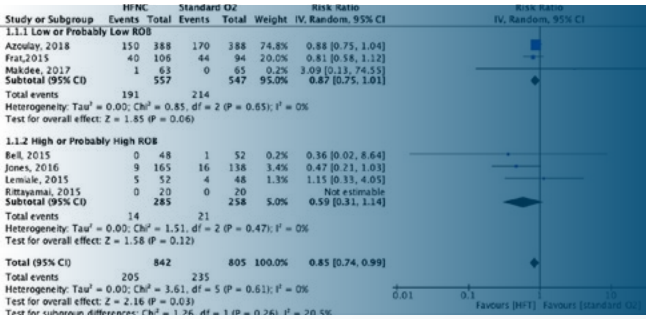
F&P Optiflow

Flow Matters

EDITION 11

5 Aug 2020



Optiflow™ matters

Guideline recommendations for the use of Nasal High Flow (NHF), aka High Flow Nasal Cannula (HFNC), are supported by analyzed data from research investigating the effect of NHF on clinical outcomes, such as the reduced need for tracheal intubation. When selecting an NHF system, it is important to ensure the entire system, including design and device limits, can provide the therapy proven to deliver the expected outcomes.

Summary

- The National Institutes of Health (NIH)* and the Surviving Sepsis Campaign (SSC)** recommend NHF for use in COVID-19 related hypoxemia.[1,2]
- These recommendations are supported by findings from four systematic reviews with meta analysis.[3-6]
- A survey conducted by Fisher & Paykel Healthcare (F&P) showed that the flow rates used in the controlled published studies[7-23] (analyzed by the four meta-analyses) ranged from 10 L/min to 60 L/min and 88% of the studies required flows ≥ 45 L/min.
- When this survey was repeated on the 49 acute adult NHF controlled studies (with subjects n ≥ 40), found using a systematic search of the PubMed database, it again showed that the flow rates used ranged from 10 L/min to 60 L/min and that 82% of the studies required flows ≥ 45 L/min.
- F&P Optiflow systems (including F&P Optiflow interfaces) and humidity settings of 37°C were widely used.

Guideline recommendations

Recent guidelines for the clinical management of COVID-19 from organisations such as the NIH and SSC recommend the use of NHF as respiratory support in adults. These recommendations are supported by systematic reviews with meta analysis, which search for, review and analyze clinical data from controlled studies such as Randomized Controlled Trials (RCTs). F&P conducted a survey of the systems and settings used in studies from which analyzed data formed the basis of these recommendations.

*The NIH, a part of the U.S. Department of Health and Human Services, is the USA's national medical research agency.

**The SSC is a collaboration between the Society of Critical Care Medicine (SCCM) and the European Society of Intensive Care Medicine (ESICM).

Reviews with meta analysis

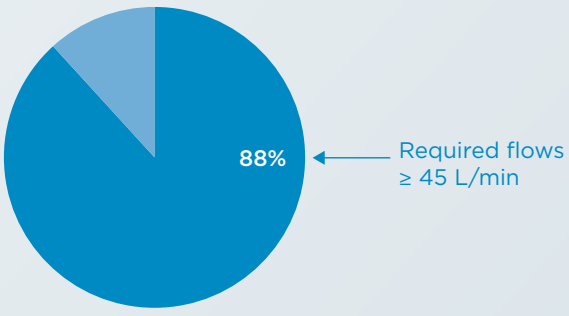
NHF recommendations from NIH COVID-19 Treatment Guidelines and the SSC Guidelines on the Management of Critically Ill Adults with Coronavirus Disease 2019 (COVID-19) are supported by the following systematic reviews with meta analysis: Zhao et al. 2017, Ou et al. 2017, Ni et al. 2018, and Rochwerg et al. 2019.[1-6]

Analyzed published studies

These four reviews analyzed data from 17 published studies (mostly RCTs) and one presentation.[7-24] The studies represent various NHF applications, including primary respiratory support, pre-oxygenation prior to intubation, post extubation respiratory support and post surgical respiratory support. The studies reported the NHF systems and settings that were used.

Systems and settings

The reported flow rates ranged between 10 L/min and 60 L/min with distribution favouring the higher end of the range.



Of the 17 published and analyzed studies, 16 (94%) used F&P Optiflow systems, including an F&P Optiflow patient interface and an F&P humidity delivery system with humidity setting of 37°C.

