Guidelines and Best Practices for Vapotherm High Velocity Nasal Insufflation (Hi-VNI™)

NICU Pocket Guide

VAPOTHERM

Patient Selection

SYMPTOMS:

Patient presents with one or more of the following symptoms:

- Hypoxemia
- Retractions
- Tachypnea
- Mild apnea and bradycardia
- Grunting
- Nasal flaring
- Difficulty weaning from Nasal CPAP
- Difficulty weaning from mechanical ventilation

Diagnoses

DIAGNOSES:

These symptoms are indicative of but not solely attributed to:

- Infant Respiratory Distress Syndrome (RDS)
- Bronchopulmonary Displasia (BPD)
- Prematurity
- Congenital Heart Defects
- Congenital diaphragmatic hernia (CDH)
- Transient Tachypnea of the Newborn (TTN)
- Meconium aspiration
- Persistent Pulmonary Hypertension (PPHN)

Vapotherm Cannula & Flow Selection

Fitting the Cannula:

- Make sure not to occlude greater than 50% of the internal diameter of each of the nares.
- Weights and recommended cannula size will vary depending on the inner diameter of the nares and the outer diameter of the cannula prongs in use.

Cannula Sizes	Weight	Tip OD
Premature	<700g	1.5 mm
Neonatal	<1100g	1.5 mm
Infant	>1100g	1.9 mm
SOLO (P,N,I)	700-1100g	1.9 mm
Intermediate Infant	>1100g	1.9 mm

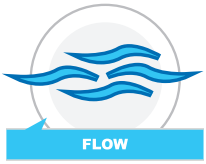
Flow Selection:

Cannula Sizes	Cannula Flow Range	Typical Starting Flow (L/min)
Premature	1-8 L/min	4-6
Neonatal	1-8 L/min	4-6
Infant	1-8 L/min	4-6
SOLO (P,N,I)	1-8 L/min	4-6
Intermediate Infant	1-8 L/min	4-6

Cannula Application:

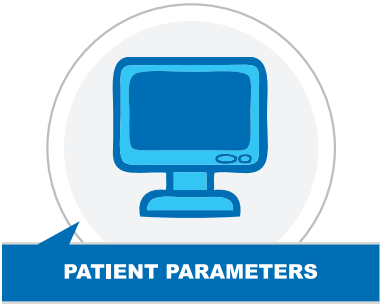
- Only Vapotherm cannulae should be used with the Precision Flow
- Select the appropriate cannula based on the above sizing chart
- Place the cannula on the patient before attaching the delivery tube
- Allow the system to reach the set point (temperature display will stop flashing) before connecting delivery tube to the cannula
- Vapotherm Low Flow Disposable Patient Circuits (red packaging) should always be used when treating neonatal patients

Therapy Implementation and Maintenance

 PATIENT ASSESSMENT	 FLOW	 TEMPERATURE	 FiO_2
SpO_2 > 88% with moderate ⬆ WOB	Start at 4 L/min and increase by 0.5 L/min as WOB requires	36°C - 37°C	Start at 21% and increase conservatively to maintain target SpO_2
SPO_2 < 88% with moderate ⬆ WOB	Start at 5 L/min and increase by 0.5 L/min as WOB requires	36°C - 37°C	Start at 25% and increase conservatively if needed to maintain SpO_2
SpO_2 < 88% with severe respiratory distress	Start at 6 L/min and increase by 0.5 L/min as WOB requires	36°C - 37°C	Start at 30% and increase conservatively if needed to support SpO_2

Note: When using Vapotherm therapy with a radiant warmer or incubator set the Precision Flow within one degree of the radiant warmer or incubator.

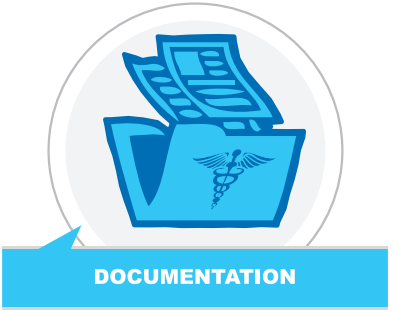
Monitoring Therapy



PATIENT PARAMETERS

Patient Parameters:

- Indices of work of breathing (WOB)
- SpO_2
- PCO_2
- FiO_2
- Nasopharynx patency
- Feeding tolerance



DOCUMENTATION

Documentation:

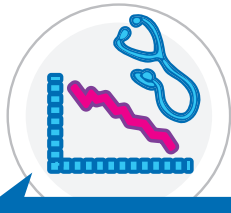
Patient

- Heart rate
- Respiratory rate
- Work of breathing (WOB)
- SpO_2

Device

- Flow rate
- FiO_2
- Temperature
- Water level
- Cannula size

Vapotherm Weaning



WEAN FiO_2 TO 25% - 30% FIRST

Stable at 25% - 30%

Yes

No

Wean flow by 0.5 L/min increments as patient tolerates

If stable at lower flow for 12-24 hours, consider further wean

Once at 4 L/min, wean temp to 34° C and consider further wean

Assess for further wean and/or discontinuation

Conventional cannula or room air

Return O_2 to range acceptable for SpO_2 requirement

Patient assessment of HR, RR, SpO_2

Once stable for 12-24 hours, consider FiO_2 wean

Once down to 25%-30% FiO_2 and stable for 24 hours wean flow

Wean FiO_2 First, Flow Second

Vapotherm parameters (flow & O_2) are independent of each other. Adjustment of flow will impact work of breathing while adjustment of O_2 maintains patient SpO_2. Monitoring of patients' response to each change requires continuous assessment of breath sounds, respiratory rate, physical characteristics (e.g nasal flaring, grunting and retractions).

Accessories

Use With Aerogen®

- An adapter is available for the Precision Flow to enable nebulizer treatments. The inline adapter is designed to be used specifically with the Aerogen® Aeroneb® solo (AAA-1).
- The adapter is not for continuous use and should be removed after each treatment.
- It is important to maintain proper upright orientation of the inline adapter during the drug administration process. Vapotherm recommends the AAA-1 be at an upright 45º angle to minimize condensation.

Use With Nitric Oxide

- Vapotherm technology is verified for use with INOmax® DS and DSIR (PF-NODPC-LOW 1-8 L/min, PF-NODPC-HIGH 5-40 L/min).
- Note: See Ikaria® for instructions for use.

Use With Precision Flow Heliox®

- Vapotherm 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.
- Vapotherm Heliox Disposable Patient Circuits (DPC)
  PF-DPC-LOW 1-8 L/min
  PF-DPC-HIGH 5-40 L/min

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MKT-0018 Rev. D
Last Modified 5/2017