F&P Optiflow

Flow Matters

EDITION 10

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COVID-19 Edition

The outbreak of COVID-19 has impacted healthcare organizations around the world.

Optiflow™ Nasal High Flow (NHF) therapy is being used to treat patients in affected hospitals, while the interest in NHF continues to grow as the virus spreads worldwide.

Summary

- NHF has been used by clinicians as respiratory support for COVID-19 patients[1-3]
- NHF is recognized by the World Health Organization (WHO) for treatment of patients with COVID-19
- The WHO says NHF patients should be in a monitored setting and airborne precautions should be used[4]

Management of COVID-19

The WHO provides helpful information on COVID-19 which includes:

- Rolling updates on their COVID-19 web page[5]
- Interim guidance for clinical management of severe acute respiratory infection when novel coronavirus (2019-nCoV) infection is suspected[4]
- Interim guidance for infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected[6]

The WHO refers to the use of NHF therapy for pre-oxygenation prior to intubation and for noninvasive respiratory support with close monitoring of clinical deterioration in selected patients with hypoxemic respiratory failure.[4]

Most of the published data and opinion on the management of COVID-19 comes from clinical experience and restrospective observation. Although reports vary, they include hypoxemic respiratory failure and the use of NHF to reduce the need for tracheal intubation.

A retrospective observational study published in *Annals of Intensive Care* by Wang et al.[1] describes the experience of using NHF therapy in patients with COVID-19.

A recent publication in *The Lancet* from Phua et al.[2] reviewed available evidence and experience to outline recommendations relating to the challenges of managing of COVID-19.

Another recent publication by Sun et al.[3] in *Annals of Intensive Care* retrospectively examined their approach in order to determine factors for reducing COVID-19 related mortality.

Infection prevention and control

The WHO outlines additional precautions that should be taken to protect healthcare workers during aerosol-generating procedures associated with an increased risk of transmission[6]. These procedures include tracheal intubation, noninvasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation and bronchoscopy.

NHF is not specifically named by the WHO as an aerosol-generating procedure associated with an increased risk of transmission.[6] However, there has been some uncertainty about the potential creation of aerosols from all forms of noninvasive respiratory support including NHF.

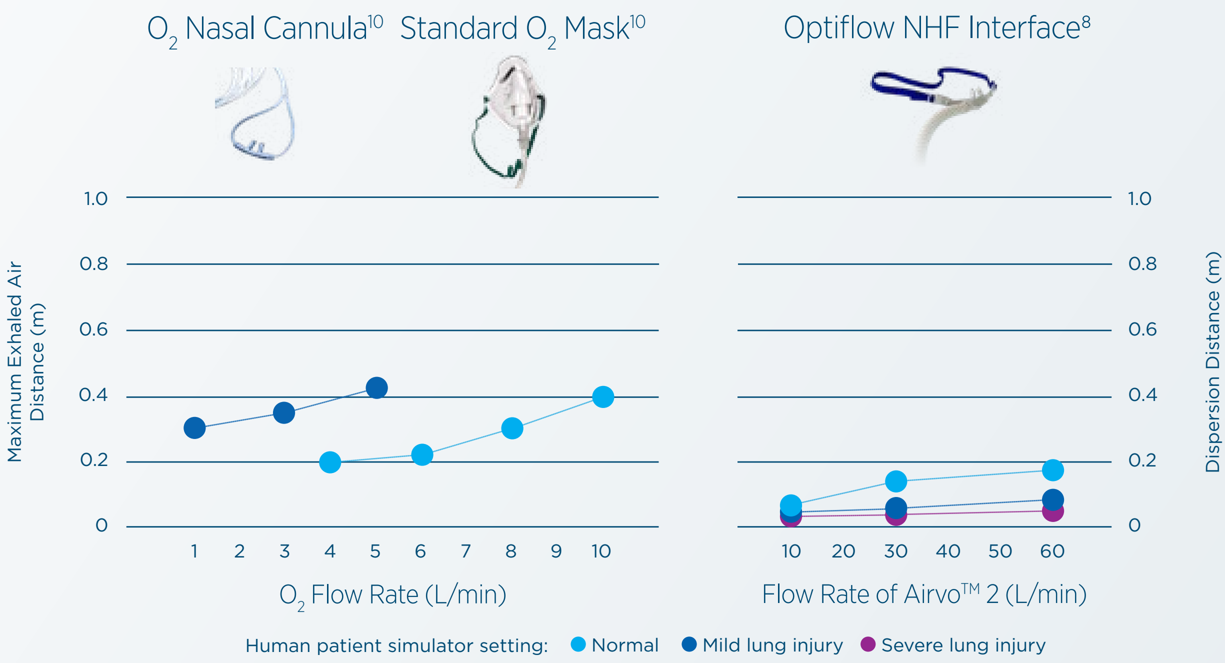
According to the WHO: *"Because of uncertainty around the potential for aerosolization, HFO, NIV, including bubble CPAP, should be used with airborne precautions until further evaluation of safety can be completed."*[4]