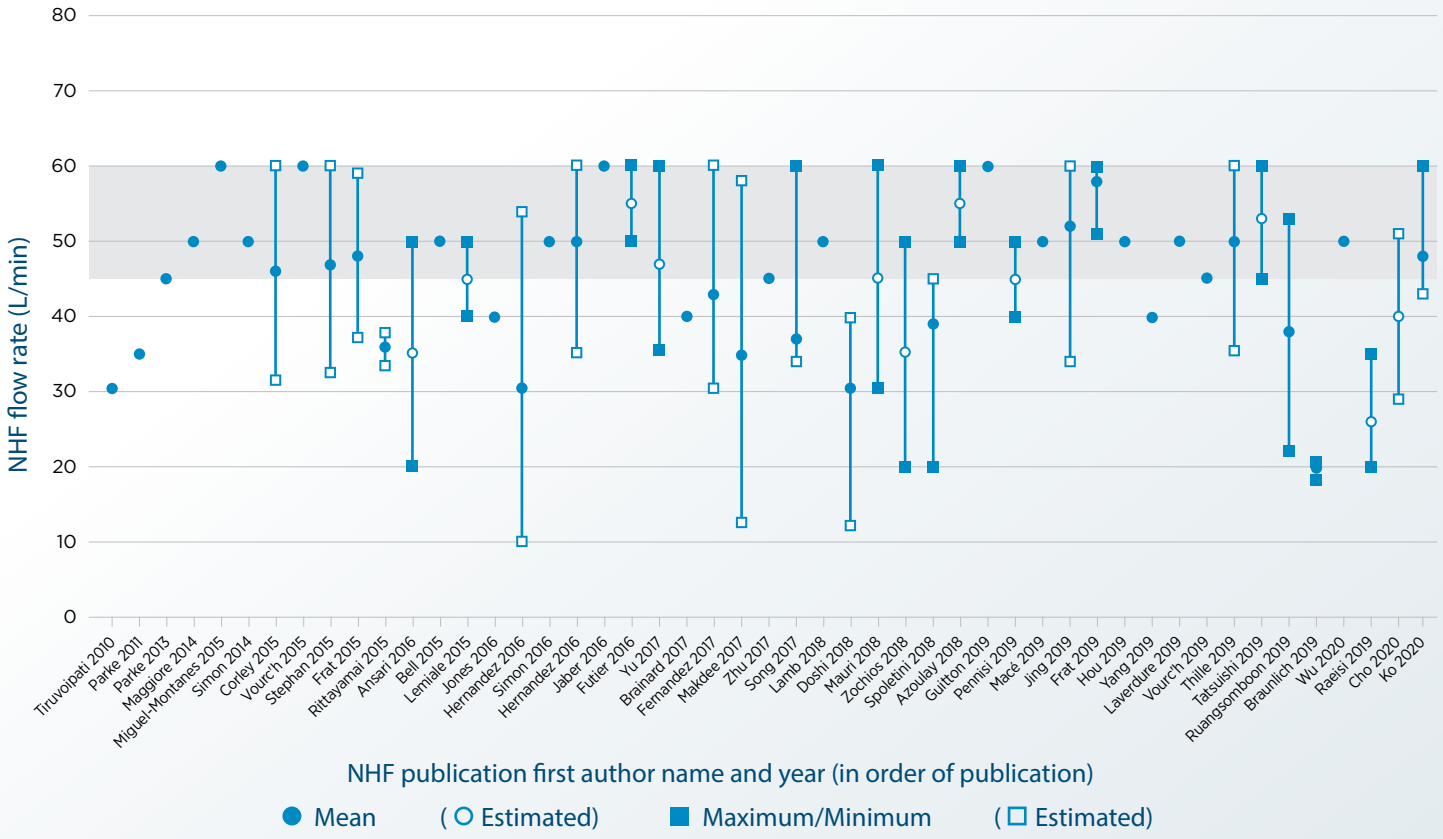
Wider body of evidence

To further investigate the body of evidence (beyond that analyzed in the four meta analyses[3-6]), the survey method was repeated for the 49 acute adult NHF controlled studies[10-23,25-59], with subjects n ≥ 40, found using a systematic search of the PubMed database. Again, the reported flow rates ranged between 10 L/min and 60 L/min with distribution favouring the higher end of the range (82% of the studies required flows ≥ 45 L/min). The flow rates reported in the 49 controlled studies are shown in the chart below.

Of the 49 controlled studies 92% used F&P Optiflow systems, including an F&P Optiflow patient interface and an F&P humidity delivery system with humidity setting of 37°C.

When selecting an NHF system, it is important to ensure the entire system, including device capabilities such as flow rate and humidity delivery, can provide the therapy to deliver the expected outcomes proven in the clinical body of evidence.

Flow rates used in the 49 controlled studies on acute adult NHF (with subjects n ≥ 40)



Definitions

Systematic search of the PubMed database: Conducted on 12 July 2020 using pre-defined search terms. Filtered using an Excel database and checked by an internal clinical team.

Acute adult NHF: All NHF applications used in hospital acute treatment areas, including primary respiratory support, pre-oxygenation prior to intubation, post extubation respiratory support, post surgical respiratory support and respiratory support during medical recovery.

Hospital acute treatment areas: All in-patient treatment areas and emergency department. Excluding operating theatres, procedural suites, outpatient clinics and rehabilitation.

Controlled studies: Outcomes RCTs, pilot RCTs, physiological RCTs, non-randomized controlled trials and randomized crossover trials which were either open label or blinded, single or multicentre.

Estimated max/min flow: Calculated from the reported mean and standard deviation or interquartile range, and/or the known flow limits of the system used. Where the mean alone is reported, no estimated maximum or minimum is calculated unless an initial flow (different to the mean) is reported in which case it is taken as one of the limits.

Estimated mean: Calculated as the mean of the reported range limits, or range limits and initial flow rate.

F&P Optiflow system: An F&P purpose-built sytem for NHF – either an Airvo™ Optiflow system or a non-Airvo Optiflow system.

Airvo Optiflow system: An F&P Airvo system with integrated flow source, humidifier and humidity delivery system (F&P heated breathing tube and F&P auto-fill chamber). Used with an F&P Optiflow patient interface and able to deliver NHF anywhere in the hospital independant of medical air supply.

Non-Airvo Optiflow system: An F&P humidifier (e.g. MR850 system) and humidity delivery system (F&P heated breathing tube and F&P auto-fill chamber). Used with an F&P Optiflow patient interface and an independant flow generator such as a HFNC-capable ventilator.

For further information, please visit www.fphcare.com/optiflow or click on the hyperlinked reference below.

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