

Risky Breathing: Ethical considerations for managing respiratory fragility and oral intake

Fazakerly, A. & Wittmann, R. (2022)

California Speech Language Hearing Association (CSHA) Annual Convention.

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Program Description: The COVID-19 pandemic has highlighted the urgent need for clarity in the management of patients with respiratory compromise. These patients may require respiratory support ranging from conventional oxygen therapy to mechanical ventilation. Initiating respiratory support is usually driven by urgent medical necessity, with the aim of sustaining life. However, the utilization of life-sustaining respiratory support carries a multitude of risks. Chief among these risks is potential oropharyngeal dysphagia, resulting in the restriction or prohibition of oral intake. How do varying degrees of respiratory support affect swallow (dys)function? When acceptable risk ceilings diverge between clinicians and/or patients, how can the provider reconcile the seemingly juxtaposed goals of sustaining life (respiratory support) and preserving (swallow) function? We will revisit the symbiotic relationship between swallowing and respiration and explore these questions through a review of the literature, survey of current practice patterns, and a collaborative query of selected case studies.

Specifically, we will examine the use of HFNC (high-flow nasal cannula) in critical care as a case-in-point study of ethical considerations for dysphagia management.

Learning Objectives

1. Describe principles of respiration and differentiate impact on swallow kinematics across the spectrum of support modalities
2. Summarize strategies for improving functional (swallow) outcomes in collaboration with allied disciplines
3. Define the role of SLPs in ethical management of risk in the treatment of dysphagic patients in respiratory compromise

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OXYGEN THERAPIES HIERARCHY

O ₂ Therapy Type		Modality	Flow	FiO ₂	Barrier to swallow evaluation?
LF	Low flow	• Standard nasal cannula (NC)	1-6	24-44%	No
		○ Humidity needed above 4L			No
		• Larger bore NC	7-15	48-80%	No
		• Oxyimizer - reservoir for O ₂ bolus on inspiration	≤12		
		• Venturi mask	2-15	24-50%	Yes
		• Simple mask	6-12	35-65%	Yes
		• Aerosol face mask	8+	28-96%	Yes
• Non re-breather mask	10-15	60-90%	Yes – acute distress		
HF	High flow	<i>Delivered via nasal cannula (HFNC), face mask, or trach adaptor</i>			
		• HFNC: heated (98.6F) and humidified air (100% relative humidity) improves mucociliary clearance	≤ 60	20-100%	No
		• Approx. 1cmH ₂ O positive pressure per 10 LPM			
		○ Depends on if pt is mouth breathing			
NPPV	Non-invasive positive pressure ventilation	• BiPAP			Yes
		• CPAP: 4-20 cm H ₂ O			Yes
	Invasive support	• Tracheostomy ± mechanical ventilation			Maybe – need VFSS
		• Intubation	≤120	≤ 100%	Yes

Flow vs. FiO₂ (adjusted independently of each other)

	Flow (Liters per minute)	FiO ₂ (fraction of inspired oxygen)
Clinical Indication	Hypoxic patients that need PEEP Tachypneic CO ₂ retainers Insufficient tidal volumes	Hypoxia and perfusion issues (e.g., PNA, ARDS)
Function	Meet or exceed respiratory demand Address WOB	Gas exchange If approaching 100%, NPPV or intubation imminent
Effect	Creates extrinsic PEEP = increase oxygenation Washes out dead space (CO ₂)	
Reference Point	Normal tidal breathing: 20-30 LPM <i>Inhale 350-500mL/breath</i> Respiratory distress: 60+ LPM	Room air: 21%

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HFNC: Benefits and Risks

Increased utilization for: acute (moderate) respiratory failure due to hypoxemia, the post-extubation period, pre-intubation period, respiratory infection, and obstructive airway disease (Adhikari, et al., 2021)

Effects	Benefits	Risks
<ul style="list-style-type: none">• Produces extrinsic PEEP (reduces WOB)• Meets or exceeds respiratory demand• Eliminates anatomic dead space (improved oxygenation)• Heats and humidifies air	<ul style="list-style-type: none">• Allows for PO intake, speech, and expectoration• Reduces use of NPPV• Precise FiO2 settings• Reduced risk for facial ulcers	<ul style="list-style-type: none">• CPAP effect when mouth closed (3.7 – 8.7 cm H₂O @ 20-60 LPM)• Slower oral phase of swallow• Greater variability of dLVC (duration of laryngeal vestibule closure) @ 50-60 LPM

As dysphagia clinicians treating patients in respiratory compromise, we need to ask:

- Why does this patient require _____ level of O₂ support?
- What is the underlying pathology/failure?
- What is the prognosis for improvement? Is this an acute vs chronic need/problem?
- In what direction is the patient trending (increasing or decreasing O₂ needs)? Duration of HFNC dependence?

There is inherent ambiguity and uncertainty surrounding HFNC-dependent patients. SLPs *can* rise to the challenge!

When a clinical case presents with feature X → respond with Y

- Variability → Adaptability
- Impermanence → Communication
- Incompleteness → Interdisciplinary Collaboration
- Complexity → Research
- Unfamiliarity → Honesty/ Disclosure

"It is possible to shift the focus from the treatment itself to the patient's autonomous choice to continue [the treatment] despite the burdens, and thereby open the range of ethically permissible actions. Although some clinicians may view the patient's quality of life as unacceptable, fully informed patients may legitimately choose differently...Such a shift does not deny the clinician's personal views but expands the possibilities for compromises that preserve integrity."

- Rushton, 2016 (Ethics in Critical Care)

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