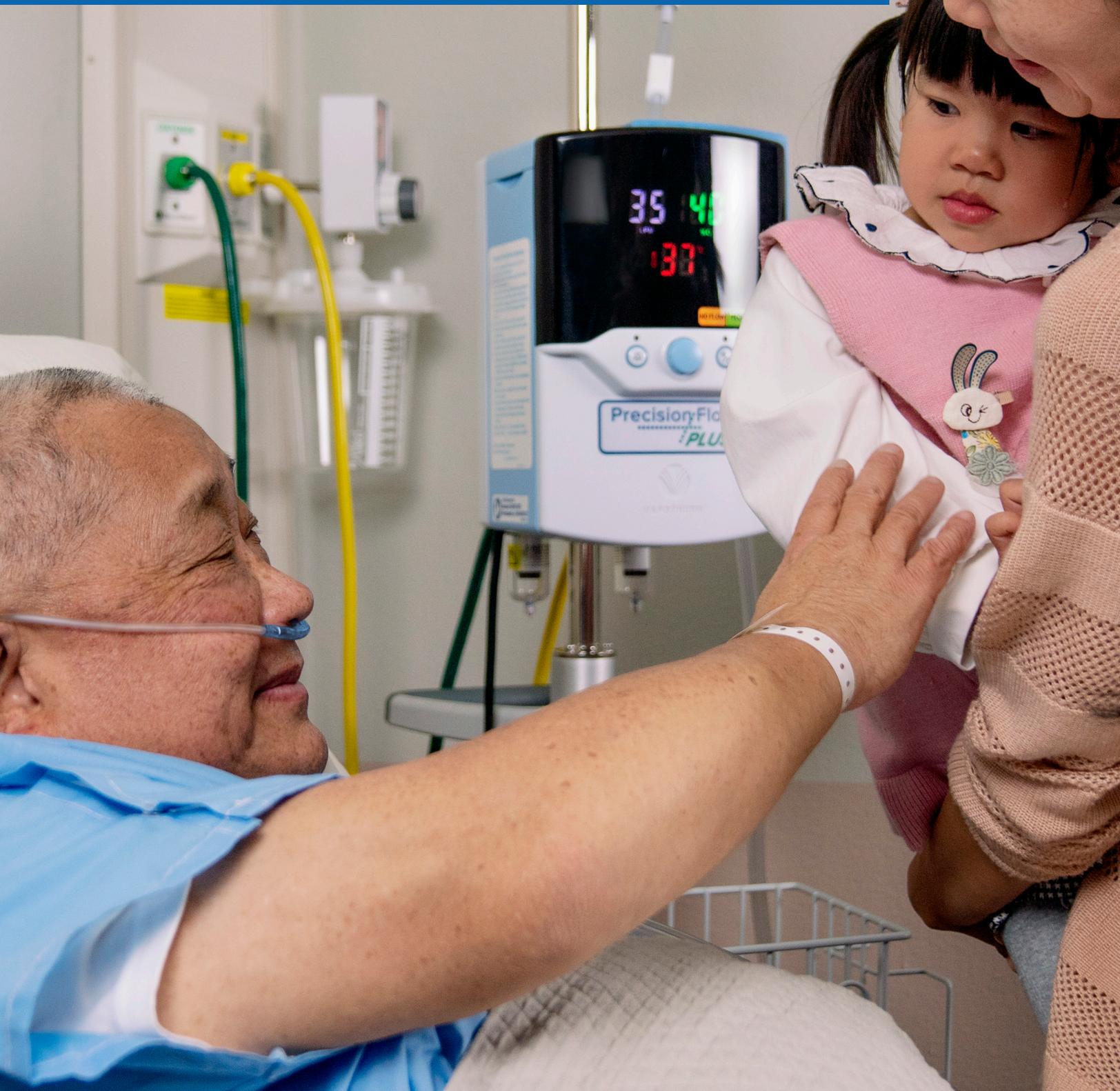


 **VAPOTHERM[®]**

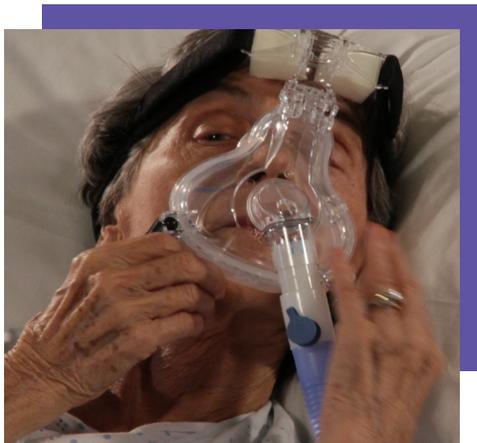
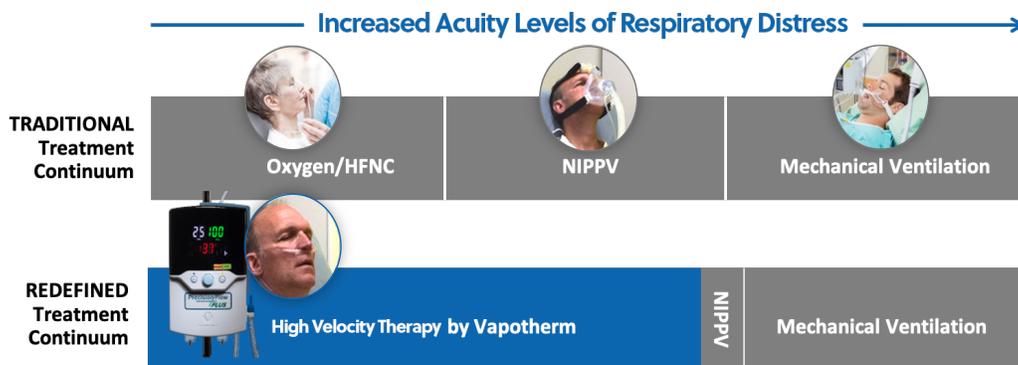
High Velocity Therapy *Mask-Free Ventilatory Support*

TAKE THE STRESS OUT OF RESPIRATORY DISTRESS



Redefining the Continuum of Care

- Provide ventilatory support for hypoxemic and hypercapnic respiratory distress
- De-escalation therapy rapidly relieves respiratory distress
- Mask-free support improves patient comfort and streamlines clinical care
