# Integrated $O_2$ 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 $O_2$ system, this study demonstrated a reduced need for non-invasive ventilation by approximately 80%, less episodes of $O_2$ 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):

| EXTUBATION TO SIMPLE OXYGEN THERAPY/COLD AEROSOL MASK OR TRACH COLLAR | |
|---|---|
| Cost of complete stand-alone setup (Aerosol generator, tubing, mask or trach collar) | $10.00 USD per patient |
| Cost of Aerosol mask alone (using existing circuit from ventilator) | $6.00 USD per patient |
| **Cost Savings Using V500/VN500 $O_2$ Therapy option** | **$4.00 USD per patient** |
| **EXTUBATION TO HIGH-FLOW NASAL CANNULA** | |
| Cost of complete stand-alone setup (HF cannula, proprietary circuit) | $80.00 USD per patient |
| Cost of high-flow cannula alone (using existing circuit from ventilator) | $20.00 USD per patient |
| **Cost Savings Using V500/VN500 $O_2$ Therapy option (excluding device and maintenance costs)** | **$60.00 USD per patient** |
| **CALCULATED ANNUAL SAVINGS:** | |
| 3 patients per week (52 weeks/annually) extubated to simple $O_2$ 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 $O_2$ therapy option as $FiO_2$ 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 $O_2$ Therapy option provides a cost-effective alternative to providing high-flow nasal $O_2$ 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.

**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:
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