SuperNO₂VA™
nasal PAP ventilation device

CLINICAL USE PROTOCOL
FOR OR, NORA & PACU
INTRODUCTION

The following clinical use protocol has been authored by Vyaire Medical Affairs to offer guidelines for the use of the SuperNO₂VA™ nasal PAP ventilation device in the operating room (OR), non-operating room anesthesia care areas (NORA), and the post-anesthesia care unit (PACU). This protocol is intended to be used as an example for the perioperative use of nasal positive airway pressure that includes the SuperNO₂VA nasal PAP ventilation device. SuperNO₂VA nasal PAP ventilation device is intended for short term use (<24 hours) on adult patients (>30 kg).
### SUMMARY

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<td>Purpose:</td>
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| Delegation: | Nasal PAP is recommended for the following patients receiving moderate or deep procedural sedation or recovering from general anesthesia in the PACU:  
  - BMI $\geq 30 \text{kg/m}^2$  
  - Obstructive sleep apnea (OSA) or STOP BANG $\geq 3$  
  - Congestive heart failure (CHF)  
  - Chronic obstructive pulmonary disease (COPD)  
  - Oxygen saturation $<95\%$ on supplemental oxygen  
Nasal PAP is also recommended postoperatively for the following procedures:  
  - Bariatric surgery  
  - Thoracic surgery  
  - Abdominal surgery  
  - Cardiac surgery |
| Equipment: | 1. SuperNO$_2$VA nasal positive airway pressure (PAP) ventilation device  
  2. Hyperinflation bag or anesthesia circuit with APL valve  
  3. Supplemental oxygen |
I. TITLE
Guidelines for the use of nasal positive airway pressure ventilation device perioperatively.

II. SCOPE
This Policy applies to: Anesthesiologists, Certified Registered Nurse Anesthetists (CRNA), Registered Nurses (RN), and Respiratory Therapists (RT).

III. PURPOSE
Upper airway obstruction and severe atelectasis induced by sedation and/or opioids are known causes of hypoxemia, hypoventilation, and acute respiratory failure perioperatively.\(^1\)\(^-\)\(^3\) Patients with a history of obesity (BMI $\geq 30$kg/m\(^2\)), obstructive sleep apnea (OSA)/STOP BANG $\geq 3$, or limited cardiopulmonary reserve such as congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) are at significantly higher risks for perioperative respiratory failure.\(^3\)\(^-\)\(^5\) Nasal positive airway pressure (nPAP) has been shown to be an effective means of relieving upper airway obstruction, preventing and treating atelectasis, and reducing the incidence of acute respiratory failure.\(^3\)\(^-\)\(^6\) The objective is to provide guidelines for the use of nasal PAP in the perioperative setting.

IV. POLICY
Nasal PAP will be used on all patients receiving moderate or deep procedural sedation or recovering from general anesthesia in the PACU that have a past medical history for BMI $\geq 30$kg/m\(^2\), obstructive sleep apnea (OSA) or STOP BANG $\geq 3$, congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), or have an oxygen saturation $<$95% on supplemental oxygen unless contraindicated. Nasal positive airway pressure ventilation will also be used postoperatively for patients that underwent cardiac, bariatric, thoracic, or abdominal surgery unless contraindicated.
V. PROCEDURE

Setting up the SuperNO$_2$VA nasal PAP ventilation system

1. Slide the head strap under the patient’s head with the SuperNO$_2$VA device on the patient’s right side. Place the SuperNO$_2$VA device over the patient’s nose and ensure the lower seal is between the upper lip and nose.

![Image of SuperNO$_2$VA device](image)

**NOTE:** To ensure an air-tight seal, apply firm downward pressure to the mask and use the head strap to secure in place.

2. Connect the hyperinflation bag’s oxygen tubing to the oxygen flowmeter/regulator. Turn on the oxygen tank’s fresh gas flow to 10 Lpm.

![Image of oxygen flowmeter](image)
3. Completely close APL valve on the hyperinflation bag and firmly attach it to the SuperNO$_2$VA device.

![Completely Open][1]  ![Completely Closed][2]

4. The reservoir bag should completely fill within 4 – 5 breaths. Visualize reservoir bag completely inflating and staying inflated to confirm positive pressure is being delivered.
Setting up the SuperNO₂VA nasal PAP ventilation device with an anesthesia machine

1. Slide the head strap under the patient’s head with the SuperNO₂VA device on the patient’s right side and place the SuperNO₂VA device over the patient’s nose. Ensure the lower seal is between the upper lip and nose.

   ![Image of SuperNO₂VA device]

   **NOTE:** To ensure an air-tight seal, apply firm downward pressure to the mask and use the head strap to secure in place.

2. Set the fresh gas flow on the anesthesia machine to 10 LPM and connect the anesthesia circuit to the SuperNO₂VA device.

   ![Image of anesthesia machine and SuperNO₂VA device]
3. Set the APL valve on the anesthesia machine to 10cmH₂O.

**NOTE:** Visualize reservoir bag completely inflating and staying inflated to confirm positive pressure is being delivered.

**Weaning off of the SuperNO₂VA nasal PAP ventilation system**

- Once the patient is awake and following commands, completely open the APL valve.
- Ensure the patient is breathing and the hyperinflation bag continuously inflating and deflating.
- Wait 60 seconds. If the patient is not obstructing, remove the hyperinflation bag.
- Also remove the green oxygen tubing from the hyperinflation bag as well as oxygen cap on the SuperNO₂VA device’s supplement oxygen port.
- Connect the green oxygen tubing to the SuperNO₂VA device’s supplement oxygen port and lower the fresh gas flow to 3 – 5 LPM.
- Loosen the straps if needed.
## TROUBLESHOOTING

### Oral Leak

- If there is a leak in the system you will notice that the reservoir bag fails to inflate.

- First step is to determine where the leak is coming from by manually pressing the SuperNO₂VA device into the patient’s face. If the reservoir bag inflates then the leak must be from around the mask. Tighten the straps to address leak.

- If the reservoir bag does not inflate, the leak is most likely from the patient’s mouth. Flex the patient’s head.

- If there is still leak from the patient’s mouth and the reservoir bag does not inflate, apply submental pressure.
REFERENCES


