Nasal High Flow for COVID-19 Preparedness and Beyond

Summary

Nasal High Flow, the delivery of a heated, humidified air/oxygen up to 60 L/min using a high flow nasal cannula (HFNC), has been shown to:

- Reduce rate of intubation of patients with AHRF – Frat, NEJM, 2015
- Reduce rate of reintubation – Hernandez, JAMA, Apr 2016
- Reduce ICU length of stay – Hernandez, JAMA, Oct 2016
- Reduce ICU admissions – UnityPoint Health, Des Moines, IA, 2020

The coronavirus disease (COVID-19) is a respiratory tract infection caused by a newly emergent coronavirus (SARS-CoV-2). Approximately 20-30% of COVID-19 patients develop severe disease that requires hospitalization and oxygen support, and approx. 5-10% of patients require admission to an intensive care unit.

The most common diagnosis in COVID-19 patients is severe **pneumonia** with patients developing **acute hypoxemic respiratory failure** with thick secretions.

Evidence

Published COVID-19 results where nasal high flow is the first-line respiratory support have shown a reduction in mortality, LOS and need for mechanical ventilation with COVID-19 patients.

In the *International Learning from COVID-19 Webinar*, Professor Gerard Criner (Temple University Hospital, Philadelphia, PA), presented their results which showed that high flow nasal therapy decreased the need for intubation in COVID-19 patients with severe hypoxemic respiratory failure (https://www.youtube.com/watch?v=10DpqkghyJ0 from 19:00 to 36:50).

In the *Nasal High Flow and COVID-19 Webinar*, Dr. Matthew Trump (UnityPoint Health, Des Moines, IA), presented their results related to nasal high flow therapy which showed that 54% of COVID-19 patients treated with nasal high flow avoided ICU admission (https://bit.ly/30OXzaE).

Guidelines

Published guidelines for the treatment and management of COVID-19 patients have included and describe the use of nasal high flow as the first line of respiratory support. Examples include:

National Institutes of Health
https://www.covid19treatmentguidelines.nih.gov/

American Thoracic Society
https://www.thoracic.org/patients/patient-resources/resources/covid-19-diagnosis-and-mgmt.pdf)

Society of Critical Care Medicine
https://www.esicm.org/wp-content/uploads/2020/03/SSC-COVID19-GUIDELINES.pdf)

Protocols

Successful use of nasal high flow therapy is highly dependent on the ability to deliver flows of humidified air/oxygen that meet the patient's peak inspiratory flow demands and ensure the patient's ability to comply with treatment (comfort).

Protocols that are based on published best practice approaches are essential for achieving a successful outcome that prevents patient escalation and reduces hospital length of stay.

A recent systematic search of the PubMed database found 48 controlled nasal high flow studies, in which 92% reported using F&P Optiflow systems and 83% reported a range of flow rates requiring settings above 40 L/min.

The chart below shows the flow rates reported in the 48 controlled studies and are largely between 40 L/min and 60 L/min, and all fall within the flow range delivered by F&P Optiflow systems (maximum 60 L/min).