HACKETTSTOWN REGIONAL MEDICAL CENTER
CARDIOPULMONARY
NASAL CPAP OF THE NEWBORN

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SCOPE

All members of the Cardiopulmonary Department

PURPOSE

To outline the procedure for properly and safely applying nasal prong continuous positive airway pressure (NCPAP) to the newborn.

Equipment:

A. Patient Specific Equipment
   a. Nasal prongs of correct size:
      1) Size 1: 700 to 1250 grams
      2) Size 2: 1250 to 2000 grams
      3) Size 3: 2000 to 3000 grams
      4) Size 4: over 3000 grams
   b. Knit cap and Velcro securing tape (provided in commercially available nasal prongs setups)
   c. Dead ender cap
   d. Tincture of benzoin
   e. Bioclusive Dressing
   f. Adhesive tape

B. Commercially available ventilator designed to properly and safely provided NCPAP to a newborn (Servo I) with a lightweight newborn specific ventilator circuit.

Personnel: The application of NCPAP should be performed under the direction of a Physician by trained individuals with recognized credentials (Respiratory Care Practitioner) and who competently demonstrate:

a. Proper use and mastery of the technical aspects of CPAP devices, mechanical ventilators, and humidification systems.
b. Knowledge of ventilator management and understanding of neonatal airway anatomy and pulmonary physiology.

c. Patient assessment skills, with the ability to monitor interactions between the patient, NCPAP device and ventilator and efficiently and between the patient, NCPAP device and ventilator and efficiently and properly respond to adverse reactions and complications.

Indications:

1. Abnormalities on physical examination- such as tachypnea (respiratory rate > 25% of normal), increased work of breathing (presence of grunting, nasal flaring or substernal and/ or suprasternal retractions.)
2. Radiologic evidence of poorly expanded and/ or infiltrated lung fields.
3. Inadequate arterial blood gas values.
4. Presence of any of the following conditions:

a. Apnea of prematurity
b. Pulmonary edema
c. Respiratory distress syndrome
d. Transient tachypnea of the newborn
e. Tracheal malacia or other abnormality
f. Atelectasis or pneumonia
g. Recent extubation/ weaning from ventilatory support.

Contraindications:

1. The need for endotracheal intubation and ventilatory support due any of the following:
    a. Upper airway abnormalities that make NCPAP ineffective and harmful such as cleft palate or tracheoesophageal fistula.
    b. Unstable respiratory drive with frequent long periods of apnea and bradycardia.
    c. Severe cardiac instability with impending arrest.
    d. Inability to maintain arterial blood gases within acceptable parameters.
2. Patients with untreated congenital diaphragmatic hernia may experience gastric distention and further organ compromise.

PROCEDURE

Application and initiation of Nasal CPAP for the newborn:

a. Gather all possible equipment.
b. Arrive at patient bedside.
c. Assess infant.
d. Request pressure setting or guidelines from Physician.
e. Request physician orders or guidelines for FiO2 titration.
f. Choose correct prong size.
g. Pressure check Vent as needed.
h. Gently suction the nasopharynx and mouth.
i. Place knit cap on infant (inside prong kit).
j. Apply the soft Velcro around the outer edge of nasal prongs.
k. Cut the Hydrocolloid dressing into two rectangular patches.
l. Place dressing on infant's face in order to line up with soft Velcro on prongs.
m. Cut slightly smaller patches of the rough Velcro.
n. Apply on top of dressing.
o. Insert prongs and assess fit and infant.
p. Secure tubing by snugly taping the tubing to the knit cap at the level of the infant's temples.
q. Monitor and record infant and ventilator interaction/changes on ventilator flow sheet.

Hazards:

1. Hazards and complications due to equipment include the following:
    a. Obstruction of nasal prongs from mucus plugging or kinking that may interfere with delivery of CPAP and result in a decrease in FIO2 through entrainment of room air via opposite naris or mouth.
    b. Nasal excoriation, scarring, pressure necrosis and septal distortion.
    c. Irritation of head and/or neck from improperly fitted NCPAP set up.