- Proven & Safe - Used in over 1600 hospitals



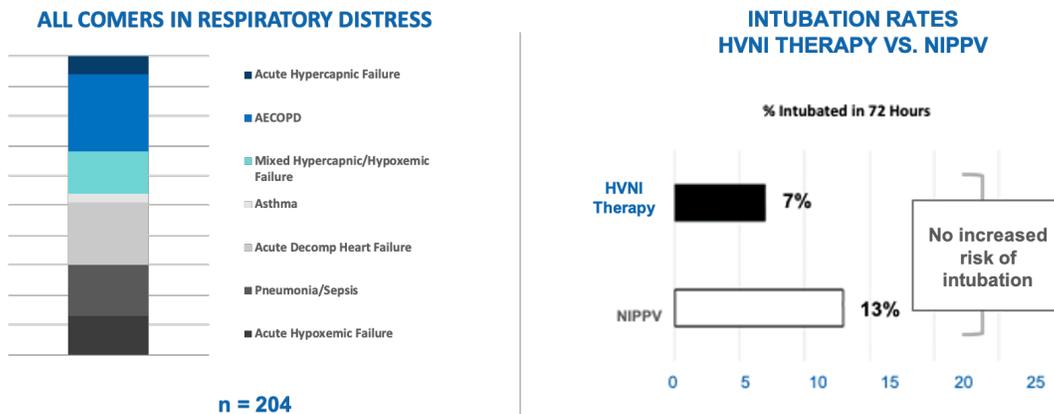
Mask intolerance causes up to 33% NIPPV Failure¹

- Patient anxiety and claustrophobia
- Clinician frustration
- Elevated acuity of care (sedation and/or intubation)

1. Carron M et al, Complications of non-invasive ventilation techniques: a comprehensive qualitative review of randomized trials, British Journal of Anaesthesia, 110 (6): 896–914 (2013).

