



CLINICAL GUIDELINE

Humidified High Flow (HHF) Nasal Cannula Therapy

Scope (Staff):	Nursing and Medical Staff
Scope (Area):	NICU KEMH, NICU PCH, NETS WA

This document should be read in conjunction with this [DISCLAIMER](#)

Background

HHF therapy represents a means for providing humidified gas with adjustable fractional inspired oxygen concentration (FiO_2). Mechanisms thought to improve respiratory function during HHF therapy include;

- Washout of naso-pharyngeal dead space thus improving CO_2 removal and oxygenation.
- Reduction of inspiratory resistance (work of breathing).
- Improved mechanics by supplying warmed and humidified gas (allows normal cilia action, decreases mucous viscosity, reduced tracheal inflammation).
- Provision of distending pressure.

With HHF the FiO_2 that the baby receives is the FiO_2 that is set.

Indications for use

- Aid to weaning CPAP in infants with chronic lung disease.
- Use outside of these indications must be authorised by a consultant.

Perceived Advantages of HHF:

- Simpler interface on the baby than CPAP.
- May aid in establishment of breast feeding due to the simpler interface.
- Studies have shown preference by nursing staff and parents.

Potential Complications of HHF Therapy

- Air leak
 - Correct prong size (prongs approx. 50% of the diameter of the nares) is essential. There must be leak around the nasal prongs. This leak is very important as there is no expiratory limb on the HHF circuit.
 - Abdominal distension.

Commencement of HHF:

- Infants typically should be over 30 weeks gestation.
- Starting flow is typically 4L/min.

- Flows may be adjusted up to 8L/min (providing the total flow is no more than approx. 2L/min/kg for that baby).
- FiO₂ adjusted as required to maintain oxygenation for gestational age.

Weaning Strategies:

There is no evidence from trials on weaning strategies. Due to the large prong size there is a potential concern that too low a flow will increase the work of breathing and thereby prolong the HHF requirement for an infant.

Recommendations:

- Wean FiO₂ first.
- Wean in increments of 1L/min.
- Flows of less than 3L/min should be used with care.
- Cease HHF abruptly (no cycling).
 - When in air and flow rates of 3-4L/min,
 - Or change to PBF for ongoing oxygen delivery in neonates in who require long term oxygen therapy. This would be typically in infants near term.

Failure of wean includes:

- Increasing oxygen requirements.
- Increasing frequency or severity of apnoeas.

If an infant meets these requirement a medical review should occur and consideration given to increasing the HHF flow to the previous level or changing to PBF depending on the clinical scenario.

Equipment

- Appropriate sized nasal prongs - OPT312 (Prem < 2 kg) or OPT314 (Neonatal 1-8 kg).
- HHF Circuit.
- Air/oxygen blender and oxygen flow meter (1-10 L/min).
- Temperature probe and heater wire adaptor for MR850.
- Water for irrigation (1 litre bag).
- Clear oxygen tubing.

Setup

- Connect one end of oxygen tubing to blender meter and the other to the pressure manifold.
- Connect the pressure manifold to the chamber.
- Connect the elbow of the blue inspiratory circuit to the chamber.
- Connect the blue temperature probe plug into the blue socket on the side of the humidifier.
- Securely insert the blue twin probe into the blue circuit elbow above the chamber.
- Insert the temperature probe into the port at the patient end of the circuit.
- Connect one end of the yellow heater wire adaptor plug into the yellow socket on the side of the humidifier and the other into the blue circuit elbow.
- Set the blender to administer oxygen as per previous CPAP setting.


- Position prongs & use a movable clip to support circuit tubing and prevent drag on the nasal prongs.
- Connect the nasal prongs to blue circuit tubing.

Documentation

- Oxygen, flow, temperature settings hourly on MR489.
- Observe correct positioning of nasal cannula hourly on MR489.

References and related external legislation, policies, and guidelines	
1.	High flow nasal cannula for respiratory support in preterm infants. Wilkinson D, Andersen C, O'Donnell CP, De Paoli AG, Manley BJ. Cochrane Database Syst Rev. 2016 Feb 22;2:
2.	High-flow nasal cannula: Mechanisms, evidence and recommendations. Manley BJ, Owen LS. Semin Fetal Neonatal Med. 2016 Jun;21(3):139-45.

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