

# Nasal High Flow Therapy (NHFT)

NHF therapy is used to provide a humidified continuous positive flow of gas, matching the inspiratory flow of the infant or child. This may provide a continuous positive airway pressure similar to that achieved with a nasal mask continuous positive airway pressure (nCPAP). Oxygen therapy can be titrated and added into the flow and used as an adjunct to NHF therapy.

## 1 GATHER EQUIPMENT

Gather equipment pictured below



## 2 PREPARE

Attend to Hand hygiene. Attach High flow delivery device to pole, ensuring it is connected to wall power and sits below the child's head height.



## 3

Install the water chamber by removing the blue caps, attaching plastic elbows and then sliding it into place on the machine. You should hear a click to confirm placement.



## 4

Attach a sterile water bag to the water chamber. It should hang 20cm above the water chamber. The water should flow automatically into the water chamber.



## 5

Now install the universal heated breathing tube. One end connects to nasal prongs, and the other to the machine. Pick the machine end of the tube up and slide the sleeve back.



## 6

Then slide the connector onto the unit pushing the sleeve down to lock.



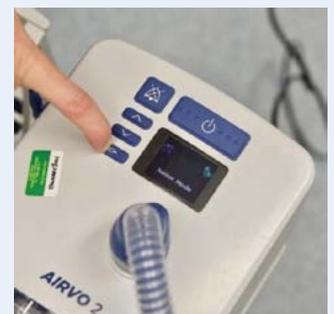
## 7

Attach appropriately sized nasal cannula (see table provided) to the other end of the universal heated breathing tube.



## 8

Turn the High Flow machine on. Review what mode you require: junior or adult (see table provided). To switch to Junior mode, you will need to hold the play button down for 5 seconds until you see confirmation on the screen that it has switched modes.



9

On the screen you will see 3 numbers:

Humidification temperature in orange.

Flow in litres per minute in blue.

Fio2 in green.



10

Refer to the table provided in this document and discuss with the treating doctor the litres of flow required. Set the litres of flow per minute on the machine by pressing the play button twice. Once the L/min appears on the screen hold your fingers on the up and down arrows simultaneously until the number flashes.



11

If the infant or child needs oxygen, attach oxygen tubing from the wall oxygen to the high flow machine.



12

Turn the wall oxygen on. The Fio2 will correspond on the screen. Alter the Fio2 by altering your wall oxygen.



13

PROCEDURE

Attend to hand hygiene and don PPE as required.



14

Review the need for a nasogastric tube. Insert if required (see table below).



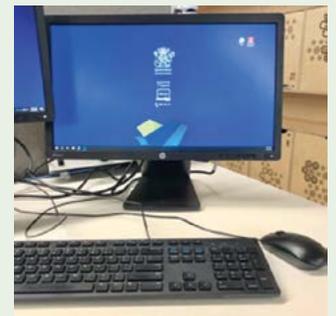
15

Apply chosen nasal cannula to infant or child (see table provided).



16

Document commencement of HFNP and vital signs. Reassess its effectiveness and alter the settings as directed by the treating doctor.



**ALERT**

There are several contraindications to NHFT including, but not limited to: choanal atresia, craniofacial malformations, pneumothorax, facial trauma, airway foreign body (suspected or confirmed). Please review your local policy or procedure to see the full list of contraindications.



## Guidelines for Maximum flow rates for nasal canula

Use the table below to ensure you pick the correct nasal canula to match the flow being delivered to the infant or child. An incorrect nasal cannula will lead to alarms and interrupted flow. The nasal canula should not fully occlude the nostrils. They should only occlude 50% of the nostrils diameter to allow for expiratory airflow.