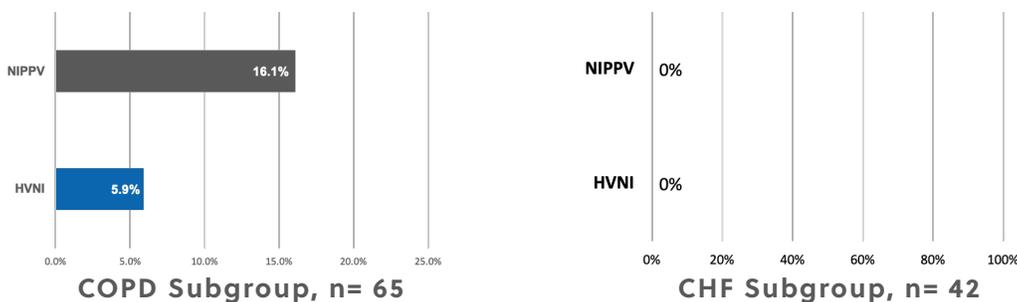
VapoTherm's High Velocity Therapy is a tool for treating respiratory distress in hospital settings, it does not provide total ventilatory support. The enclosed materials may describe certain outcomes in relation to the use of VapoTherm's High Velocity Therapy, but individual results may vary. Practitioners should refer to the full indications for use and operating instructions of any products referenced herein before prescribing them.

Clinical Evidence Shows Effective First Line Therapy

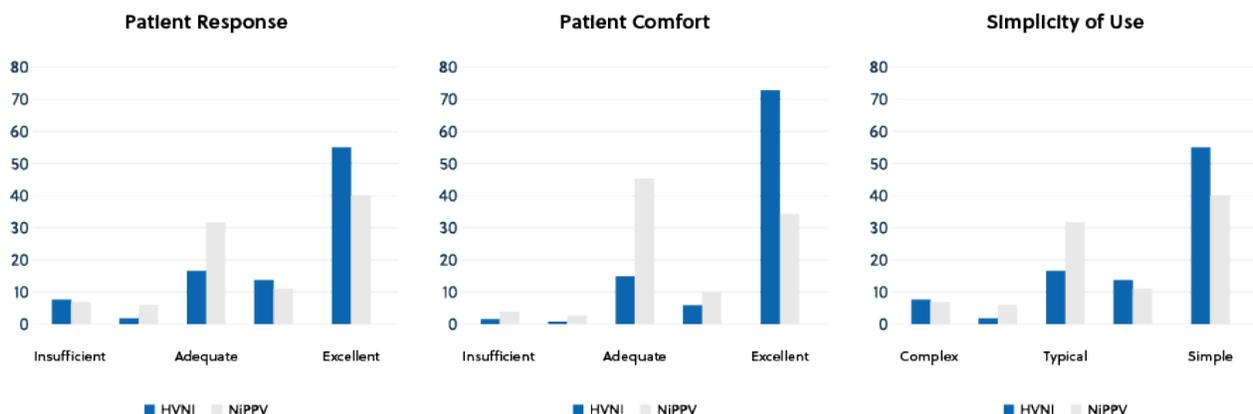


The study included any patients that presented to the Emergency Department in respiratory distress where the clinician felt there was a need for non-invasive ventilation. HVNI Therapy is not intended to provide total ventilatory support.

