



Clinical Practice Guideline

Guideline coverage includes NICU KEMH, NICU PMH and NETS WA

Humidified High Flow (HHF) Nasal Cannula Therapy

This document should be read in conjunction with the [Disclaimer](#)

Background

HHF therapy represents a means for providing humidified gas with adjustable fractional inspired oxygen concentration (FiO₂). Mechanisms thought to improve respiratory function during HHF therapy include;

- Washout of naso-pharyngeal dead space thus improving CO₂ 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 FiO₂ that the baby receives is the FiO₂ 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

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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