



# High Flow Nasal Cannulae (HFNC) oxygen therapy

## Principles:

- Delivers high flow rates of blended air/oxygen with heating and humidification.
- Flow rate higher than inspiratory flow reduces unwanted entrainment of atmospheric air.
- Nasopharyngeal washout decreases deadspace, improving CO<sub>2</sub> clearance and decreasing work of breathing.
- High flow rates provide a small amount of Positive End Expiratory Pressure (PEEP).

**Indications:** Bronchiolitis (moderate-severe); Pneumonia; Asthma; Post-extubation support.

**Contra-indications:** Severe respiratory failure requiring Non invasive Ventilation or Intubation & Ventilation; Upper airway abnormalities rendering HFNC therapy ineffective or dangerous (choanal atresia; skull base trauma; cleft palate); Pneumothorax; Tracheo-oesophageal fistula; caution in children with upper airway obstruction or stridor as adequate oxygenation may mask deterioration.

## Establishing therapy:

- Take a blood gas prior to starting therapy if possible.
- Select the correct size nasal cannulae based on nostril size (not weight):
  - The cannula diameter should be <2/3rds that of the nostril.
  - **The use of inappropriately large cannulae is associated with barotrauma**
- Insert an NG tube initially & pause feeds.
- **Initial flow target typically 2L/kg.**
- Better tolerated if increased incrementally to this 2l/kg target.
- Increase FiO<sub>2</sub> as required to maintain target oxygen saturations.

## Ongoing care:

- Children on HFNC should be monitored in a level 1 HDU environment.
- Minimum monitoring is continuous Oxygen saturations and ECG.
- Observations every 30 minutes for 2h, reduced to 1 hourly thereafter if the child is stable.
- Consider starting NG feeds if the child is stable for 4-6hrs.
- If nebulisers are required, **HFNC must be stopped temporarily.**

## When to call KIDSNTS



- Significant clinical concern that a child is deteriorating despite HFNC therapy.
- Concern that a child needs intubation.
- Requirement for HDU transfer. (local team to organise a HDU bed)
- Persistent oxygen requirement > 60% via HFNC.
- There is a deteriorating trend in the clinical condition of the child that may continue to worsen.

Ensure that the anaesthetic/critical care team are aware and have reviewed the child if you are concerned.

## Escalation:

- HR, RR and work of breathing will typically reduce within 1h of starting HFNC therapy.
- Increase Oxygen as required.
- The flow rate can be increased up to 3L/kg if:
  - There are no other specific clinical concerns
  - The maximum flow rate for the cannula size is not exceeded.

## Weaning:

- Generally wean oxygen requirement first.
- Once oxygen requirement < 40%, consider weaning flow if the child is stable work of breathing mild or less.
- No best specific method of weaning - flow can be reduced, periods of time off or just stopped entirely.
- In the acute setting, HFNC can often be weaned quickly once there is clinical improvement.