COPD & CHF Subgroups show no increased risk of intubation



Comfortable for patients & easy to use

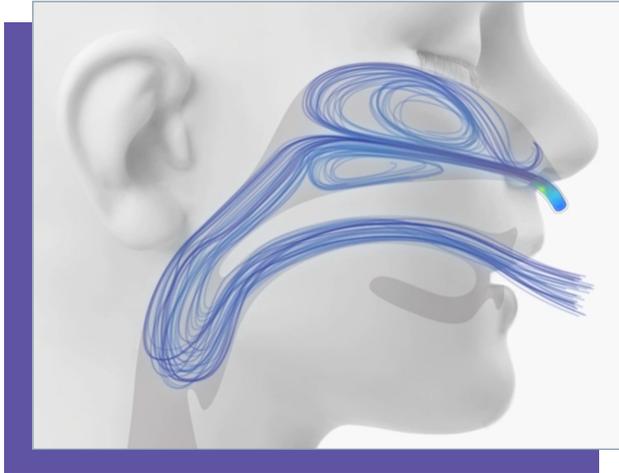


Perception of patient response, patient comfort and simplicity of use as reported by physicians in Doshi, et. al study.

2. Doshi P, Whittle JS, Bublewicz M, et al. High-Velocity Nasal Insufflation in the Treatment of Respiratory Failure: A Randomized Clinical Trial. Ann Emerg Med 2018;72:73-83 e5(Adult, Multi, Clinical Trial, Prospective, Randomized, Multi-Center, n=204).

Mechanisms of Action

High Velocity Therapy efficiently flushes the upper airway dead space between breaths to improve alveolar ventilation efficiency, even in tachypneic patients. Traditional NiPPV impacts the tidal volume to improve alveolar ventilation. Two different modalities that achieve the same outcome:



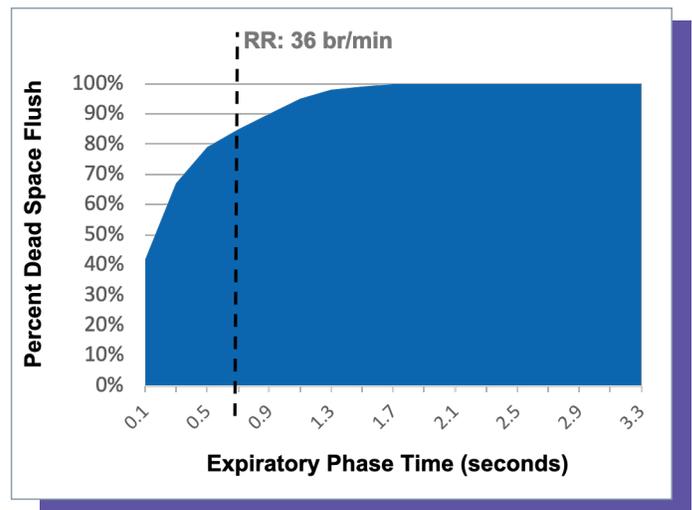
Alveolar Ventilation:
**(Tidal Volume – Dead Space) x
Respiratory Rate**

Why High Velocity?

High Velocity is critical to the ability to treat not only hypoxemic, but also hypercapnic respiratory distress³. Efficient flush delivers more fresh oxygen to the alveoli rapidly relieving respiratory distress.

The entire system is designed to deliver effective and efficient respiratory support:

- Precision control of FiO₂, flow and temperature designed to meet specific patient needs.
- Comfortable, small prong cannulas maximize flush by creating high velocity.
- Optimally heated and humidified breathing gas helps to preserve mucociliary function, mobilizes secretions, and improves patient comfort and compliance.
- Mild distending airway pressure.



Less stress for patients, providers, institutions

Patients

- Comfortable and well tolerated
- Ability to eat, drink, and take oral medication



Providers

- Simple and fast set up
- Easy interface fitting
- Patients do not require training for compliance
- Integrated patient safety alarms



Institutions

- Does not increase risk of intubation
- Reduced intensity of care



Avoidance of NiPPV patient experience

A 60 year-old patient with history of COPD, having been intubated in the past month for a COPD exacerbation, arrived in the Emergency Department. Initial assessment noted tachypnea with nasal flaring and purse lipped breathing, as well as bilateral wheezing and wet cough.

