

PROCEDURE FOR: Heated Humidified Nasal Cannula

OBJECTIVE: The newborn infant is an obligate nose breather, at risk for developing thickened secretions and subsequent nasal mucosal injury with the use of the nasal cannula at flows > 1 L/min. Heating and humidifying the blended oxygen gas from the nasal cannula minimizes the amount of thickened secretions thus maintaining airway patency.

RATIONALE: The heated humidified nasal cannula is a low-flow variable performance system with a safety pop-off set to 3L/min. The blended oxygen gas is heated and humidified by the humidifier to 31 degrees Celsius. The temperature is then increased by 3 degrees by the heated wire circuit to read 34 degrees Celsius, 32mg/L, at the temperature probe site. The oxygen flows from the cannula into the infant's nasopharynx, which acts as an anatomic reservoir. The fractional concentration of inspired oxygen varies with the infant's flow, minute ventilation, position of cannula to nares and nasal vs oral breathing.

PERFORMED BY: Respiratory Therapist

EQUIPMENT: Water bag
Fischer & Paykel humidification chamber
Circuit
Infant nasal cannula

INDICATIONS: Nasal cannula flow > 1 L/min

- PROCEDURE:**
1. Slide the humidification chamber onto the humidifier base.
 2. Hang the water bag from the water bag pole at least 20 inches above the chamber. Unwind the waterfeed set and spike the waterbag. As a self feed system the water level should not reach beyond the black demarcation on the humidifier.
 3. Connect the circuit to the humidifier ports.
 - a. Attach the nonwired extension tubing to the circuit when the infant is in the isolette or environmentally controlled bed that has a temperature set greater than 34 degrees Celsius. The temperature probe needs to be **outside** of the isolette.
 4. Connect the temperature probe.
 - a. Connect the blue temperature probe plug into the blue socket on the side of the humidifier.
 - b. Insert blue twin probe into the breathing circuit elbow above the chamber. Confirm the probe is completely secured into the socket.
 - c. Insert blue single probe into probe at patient end of breathing circuit near the Y-piece.
 5. Connect the heater wire adapter.
 - a. Connect the yellow heater wire adapter plug into the yellow socket on the side of the humidifier.

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- b. Connect the clover leaf end into the socket on the breathing circuit elbow above the chamber.
6. Confirm both Oximeter ports on the chamber column are closed.
7. Turn on humidifier.
 - a. Select mode for **non-invasive infant**. Press button until you hear two audible beeps. Allow the humidifier 20 to 30 minutes to achieve temperature.

- LIMITATIONS:**
1. When the device is turned off for longer than an hour the condensate remaining in the circuit will puddle and will be difficult to evaporate. This circumstance will require a circuit change.
 2. Condensation at the junction of the cannula and the wired circuit collects and needs to be tapped out periodically.
 3. Changes in the temperature of the environment (cold drafts) may result in alarms. Select an area with less cold drafts.
 4. The device can be used at a flow range of 0.5L/min to 3L/min.
 5. This device is to be used in the non-invasive mode only.
 6. Condensation may develop in the nasal cannula.

- BENEFITS:**
1. Humidified gas is soothing to infants with reflux.
 2. Humidified gas decreases the amount of mucous plugging and nasal bleeding.
 3. Humidified gas decreases the need for nasal suction.

- COMPLICATIONS:**
1. When the humidifier is turned off and then back on again the device defaults to the invasive mode with the infant receiving gases at temperature and saturations of 37 degrees Celsius, 44mg/L. To place in non-invasive mode; select the top right button on the humidifier, depress, wait for two audible beeps and the mask symbol to light.
 2. When the circuit extension is used in the open crib, excessive condensation may result in water filling the nasal prong and flowing into the nares of the infant. This circumstance will require removal of the extension and replacement of the nasal cannula.
 3. The twisting of the nasal cannula can result in obstruction of flow of gas.

APPROVAL:

EFFECTIVE DATE: 9/06

REVISION DATES: