**Integrated O₂ Therapy Option for Respiratory Care**  
**Patient Outcomes - Cost Savings – Workflow Improvement**  
**Tangible Benefits for Today’s Hospitals**

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**BACKGROUND**
This paper examines the recent trends in the use of high-flow oxygen therapy that has shown benefits in improved oxygenation post extubation, improved lung volumes, and patient comfort and tolerance.

An example of a typical hospital’s potential for cost-savings when using a device-integrated oxygen therapy option as compared to other commercially available stand-alone devices.

The discussion will conclude with a brief summary of other potential tangible benefits to the workflow and delivery of patient care.

**PATIENT OUTCOMES**
A comparison of high-flow nasal oxygen delivery vs Venturi mask oxygen therapy has shown improvements in oxygenation, comfort, and clinical outcomes. When using a high-flow nasal O₂ system, this study demonstrated a reduced need for non-invasive ventilation by approximately 80%, less episodes of O₂ desaturation by an estimated 66%, less need for reintubation by approximately 80%, and a reduced length of stay in the ICU by an approximate average of 1.3 days.¹

When studying post-cardiac surgical patients where alveolar collapse and post-op atelectasis is a common complication, use of high-flow oxygen therapy demonstrated significant improvements in end-expiratory lung volumes (hence FRC). This was determined by the use of electrical impedance tomography EELI values. This was explained by the low-level positive airway pressure generated when using a high flow nasal cannula.²

**COST SAVINGS/CONSUMABLES**
While local expenses will vary based on contractual obligations or purchasing agreements, a typical comparison of the cost to extubate a patient to both a simple aerosol oxygen mask and a high-flow nasal cannula system can be extrapolated. Theoretically, the following cost savings are possible (however there is no guarantee that any individual hospital will realize similar savings):

<table>
<thead>
<tr>
<th>Extubation to Simple Oxygen Therapy/Cold Aerosol Mask or Trach Collar</th>
<th>Extubation to High-Flow Nasal Cannula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of complete stand-alone setup (Aerosol generator, tubing, mask or trach collar)</td>
<td>$10.00 USD per patient</td>
</tr>
<tr>
<td>Cost of Aerosol mask alone (using existing circuit from ventilator)</td>
<td>$6.00 USD per patient</td>
</tr>
<tr>
<td>Cost Savings Using V500/VN500 O₂ Therapy option</td>
<td>$4.00 USD per patient</td>
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<tr>
<td>Cost of complete stand-alone setup (HF cannula, proprietary circuit)</td>
<td>$80.00 USD per patient</td>
</tr>
<tr>
<td>Cost of high-flow cannula alone (using existing circuit from ventilator)</td>
<td>$20.00 USD per patient</td>
</tr>
<tr>
<td>Cost Savings Using V500/VN500 O₂ Therapy option (excluding device and maintenance costs)</td>
<td>$60.00 USD per patient</td>
</tr>
</tbody>
</table>

**CALCULATED ANNUAL SAVINGS:**

- 3 patients per week (52 weeks/annually) extubated to simple O₂ mask/collar: $624.00 annually
- 3 patients per week (52 weeks/annually) extubated to high-flow cannula: $9,360.00 annually
**WORKFLOW IMPROVEMENT**

Time management for the caregiver is streamlined as one device can remain at the bedside to support all oxygenation and ventilation requirements of the patient simply by changing the patient-circuit interface. No longer is a second device required which also saves space in the ICU room itself reducing clutter and in some cases noise levels.

A reduction in devices will reduce the biomedical requirements and expense of maintaining a multitude of different devices with respect to spare parts, preventative maintenance, and asset tracking.

Data management and EMR charting is facilitated using the V500/VN500 O₂ therapy option as FiO₂ concentration and flow rate values can be electronically transferred via the medibus protocol. These data points can be trended over time to analyze the patient’s changing status over a few hours to several days.

**IMPACT**

A randomized clinical trial comparing post-extubation high-flow nasal cannula vs conventional oxygen therapy showed that reintubation rates was lower in the high-flow group (13 patients/4.9%) vs the conventional oxygen therapy group (32 patients/12.2%)³. As a result of this evidence, the use of high-flow oxygen therapy is becoming a growing trend. As market pressures continue to press hospitals to improve the quality of care while decreasing costs, the V500/VN500 O₂ Therapy option provides a cost-effective alternative to providing high-flow nasal O₂ therapy. Dräger will continue to work with customers to bring technology and comprehensive solutions to support these mutual objectives to improve our delivery of health care.

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**As a result of this evidence, the use of high-flow oxygen therapy is becoming a growing trend.**

**Questions?**

For questions or more information, please contact: edwin.coombs@draeger.com

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**References**