Recent publications by Hui et al.[7], Leung et al.[8] and Hui et al.[9] compared the application of NHF to a range of alternative therapies and interfaces and did not find an increased risk of transmission via air dispersion. Collated air dispersion results from two studies conducted by Hui et al.[7,9] are illustrated in the chart below.

Li et al.[10] reviewed the existing literature and determined that dispersion via NHF shows a similar risk to standard oxygen masks. For resources in which the principle author of this paper discusses their findings in detail, visit *The International Society for Aerosols in Medicine*'s COVID-19 webpage[11].

Ongoing research continues to investigate the risk of transmission of COVID-19 in the clinical setting.

Changes in Exhaled Air Dispersion*



*Dispersion distance data shown on the chart is combined from two studies conducted by the same authors.
The experiments were conducted in rooms with different configurations. Not all of the interfaces depicted were directly compared.

For further information, please visit the F&P webpage: www.fphcare.com/COVID-19 or click on the hyperlinked reference below.

1. Wang K, Zhao W, Li J, et al. The experience of high-flow nasal cannula in hospitalized patients with 2019 novel coronavirus-infected pneumonia in two hospitals of Chongqing, China. Ann Intensive Care. 2020 Mar 30;10(1):37.
2. Phua J, Weng L, Ling L, et al. Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations. Lancet Respir Med. 2020 May;8(5):506-517.
3. Sun Q, Qiu H, Huang M, Yang Y. Lower mortality of COVID-19 by early recognition and intervention: experience from Jiangsu Province. Ann Intensive Care. 2020 Mar 18;10(1):33.
4. World Health Organization. Clinical management of severe acute respiratory infection when novel coronavirus (2019-nCoV) infection is suspected. Interim guidance. 28th January 2020. Available from: https://www.who.int/docs/default-source/coronaviruse/clinical-management-of-novel-cov.pdf?sfvrsn=bc7da517_2 [Accessed 4th March 2020].
5. World Health Organization. Rolling updates on coronavirus disease (COVID-19). Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen [Accessed 4th March 2020].
6. World Health Organization. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected. Interim guidance. 25th January 2020. Available from: https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125 [Accessed 4th March 2020].
7. Hui DS, Chow BK, Lo T, et al. Exhaled air dispersion during high-flow nasal cannula therapy versus CPAP via different masks. Eur Respir J. 2019;53(4):1802339.
8. Leung CCH, Joynt GM, Gomersall CD, et al. Comparison of high-flow nasal cannula versus oxygen face mask for environmental bacterial contamination in critically ill pneumonia patients: a randomized controlled crossover trial. J Hosp Infect. 2019;101(1):84–8.
9. Hui DS, Chan MTV, Chow B. Aerosol dispersion during various respiratory therapies: A risk assessment model of nosocomial infection to health care workers. Hong Kong Med J. 2014;20(suppl 4):S9-13.
10. Li J, Fink JB, Ehrmann S. High-flow nasal cannula for COVID-19 patients: low risk of bio-aerosol dispersion. European Respiratory Journal. 2020 May 1;55(5).
11. International Society for Aerosols in Medicine. COVID-19 Resources. Available from: https://www.isam.org/covid [Accessed 22nd May 2020].

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