Granton et al. 2020, Society of Critical Care Medicine

High flow nasal cannula (HFNC) compared with conventional oxygen therapy or noninvasive ventilation (NIV) immediately postextubation: A systematic review and meta-analysis.

Objectives:
To determine the safety and efficacy of HFNC compared to continuous oxygen therapy (COT) or NIV in critically ill adults patients only immediately postextubation.

Devices & settings

- Yes, it’s a pie chart
- 100% of the analyzed studies used F&P Optiflow Systems
- 100% of the analysed studies used nasal high flow therapy delivered by F&P Optiflow Systems

Systematic review search method

- Search terms: 'high flow nasal cannula' etc AND (adult OR mature OR grown)
- Filters: Publication date from 1 Jan 2007 to 08 Oct 2019; Humans; English; Spanish
- Total n=492
  - PubMed 201
  - Web of Science 128
  - Embase 163
- RCT n=8

Searched 'high flow nasal cannula' etc AND (adult OR mature OR grown)

Filters: Publication date from 1 Jan 2007 to 08 Oct 2019; Humans; English; Spanish

100% of the analysed studies used nasal high flow therapy delivered by F&P Optiflow Systems

100% of the analyzed studies used F&P Optiflow Systems

Systematic review with meta-analysis

Meta-analysis results
NHF vs COT (n=7 RCTs)

- Decreased rate of reintubation:
  - Relative risk [RR] 0.46, 95% confidence interval [CI] 0.30 - 0.70, moderate certainty

- Decreased postextubation respiratory failure:
  - [RR] 0.52, [CI] 0.30 - 0.91, very low certainty

May decrease use of NIV:
- [RR] 0.64, [CI] 0.34 - 1.22, moderate certainty

May decrease hospital LoS:
- -0.98 days [CI] -2.96 to 0.21, moderate certainty

May reduce LoS:
- ICU: -0.99 days [CI] -1.68 to -0.30, moderate certainty
- Hospital: -3 days [CI] -6.24 to +0.24, moderate certainty

No difference in:
- Mortality or ICU Length of Stay (LoS)
- Reintubation rate, mortality or postextubation respiratory failure

Other results
NHF vs NIV (n=1 RCT)

Decreased rate of reintubation:
- Relative risk [RR] 0.46, 95% confidence interval [CI] 0.30 - 0.70, moderate certainty

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No difference in:
- Mortality or ICU Length of Stay (LoS)

Other results
NHF vs NIV (n=1 RCT)

Analyzed RCTs

<table>
<thead>
<tr>
<th>Flow (L/min)</th>
<th>Subjects (n)</th>
<th>Inclusion Criteria Recently extubated</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 15 20 25 30 35 40 45 50 55 60</td>
<td>155</td>
<td>Congestive heart failure (CHF), non-hypercapnic COPD</td>
</tr>
<tr>
<td>100%</td>
<td>600</td>
<td>CHF as indication - high risk</td>
</tr>
<tr>
<td></td>
<td>527</td>
<td>CHF as indication - low risk</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>COPD exacerbation, PaCO2 &gt; 45mmHg</td>
</tr>
<tr>
<td></td>
<td>105</td>
<td>P/F ≤ 300 immediately before extubation</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Weaned from mechanical ventilation</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>Extubation in patients with acute respiratory failure</td>
</tr>
<tr>
<td></td>
<td>88</td>
<td>At least one high-risk criterion for postextubation failure</td>
</tr>
</tbody>
</table>

*Flow Range* | *Starting Flow* | *Mean Flow*
---|---|---
Some flows were 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.