

ASPR TRACIE Technical Assistance Request

Request Receipt Date (by ASPR TRACIE): 16 November 2020

Response Date: 17 November 2020

Type of TA Request: Standard

Request:

The requestor asked for information and guidance on the usage of high-flow nasal cannulas (HFNC) for patients hospitalized with COVID-19.

Response:

ASPR TRACIE reviewed existing resources on our [Novel Coronavirus Resources](#) page. We also conducted a search online for relevant resources. Materials gathered are provided in this document.

Please refer to the Centers for Disease Control and Prevention's [Coronavirus Disease 2019 webpage](#) for the most up-to-date clinical guidance on COVID-19 outbreak management.

I. Select Resources

National Institutes of Health. (2020). [Oxygenation and Ventilation](#).

This web page provides recommendations for hypoxemic patients based on the Surviving Sepsis Campaign Guidelines for adult and pediatric sepsis and COVID-19.

National Emerging Special Pathogen Training and Education Center. (2020). [Respiratory Support Strategies](#).

This slide deck provides information on nasal cannulas, non-invasive ventilation, invasive ventilation, and modifications to non-invasive devices for invasive ventilation use. It also includes a suggested continuum of respiratory support strategies for COVID-19 patients.

II. Clinical Protocols

Jayaprakash, N. (2020). [High Flow Nasal Cannula \(HFNC\) Use in COVID-19 Respiratory Failure](#). Society of Critical Care Medicine.

This brief video presentation provides an overview of HFNC use for COVID-19 patients.

Massachusetts General Hospital. (2020). [Respiratory Care Policy Manual. Gas Therapy, High Flow Nasal Cannula \(HFNC\) Use in Patients with COVID-19 ARDS.](#)

This policy document provides healthcare providers with points to consider shortly after initiation of HFNC, and two hours or more after HFNC initiation.

Penn Medicine, Department of Nursing Education and Research. (2020). [High Flow Nasal Cannula: Management of COVID-19 Patients.](#)

This slide deck provides information on how to utilize HFNC for COVID-19 patients, including the personal protective equipment that should be worn by healthcare workers and patients, HFNC settings and monitoring, interventions if the patient experiences distress, how to transport the patient when they need to leave for tests/ procedures, and suggestions for troubleshooting issues with HFNC.

Penn Medicine, Center for Evidence-based Practice. (2020). [COVID-19: High Flow Nasal Cannula \(HFNC\)/ Non-Invasive Positive Pressure Ventilation \(NIPPV\) Indications.](#)

This document provides information on the indications for HFNC and NIPPV in COVID-19 patients, how these devices should be initiated, and the threshold levels for intubation and mechanical ventilation for patients who do not respond or deteriorate when on HFNC or NIPPV.

U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2020). [High-flow Nasal Cannulation: A Non-invasive Resuscitation Therapy for COVID-19 Patients.](#)

This web page identifies considerations for healthcare providers who are exploring the use of HFNC for patients infected with COVID-19. It also includes information on how to request HFNC equipment.

U.S. Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. (2020). [Ventec Life Systems – VOCSN High Flow Nasal Cannula Resources.](#)

This web page provides information on the VOCSN High Flow therapy, which “delivers a continuous, set flow of gas (usually air and oxygen from a high-pressure source) to the patient through a large bore nasal cannula or other interface.”

III. Other Relevant Resources

American Academy of Medical Colleges. (2020). [Coronavirus \(COVID-19\) Clinical Guidance Repository.](#)

This web page is a repository of open access resources for healthcare professionals and provides information on COVID-19 treatment and management guidance, including information on respiratory guidance.

Calligaro, G.L., Lalla, U. Audley, G., et al. (2020). [The Utility of High-Flow Nasal Oxygen for Severe COVID-19 Pneumonia in a Resource-constrained Setting: A Multi-centre Prospective Observational Study](#). EClinicalMedicine.

The authors conducted a study on consecutive patients with COVID-19-related hypoxemic respiratory failure treated with high-flow nasal oxygen (HFNO) at two tertiary hospitals in Cape Town, South Africa. Results indicated that HFNO can successfully be utilized to provide respiratory support to patients with COVID-19 pneumonia and hypoxemic respiratory failure. Mechanical ventilation was avoided even in patients with significant hypoxemia. When used in combination with mechanical ventilation, however, HFNO failed in a little over half of the cohort, and mortality rates in this group of patients was very high.

Demoule, A., Vieillard Baron, A., Darmon, M., et al. (2020). [High-flow Nasal Cannula in Critically Ill Patients with Severe COVID-19](#). American Journal of Respiratory and Critical Care Medicine. 202(7).

The authors conducted a retrospective study on 379 critically ill COVID-19 patients admitted to the intensive care unit (ICU) to compare intubation and mortality rates between those who received HFNC and those who did not. Results indicated that HFNC significantly reduces intubation and subsequent invasive mechanical ventilation but does not affect case fatality.

Li, J., Fink, J.B., and Ehrmann, S. (2020). [High-flow Nasal Cannula for COVID-19 Patients. Low Risk of Bio-aerosol Dispersion](#). European Respiratory Journal. 55(5): 2000892.

The authors reviewed literature from around the world to determine whether HFNC increased bio-aerosol dispersion in the environment due to the high gas flow used. They found that compared to oxygen therapy with a mask, the utilization of HFNC does not increase dispersion or microbiological contamination into the environment. The authors also found that wearing a surgical mask on top of HFNC reduced the aerosol transmission during coughing or sneezing.

Montiel, V., Robert, A., Robert, A., et al. (2020). [Surgical Mask on Top of High-flow Nasal Cannula Improves Oxygenation in Critically Ill COVID-19 Patients with Hypoxemic Respiratory Failure](#). Annals of Intensive Care. 10(125).

The authors conducted a prospective study of 21 patients admitted with COVID-19 to a mixed ICU to assess the effect that adding a surgical mask on a HFNC system had on oxygenation parameters. Results showed that a surgical mask improved COVID-19 patient's oxygenation for severe hypoxemic respiratory failure.

Sharma, S., Danckers, M., Sanghavi, D., et al. (2020). [High Flow Nasal Cannula](#). StatPearls.

The authors assess the use of HFNC and the physiological mechanisms of action. They also identify limitations and challenges to HFNC.