Nasal Canula (Colour/Animal)	Premature - Red (Ladybird)	Neonatal - Yellow (Bee)	Infant - Purple (Butterfly or Octopus)	Paediatric - Green (Bird or turtle)	Junior - Grey (Dolphin)
Maximum Flow rate	8 L/Min	8 L/Min	20 L/Min	25 L/Min	50 L/Min

## Recommended flow rates:

Use the table below to identify the recommended litres of flow per kilogram per minute and which mode you require:

Child's Weight	Flow Rate	Max Flow Rate	Mode
0-12 kg	2 L/kg/min	Max 25 L/min	Junior Mode
13-15 kg	2 L/kg/min	Max 30 L/min	Adult Mode
16-30 kg	35 L/min	Max 40 L/min	Adult Mode
31-50 kg	40 L/min	Max 50 L/min	Adult Mode
>50 kg	50 L/min	Max 50 L/min	Adult Mode

## Recommendations for the insertion of a Nasogastric Tube (NGT) for NHFT gastric decompression:

Ideally a NGT should be placed prior to initiation of NHF therapy and remain in situ for the duration of therapy. Once the nasogastric is in place, aspirate the NGT for air 2-4 hourly to decompress the stomach.

Recommendations for the insertion of a nasogastric tube	 < 1 Year	 1-3 years	 > 3 years
	Requires insertion of NGT for decompression	Nasogastric tube placement should be encouraged. This is at the discretion of the treating medical officer.	May require a nasogastric tube if GIT distension is an issue whilst on NHF therapy.
		If a NGT is not placed preform hourly abdominal examinations to monitor and assess for distention.	

## Recommendations for Nebulisers and Multidose inhalers (MDI) whilst on NHFT:

During administration of either nebuliser or MDI it is recommended to reduce the flow rates as follows:

- Junior Mode – reduce to 2 L/min and increase the oxygen to 95% Fio<sub>2</sub>
- Adult mode – reduce to 10 L/min and increase the oxygen to 95% Fio<sub>2</sub>

After the nebuliser /MDI is finished, return the patient to the previous settings, returning both the L/min flow and reducing the Fio<sub>2</sub> to the prescribed level.



### ALERT

Due to the risk of aspiration discuss with the medical officer and reduce the flow rate to 2 L/min (if on junior mode) and increase the Fio<sub>2</sub> to 95% or 10 L/min (if on adult mode) and increase the Fio<sub>2</sub> to 95% whilst the infant/child attempts to eat or feed. The maximum time frame recommended for this is 20 minutes.

Please refer to your local policy or procedure for advice on transporting an infant or child on nasal high flow therapy within your hospital.



## Tips in children

- Infants and children may initially be distressed on commencement of Nasal High Flow Therapy. Ensure care givers are present to hold their hands and comfort them. If distress is ongoing, obtain a review from a medical officer and consider simple analgesia.
- You may need to initially set the flow lower than your target goal to increase the child's compliance. For example, if your target rate is 20 L of flow per minute you could start at 10L/min and slowly increase the amount.

## When to escalate care



Urgently seek medical advice in the child with any signs of severe or life-threatening respiratory distress.



Seek prompt senior nursing/medical advice in a child with moderate respiratory distress or worsening symptoms.

## For further information:

[CHQ Guideline: Nasal High Flow Therapy](#)

[Nursing Standard: Enteral Feeding Tubes: Insertion, care and management \(QH only\)](#)

### Video:

[Video: Core Nasogastric Tube Insertion](#)

[Video: Paediatric Strength with Immersion Model \(SwIM\) program: Nasal High Flow Therapy Patient Care and Troubleshooting](#)

[Video: Nasal High Flow Therapy \(QH only\)](#)

## References:

This Queensland Paediatric Emergency Nursing Skill Sheet was developed by the Emergency Care of Children working group (funded by the Queensland Emergency Department Strategic Advisory Panel) with the help of the following resources:

Children's Health Queensland Hospital and Health Service. (2019, May 30). Nasal High Flow Therapy. Children's Health Queensland Guidelines. <https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/guidelines/gdl-70025.pdf>

Scaini, L. (2017). Respiratory Module. In I. Chang, J. Harnischfeger, E. Ellis-cohen, A. Dale, J. Reinbold, B. Walker, C. Gray, & R. McCaffery (Eds.), Children's Health Queensland Transition to Paediatric Practice: Paediatric Intensive Care Program Module 4 (3rd ed., pp. 32–33). State of Queensland (Queensland Health).

Paykel, F. (n.d.). AIRVOTM 2 Humidification System. Fisher & Paykel Healthcare. Retrieved July 7, 2020, from <https://www.fphcare.com/au/hospital/adult-respiratory/optiflow/airvo-2-system/>

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- Ensuring informed consent is obtained prior to delivering care.
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