Guideline recommendations

Recent guidelines for the clinical management of COVID-19 from organizations such as the NIH, ANZICS 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 review 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).**

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To further investigate the body of evidence (beyond that analyzed in the five meta analyses\textsuperscript{4-8}), the review method was repeated for the 52 acute adult NHF controlled studies\textsuperscript{9-25,32-66} with subjects n > 39, found using a systematic search of the PubMed database. Again, the reported flow rates ranged between 10 L/min and 60 L/min with the majority requiring flows at the higher end of the range (85% of the studies required flows \( \geq 45 \) L/min). The flow rates reported in the 52 controlled studies are shown in the chart below.

Of the 52 controlled studies, 94\% used F&P Optiflow systems, including a F&P Optiflow patient interface and a F&P humidity delivery system with humidity setting of 37 °C.

When selecting a 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 52 controlled studies on acute adult NHF (with subjects n > 39)

<table>
<thead>
<tr>
<th>NHF publication first author name and year</th>
<th>Flow rate (L/min)</th>
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<tr>
<td>Mean ((\text{Estimated}))</td>
<td>Maximum/Minimum ((\text{Estimated}))</td>
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**Definitions**

- **F&P Optiflow system**: A F&P purpose-built system for NHF – either an Airvo\textsuperscript{Tm} Optiflow system or a non-Airvo Optiflow system.

- **Airvo Optiflow system**: A 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 a F&P Optiflow patient interface and able to deliver NHF anywhere in the hospital independent of medical air supply.

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

- **Systematic search of the PubMed database**: Conducted on 17 September 2020 using pre-defined search terms. Filtered using an Excel database and checked by an internal clinical team.

- **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.

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

**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.

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

**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.