

## **Policy: Nasal Continuous Positive Airway Pressure (CPAP) Nasal Interface Application**

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### **1) Purpose:**

To provide instructions on how to apply nasal interface providing nasal bCPAP.

### **2) What do you need?**

- Neck roll
- Head cap or hat
- Nasal Cannulaide
- Velcro
- Nasal Prongs
- Chin strap (optional)
- Gastric tube

### **3) Instructions**

#### **A. Neck Roll**

A neck roll is needed to put the head in a mild extension to align the tracheal opening with the upper airway.

1. For initial stabilization, put the infant in supine position with the head elevated about 30 degrees.
2. Place a soft neck roll (i.e., washcloth) under the infant's neck to slightly extend the neck.
3. A gel pillow may be placed around the head and neck to support developmental positioning but should not be used instead of a neck roll.
4. Change infant position every care (i.e. 3-4 hours) from supine to prone to avoid skin breakdown

#### **B. Head Cap**

A head cap or a hat is needed as an anchor to stabilize the respiratory tubes and the bCPAP circuit on the infant's head.

1. Use commercially available or in-house made caps from stockinette
2. Select appropriate size cap as per manufacturer guidelines based on head circumference
3. Place the cap down over the ears and to the nape of the neck.
4. The head cap fit should allow for about one finger width between the cap and the infant's head.
  - a. The hat must not be too tight as this may cause excessive molding of skull
  - b. It should be sufficiently snug to stay in place. A loose hat will allow infant's movement to dislodge the prongs.

### C. Nasal Cannulaide

The nasal cannulaide is to create proper seal around the nasal prongs

1. Obtain appropriate Cannulaide size to fit the infant's nares as per manufacturer guidelines.

Size	Infants' weight
1	<700g
2	700g – 1250g
3	1251g – 2000g
4	2001g – 3000g
5	>3000g

2. Warm Cannulaide before use to improve adhesion.
3. Do not apply adhesives under the Cannulaide.
4. Gently cleanse nose and upper lip.
5. Line up Cannulaide holes with nares. Apply to upper lip then apply over nose.
6. Cannulaide should adhere to nasal surface without air pockets underneath.
7. Cannulaide must be changed at least every 12hours.

### D. Velcro

The Velcro is to help keep prongs in place

1. Make a "moustache" from the rough side of a piece of white Velcro.
  - a. Length of moustache needs to be enough to cover lip from side to side
  - b. Width of moustache needs to be enough but not to touch nasal septum
2. Remove the "velcro-like" part from the Cannulaide.
3. Apply the Velcro mustache to the patient's upper lip on top of the Cannulaide.
  - a. The Velcro moustache should NEVER rest on the nasal septum.
  - b. The Velcro moustache side ends should NEVER touch the eye area.

### E. Nasal Prongs

Nasal prongs should fit snugly in the nasal apertures to create proper seal and is used to maintain a closed circuit from the gas source to the bubbler

1. Obtain appropriate size of nasal CPAP prongs based on the infant's weight and size of nasal apertures as per manufacture guidelines. See examples below

### Nasal Prongs Size

Infants' weight	Hudson	Babi.Plus
<700g	0	0 - 1
700g – 1250g	1	2
1251g – 2000g	2	3
2001g – 3000g	3	4
>3000g	4	5 - 7

2. Attach soft Velcro strips to both ends of the prongs transverse arm at least 0.5 cm from the nose on either side.
3. Attach manometer to the pressure port to monitor pressure within the circuit or place cap to close it.
4. Place prongs in patient's nares.
  - a. Lubricate the prongs with sterile water, saline or infant's saliva.
  - b. Place nasal prongs with convex side down into the baby's nose.
  - c. Nasal prongs should fit nasal opening snugly:
    - i. Undersized prongs will fit loosely in the nasal apertures
    - ii. Oversized prongs may overstretch nasal apertures causing blanching.
    - iii. There should be no lateral pressure on the septum causing it to be pinched, twisted or misaligned.
  - d. Ensure there is always a minimum 1-2 mm space between the tip of the septum and the bridge between the prongs.
5. Attach prongs to corrugated respiratory tubing using proper adaptors and connectors (see setting CPAP circuit)
6. Adjust the angle of the prongs and the position/location of the corrugated tubing until each is correctly positioned over the temporal area.
7. Secure tubing with tape to the infant's cap.
8. The corrugated tubing should not rest on the eyes or near it.
9. Nasal prongs need to be examined frequently (every hour) to ensure proper placement and good seal.
10. Nasal prongs need to be revised every care and nose to be suctioned for nasal secretions. Use less frequent suctioning if infant is stable on 21% FiO<sub>2</sub>.
11. Prongs have to be changed every 48 hours to avoid over growth of bacteria.

### F. Chin Strap

A chin strap is used to minimize air leak from the mouth and help in better sealing of CPAP circuit.

1. A chin strap should be applied at all times bringing the mouth to a natural closed position in the following conditions:
  - a. Infants < 26 week gestation.
  - b. Infants 26-28 week gestation who require  $FiO_2 > 21\%$
  - c. Infants > 28 week gestation who do not exhibit a palatoglossal seal at the open mouth posture based on the bedside assessment.
2. Use commercially available chin straps or wrap a long piece of stockinette around the infant's head:
  - a. starting from the chin, wrap the chin strap on either side of the head towards the vertex
  - b. tie in place underneath the corrugated respiratory tubes
  - c. gently, pull the jaw forward to close mouth.
3. A pacifier may be used with chinstrap in place as an option to increase the infant's comfort level. Chinstrap should not be used to hold pacifier in place.
4. Do not tie the strap so tight so that infants cannot move the jaw.
5. Chinstrap has to be changed every 24 hours or per manufacturer instructions
6. Examine for skin breakdown under the chin straps every care (q 3-4 hours) especially soft tissue of neck below mandibles on both sides

#### **G. $FiO_2$**

Adjust  $FiO_2$  to achieve targeted oxygen saturation parameters. Wean gradually at increments of 2-5 % targeting a  $FiO_2$  of 21% while keeping oxygen saturation between 90-93%

#### **H. Gastric tube**

Orogastric tube always need to be in place to vent stomach from excess air

1. Place orogastric (OG) tube to desired depth according to infant's weight and tape in place using tegaderm (or tape).
2. Leave tube open to vent air from stomach. OG tube may be clamped after bolus gastric feeding but has to be vented 30 min prior to every feeding.

#### **I. Documentation**

- 1- Complete the bCPAP checklist upon initiation and every shift.
- 2- Make sure that a new bedside bCPAP checklist is initiated every day at the beginning of the day shift.
- 3- Document infant's vital signs as per hospital policy (i.e. every 3-4 hours).

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