Traditional NIV was ordered but not initiated; High Velocity Therapy was started at 25 L/min with an FiO₂ of 60%. An ABG was drawn upon immediate application of High Velocity Therapy and 44 minutes after initiation.

Time	HR (bpm)	RR (br/min)	pH	PaCO ₂	PaO ₂	HCO ₂	O ₂ Hb	SaO ₂
6:08	124	36						97
6:29 ABG Drawn and High Velocity Therapy Initiated at 25 L/min 60% FIO ₂								
6:30			7.28	74	78	34	91	93
6:43	123	27						94
6:53	120	20						95
7:03	113	24						96
7:13		22						96
7:17			7.41	53	68	33	91	94

High Velocity Therapy avoided an ICU admission and more invasive respiratory modalities

Versatility for many care areas, applications & conditions

High Velocity Therapy is a tool to treat respiratory distress, giving it broad utility for a range of care areas, clinical applications, and conditions.

Care Areas

- Emergency Department
- General Care Floor
- Intensive Care Unit
- Long Term Acute Care

Clinical Applications

- Primary Respiratory Support
- Post-Extubation Support
- Secretion Mobilization
- Tracheostomy weaning



Conditions

- Asthma
- Bronchiolitis
- CHF
- COPD
- COVID-19
- Dyspnea
- Pneumonia
- Prolonged Mechanical Ventilation

Reduce Cost of Care

Based on clinician experience, VapoTherm High Velocity Therapy has been shown to reduce the cost of care across the hospital:

- **Improve Emergency Department Throughput**
Less clinician touches and greater inpatient admissions options may improve emergency department throughput.
- **Increase Clinician Efficiency**
Surveys show High Velocity Therapy is twice as efficient as NiPPV for respiratory therapists.
- **Potential to Reduce ICU Admissions**
An assessment of High Velocity Therapy in 5 Emergency Departments showed 50% of patients were admitted to the General Care Floor³.
- **Mitigate risk of Skin Breakdown**
VapoTherm's mask-free interface is made from a soft, comfortable material and doesn't require any additional affixation or padding for adult patients.

3. Spivey S, Ashe T, Dennis R, et al. Assessment of high flow nasal cannula therapy use in the emergency department setting: observations of practice across four systems. Respiratory Therapy. Winter 2015;10(1):30-34.

High Velocity Therapy with the Precision Flow[®]

Precision Control to Meet Patient Needs

With an integrated blender and flow meter, clinicians can deliver the precise L/min and FiO₂ their patients need, as each parameter can be titrated independently. Patient comfort is maximized by allowing temperature to be dialed in 1 degree increments.



Alarms & Alerts

The Precision Flow Platform incorporates a highly visual display of parameters and utilizes patient-focused alarms to warn clinicians of any disruptions in therapy.

Connectivity

The Precision Flow Plus comes equipped with Nurse Call and EMR connectivity to improve hospital workflows and efficiency.

Transfer Patients with Confidence

The VapoTherm Transfer Unit delivers continuous High Velocity Therapy on the go for easy patient ambulation and transfer.

Mask-Free Patient Interface

The ProSoft Hi-VNI[®] cannula is comfortable for the patient and maximizes flush of expiratory gas and assures an open system.



Optimally Conditioned Gas

The VapoTherm cartridge infuses respiratory gas with humidification to produce energetically stable vapor.

Water Jacket Delivery Tube

The VapoTherm delivery tube uses the safe, insulating heat of warm water to maintain gas temperature and humidity all the way to the patient to mobilize secretions and maximize comfort. The triple lumen tube is designed to reduce rainout.



Single Patient Use Circuit

Validated for 30-days single patient use, the VapoTherm Disposable Patient Circuit (DPC) is packaged in a convenient "grab and go" kit.

How High Velocity Therapy can **reduce stress** for adult respiratory distress

Provide a comfortable, mask-free experience that may drive patient compliance

Relieve respiratory distress symptoms with de-escalation therapy

One easy-to-use tool for treating hypercapnia, hypoxemia, and dyspnea

To learn more about high velocity therapy, visit www.vapotherm.com

