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MASSACHUSETTS
GENERAL HOSPITAL

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Massachusetts General Hospital
Respiratory Care Policy Manual
Gas Therapy

High Flow Nasal Cannula (HFNC) Use in Patients with COVID-19 ARDS

DESCRIPTION

Heated, humidified oxygen can be administered effectively at flow rates up to 60 L/min via a specially designed nasal cannula. High flow oxygen provides a precise, accurate oxygen concentration. There is minimal entrainment of room air with a high flow delivery system, so that the FiO₂ set on the device is equal to the FiO₂ delivered to the patient. In addition, the HFNC reduces dead space ventilation and applies a variable, unknown level of PEEP to the airway.

PATIENT SELECTION

Indications

1. Progressive Hypoxemic respiratory failure; PaO₂/FiO₂ < 200 mm Hg
2. SpO₂ < 90% with a partial/non rebreathing mask at > 10 L/min
3. Patient is unable to tolerate oxygen mask (partial rebreathing, non-rebreathing or high flow mask), when removal of the mask results in significant desaturation or when supplemental oxygen requirement prevents oral intake.

Contraindications (other methods of O₂ administration should be considered first)

1. Hypercapnic respiratory failure
2. Obstructive sleep apnea
3. Tracheostomy
4. Acute cardiogenic pulmonary edema
5. Stable COPD with baseline increased PaCO₂

Recent data shows the risk of nosocomial transmission of SARS Co-V2 is not increased with HFNC. Therefore, HFNC may be an acceptable therapy for patients with mild hypoxemic respiratory failure in patients with confirmed or suspected COVID-19, as well as patients flagged as Co-V risk.

KEY POINTS

1. The patient **MUST** be transferred to an Intensive Care Unit **BEFORE** starting HFNC.
2. In addition to the objective measures, assessment of subjective measures (RR/WOB; as in checklist below) is important to reduce risk of potential self-induced lung injury.
3. Points to consider (below) should be completed shortly after initiation, approximately 2 hours later, and on a continuous basis thereafter to ensure HFNC remains beneficial (utilizing form below). Discussions should be with all team members, including ICU attending, ICU nurse, ICU resource nurse and/or CNS/NPS, ICU respiratory therapist and Charge Respiratory Therapist.
4. Lack of evidence of improvement within 24-48 hours (for example: inability to decrease FiO₂ or HFNC liter flow), intubation should be considered.

CONSIDERATION

1. In patients who have hypoxemic respiratory failure and specific goals of care (GOC) limitations, HFNC may still be used.
2. Discussion should be had with the attending physician and patient to ensure GOC are clearly understood.

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3. The attending physician, medical senior physician, nursing supervisor, and charge registered respiratory therapist should huddle to ensure patient disposition is appropriate (i.e.: ICU vs floor).
4. If the GOC limitations include DNR/DNI, CMO, or no transfer to ICU, HFNC may be initiated and maintained on the general care floors.
5. If the GOC permit intubation (DNR only), the patient should be transferred to an ICU.

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APPROVED BY:

Robert M. Kacmarek, Ph.D., RRT
Director of Respiratory Care

Lorenzo Berra, MD
Medical Director, Respiratory Care

Points to consider shortly after initiation of HFNC:

	Yes	No
Does this patient require immediate intubation?	<input type="checkbox"/>	<input type="checkbox"/>
Are relative contraindications for HFNC present? (hypercapnia, airway protection, aspiration risk, obstructed nasal passage, deviated septum, copious secretions)	<input type="checkbox"/>	<input type="checkbox"/>
Is patient tolerating HFNC poorly/appearing uncomfortable?	<input type="checkbox"/>	<input type="checkbox"/>
Will frequent titration of setting be required?	<input type="checkbox"/>	<input type="checkbox"/>
Is patient hemodynamically unstable?	<input type="checkbox"/>	<input type="checkbox"/>
Has the patient's hypoxia failed to improve with HFNC?	<input type="checkbox"/>	<input type="checkbox"/>
Has the patient's work of breathing failed to improve with HFNC? (respiratory rate, use of accessory muscles, pronounced chest excursion, ability to speak)	<input type="checkbox"/>	<input type="checkbox"/>

A YES response to any of the above should prompt consideration for intubation.

Questions to be answered at First Huddle:

What is the goal for HFNC in this patient?

What is the alternative if HFNC fails?

Has RICU been consulted (if patient not DNI and has a potentially difficult airway)?

Second Huddle, after 2 hours of HFNC and ongoing:

	Yes	No
Has gas exchange and dyspnea improved in past 2 hours? (respiratory rate, use of accessory muscles, pronounced chest excursion, ability to speak)	<input type="checkbox"/>	<input type="checkbox"/>
Is the goal of HFNC being met?	<input type="checkbox"/>	<input type="checkbox"/>
Is SpO ₂ > 92% and FIO ₂ < 0.6?	<input type="checkbox"/>	<input type="checkbox"/>
Is patient hemodynamically stable?	<input type="checkbox"/>	<input type="checkbox"/>

A NO response to any of the above should prompt consideration for discontinuing HFNC and proceeding to intubation.

Clinical Parameters to monitor before initiation of HFNC as well as every 2hours after

****The absence of global improvement in these parameters should prompt consideration for discontinuing HFNC and proceeding to intubation.***

	<i>Before Initiation</i>	<i>2 hrs after initiation</i>	<i>4 hrs after initiation</i>	<i>6 hrs after initiation</i>
<i>HFNC Flow</i>				
<i>HFNC FiO₂</i>				
<i>RR</i>				
<i>SpO₂</i>				
<i>Mental Status</i>				
<i>Dyspnea</i>				
<i>HR</i>				
<i>BP</i>				

	<i>8 hrs after initiation</i>	<i>10 hrs after initiation</i>	<i>12 hrs after initiation</i>	<i>14 hrs after initiation</i>
<i>HFNC Flow</i>				
<i>HFNC FiO₂</i>				
<i>RR</i>				
<i>SpO₂</i>				
<i>Mental Status</i>				
<i>Dyspnea</i>				
<i>HR</i>				
<i>BP</i>				

Please return this form to Carolyn La Vita, Respiratory Care Services.