comorbidities that would increase aspiration risk? (including but not exclusive to Down Syndrome, CP, hydrocephalus s/c shunt, brain tumor, CLD, LM/TM, HTN, hypotonia, muscular. Categories: pulmonary, GI, neuro, genetic, degenerative disease, cardiac, prematurity) – hold if comorbidities
- ❖ Is high flow for PEEP or O2?
 - Which is better for oral feeding??? Need evidence and input on this guideline
- ❖ High flow with respiratory distress:
 - Do not assess swallow
 - Do not orally feed
 - Continue alternative hydration/nutrition until stable
- ❖ If weaning high flow and no evidence of respiratory distress:
 - If swallowing difficulties at baseline/before illness and/or other comorbidities
 - Wean O2
 - Continue alternative hydration/nutrition
 - Do not assess oral feeding until weaned from high flow
 - If no comorbidities:
 - Wean O2

Onedrive: Pediatric Feeding on HFNC Algorithm

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- Trial small oral feeds with fatigue being monitored watching for respiratory and oxygen saturation rate to ensure stability
 - If WOB increases, reduce volume of feeds or stop feeding until WOB normalized for approx. 4-6 hours prior to retrying
 - If vomiting or concerns for aspiration, stop feeds until high flow discontinued and then reattempt once weaned from high flow
- ❖ Requirements prior to oral feeding trial:
 - Adequate neurodevelopmental maturation including alertness for oral feeding
 - Ability to tolerate NG/NJ/ND tube feeds if tube is in place
 - No NG to drain/suction
 - Intact nonnutritive suck (for infant)
 - Demonstration of hunger cues
 - Signs of intact bulbar function including secretion management, audible and clear phonation/cry
- ❖ Age guide:
 - If under 12 months:
 - use Wolf & Glass neonatal swallow guidelines

Risk Assessment for Oral Feeding on HFNC

	2	1	0
Full oral feeding prior to HFNC	None	< 3 weeks	≥ 3 weeks
Medical Complexity	Very complex	Moderately complex	One system only
Respiratory Status	Extremely fragile; high FiO2	Stable with significant support; mod FiO2	Weaning respiratory support regularly; RA
Airway Protection / Aspiration Risk	High risk or known aspirator	Moderate risk	Respiratory status is the only risk factor
Flow Rate (based on corrected age)	< 37 wk: ≥ 4L ≥ 37 wk: ≥ 5L ≥ 2 mo: ≥ 6L	< 37 wk: 2.5-3.5L ≥ 37 wk: 3.5 - 4.5L ≥ 2 mo: 4.5 - 5.5L	< 37 wk: ≤ 2L ≥ 37 wk: ≤ 3L ≥ 2 mo: ≤ 4L

- Score range: 0-10
 - Score 0 - 2: Low risk; consider oral feeding
 - Score 3 - 4: Greater risk; needs discussion; may be candidate for limited oral feeding activity
 - Score ≥ 5: Highest risk; not a good candidate for oral feeding
 - Baby must also meet the general criteria for feeding at that level – gestational age, resp rate, feeding readiness cues
- Under 6 months
 - Less than 4L HFNC
 - FiO2? what would be appropriate
 - RR <60 (RR greater than 60 breaths per minute may be incompatible with safe swallowing because the time between breaths is shorter than the time needed to complete a pharyngeal swallow)
 - 6 months to 2 years
 - Less than 6L HFNC
 - FiO2? What would be appropriate
 - RR <40
 - For over 2 years of age:
 - 8L
 - Use other factors to guide appropriateness of PO rather than flow itself (i.e., alertness, secretion management, stability, WOB etc.)