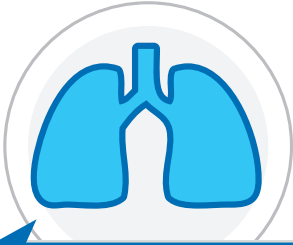


# Guidelines and Best Practices for Mask-Free NIV™ for Spontaneously Breathing Patients

## Pediatric Pocket Guide



## Patient Selection



### **SYMPTOMS:**

**Patient presents with one or more of the following:**

- Respiratory distress
- Hypoxemia
- Hypercapnia
- Tachypnea
- Accessory muscle use
- Grunting
- Nasal flaring

## Diagnoses



### **DIAGNOSES:**

**These symptoms are indicative of, but not solely attributed to:**

- Acute Respiratory Distress Syndrome (ARDS)
- Viral bronchiolitis
- Pneumonia
- Acute Asthma
- Congenital Heart Defects (CHD)
- Persistent Pulmonary Hypertension
- Bronchopulmonary Dysplasia (BPD)
- Ventilator Weaning









# Hi-VNI Cannula Selection

## Fitting the Hi-VNI Cannula:

- Make sure NOT to occlude greater than 50% of the nares.
- Hi-VNI cannula prongs should be wide enough not to pinch the nasal septum (erosion risk).
- The SOLO is a single prong Hi-VNI cannula that can be used in neonates and infants. The single prong design is as effective as a dual prong Hi-VNI cannula. The single prong simplifies NG tube placement.
- The recommended flow rates for infants and toddlers under 20 kg is 2 L/min per kilogram of weight.<sup>1</sup>

*Note: If the patient's weight is significantly above the 95th percentile for age, use CDC 50th percentile weight for age to start initial L/min rate, and titrate to clinical effect.*

- Hi-VNI Technology is a de-escalation therapy. It is safe to start with highest flows based on weight, and titrate down to clinical response (decreased WOB).

	Hi-VNI Cannula Sizes	Flow Range	Tip OD
	Premature	1-8 L/min	1.5 mm
	Neonatal	1-8 L/min	1.5 mm
	SOLO (single prong)	1-8 L/min	1.9 mm
	Infant	1-8 L/min	1.9 mm
	Intermediate Infant	1-8 L/min	1.9 mm
	Pediatric Small	1-20 L/min	1.9 mm
	Pediatric/Adult Small	5-40 L/min	2.7 mm
	Adult	5-40 L/min	4.8 mm

## Hi-VNI Cannula Application:

- Only Vapotherm Hi-VNI cannulae should be used with the Vapotherm Precision Flow®
- Select the appropriate Hi-VNI cannula based on the above sizing chart
- Place the Hi-VNI cannula on the patient before attaching the delivery tube
- Allow the system to reach the set point (temperature display will stop flashing) before connecting delivery tube to the Hi-VNI cannula
- The Precision Flow's operational L/min range is locked depending on the disposable patient circuit (DPC) selected:
  - PF-DPC-HIGH (Blue packaging): 5-40 L/min
  - PF-DPC-LOW (Red packaging): 1-8 L/min

1. Weiler et al, "The Relationship Between High Flow Nasal Cannula Rate and Effort of Breathing in Children", The Journal of Pediatrics. October 2017. Volume 189:66-71.

## Therapy Implementation and Maintenance



### STARTING L/MIN

The recommended starting L/min rate is 2 L/min per kilogram of weight.<sup>1</sup> Titrate to clinical effect.

**Note:** If the patient's weight is significantly above the 95th percentile for age, use CDC 50th percentile weight for age to start initial flow rate.



### TEMPERATURE

Set temperature to 37°C and adjust to patient preference.



### FiO<sub>2</sub>

Start and titrate FiO<sub>2</sub> as needed to achieve target SpO<sub>2</sub>.

1. Weiler et al, "The Relationship Between High Flow Nasal Cannula Rate and Effort of Breathing in Children", The Journal of Pediatrics. October 2017. Volume 189:66-71.

## Monitoring Therapy



### PATIENT PARAMETERS

#### Patient Parameters:

- Indices of work of breathing (WOB)
- SpO<sub>2</sub>
- PCO<sub>2</sub>
- FiO<sub>2</sub>
- Nasopharynx patency
- Feeding tolerance



### DOCUMENTATION

#### Documentation:

##### Patient

- Heart rate
- Respiratory rate
- Work of breathing (WOB)
- SpO<sub>2</sub>

##### Device

- Flow rate
- FiO<sub>2</sub>
- Temperature
- Water level
- Hi-VNI cannula prongs must occlude no more than 50% of the nares

# Weaning

## Weaning L/min

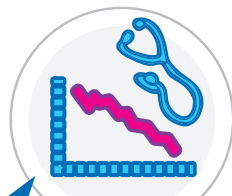
Wean in 1 L/min increments as patient tolerates

Consider further wean titrated on clinical assessment of work of breathing

If at less than 10 L/min you see rainout, consider dropping temperature to no lower than 34°C

Assess for further wean and/or discontinuation

Conventional cannula or room air



**WEAN BY L/MIN OR  $FiO_2$**

Vapotherm Hi-VNI Technology parameters (L/min &  $FiO_2$ ) are independent of each other. Adjustment of L/min will impact work of breathing while adjustment of  $FiO_2$  maintains patient  $SpO_2$ . Monitoring patients' response to each change requires continuous assessment of breath sounds, respiratory rate, physical characteristics (e.g nasal flaring, grunting and retractions).

## Weaning $FiO_2$

Return  $FiO_2$  to range acceptable for  $SpO_2$  requirement

Patient assessment of HR, RR,  $SpO_2$

Continue  $FiO_2$  wean to maintain  $SpO_2$  targets

# Aerosol Medication and Specialty Gases

## Use with Aerosol Medication

Treating patients with respiratory disorders frequently requires combined use of Hi-VNI Technology with aerosolized medication. For practice considerations to do so, refer to the “Aerosol Delivery with HVNI Pocket Guide” and the “Aerosol Medication Delivery with HVNI Therapy Practice Summary.”

## Use with Nitric Oxide



- Vapovent Hi-VNI Technology is verified for use with multiple nitric oxide delivery systems. To confirm your system is compatible with Vapovent, contact your local representative.
- Vapovent Nitric Oxide Disposable Patient Circuits (DPCs):  
PF-NODPC-LOW 1-8 L/min  
PF-NODPC-HIGH 5-40 L/min
- Note: Refer to the Instructions for Use provided with your nitric oxide system and with the Nitric Oxide circuit.

## Use with Precision Flow Heliox®

- Vapovent offers an ideal solution for convenient delivery of conditioned helium-oxygen gas mixtures (Heliox).
- Heliox has a significantly lower density than typical air/oxygen mixtures.
- The lower gas density reduces the work of breathing by reducing the force needed to move gas through the airways.
- Heliox is commonly used on patients with diseases of increased airway resistance, such as bronchiolitis, asthma, post-extubation stridor, airway compression, intra and extrathoracic airway obstruction.
- Precision Flow Heliox strategies follow the same general clinical guidelines for air-oxygen mixtures, except  $FiO_2$  should be titrated between 0.21 and 0.4 since higher oxygen concentrations (and lower helium concentrations) would result in a less significant clinical effect.
- Standard Vapovent Disposable Patient Circuits (DPCs) may be used with the Precision Flow Heliox.

PF-DPC-LOW 1-8 L/min  
PF-DPC-HIGH 5-40 L/min





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