

Nasal High Flow Therapy (NHFT) using the Airvo™ 2

NHFT 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 NHFT therapy. Fisher & Paykel's Airvo 2 is a common NHFT device used across hospitals in Queensland. This skill sheet relates to the use of the Airvo 2. Other NHFT devices may be used in some health services.



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.

1

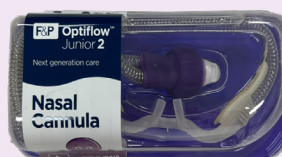
GATHER EQUIPMENT



Breathing tube & chamber kit



Water for irrigation



Nasal prongs



Oxygen tubing (if oxygen is required)

*NHFT is an Aerosol Generating Procedure (AGP). Please follow your local guidelines as to the PPE is required for AGPs.

Nasal Cannula Selection


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

Nasal Canula (Colour/Animal)	Infant - Purple (Butterfly or Octopus)	Paediatric - Green (Bird or Turtle)	Junior - Grey (Dolphin)	Adult Sized Prongs
Flow Range	2-20L/min	2-25L/min	10-50 L/min	10-50 L/Min




2 **PREPARE**

Attend to hand hygiene. Ensure high flow device is attached to a pole, sitting below the child's head height. Plug into wall power.



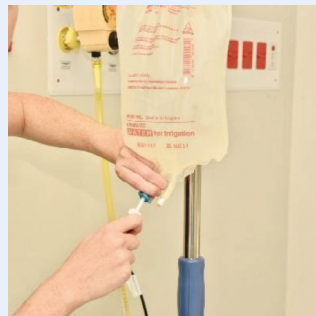
3

Install the water chamber by removing the blue caps and attaching plastic elbows. Slide it into place until you hear a click confirming placement.




4

Attach a sterile water bag to 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.




5

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




6

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



7


Turn the High Flow machine on. Switch to the mode you require (Junior or Adult - see table on next page). To switch between modes, you will need to hold the play button down for 5 seconds until you see confirmation on the screen.



8

In Junior mode, you will see 3 numbers on the screen:

- Humidification temperature in orange.
- Flow in litres per minute in blue.
- Fio₂ in green.



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	2L/kg/min	Max 25L/min	Junior Mode
13-15 kg	2L/kg/min	Max 30L/min	Adult Mode
16-30 kg	35L/min	Max 40L/min	Adult Mode
31-50 kg	40L/min	Max 50L/min	Adult Mode
>50 kg	50L/min	Max 50L/min	Adult Mode



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Refer to the table above and discuss with the treating doctor the litres of flow required.



Child's Weight	Flow Rate	Max Flow Rate	Mode
10-12 kg	20 L/min	Max 30 L/min	Neonate Mode
13-15 kg	25 L/min	Max 30 L/min	Adult Mode
16-20 kg	30 L/min	Max 30 L/min	Adult Mode
21-25 kg	30 L/min	Max 30 L/min	Adult Mode
26 kg	30 L/min	Max 30 L/min	Adult Mode



10

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. Dial from wall oxygen regulator to the desired FiO₂ as displayed on the Airvo 2.


Nasal high flow therapy (NHFT) is an aerosol generating procedure (AGP).

Ensure that adequate personal protective equipment (PPE) is utilised by those caring for the patient.

Refer to local infection control policies and procedures for more information on the required PPE.


13 PROCEDURE

Attend to hand hygiene and don PPE as required.



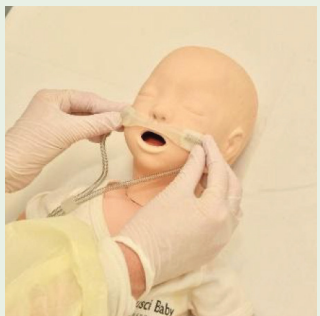
14

Review the need for a nasogastric tube. Insert if required (see table on p4).



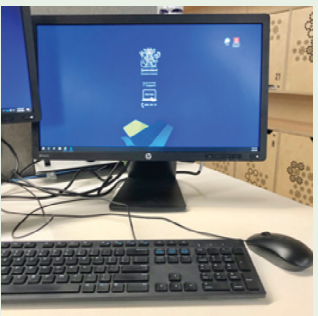
15

Apply appropriately sized nasal cannula to infant or child (see table on p1).





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Document commencement of NHFT. Record the flow and FiO₂ being administered. Attend vital signs. Reassess its effectiveness and alter the settings as directed by the treating doctor.



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.






Tips

- 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 20L/min flow, you could start at 10L/min and slowly increase to the target volume.

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.

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

Some infants will require nasogastric feeds as a part of their treatment. If stable, the insertion of the NGT may occur at the same time as the application of high flow nasal prongs. Always conduct a thorough patient assessment to assess stability prior to any procedure.

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 2L/min and increase the oxygen to 95% FiO₂
- Adult mode – reduce to 10L/min and increase the oxygen to 95% FiO₂

After the nebuliser /MDI is finished, return the patient to the previous settings, returning both the L/min flow and reducing the FiO₂ to the prescribed level.



If the patient has a continued oxygen requirement, you may give the nebuliser through a specialised nebuliser bowl. Please refer to the manufacturer for more detail on the use of this product.



ALERT

When children are receiving high flow oxygen, there is an increased risk of aspiration with oral intake. The high flow will need to be turned down (Junior mode: 2L/min, Adult mode: 10L/min). The FiO₂ should be increased to 95% whilst flow through the high flow set is reduced. The recommended maximum time frame to reduce the flow 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.



For further information:

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

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

Videos

[Nasogastric Tube Insertion \(OPTIMUS Core\)](#)

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

References:

Children's Health Queensland Hospital and Health Service. (2020, June 25). Nasal High Flow Therapy. Children's Health Queensland Guidelines. <https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/guidelines/gdl-70025.pdf>

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Fisher & Paykel Healthcare. (2022). Optiflow™ Junior 2+ OJR520 Nasal Cannula Specifications. Retrieved November 2, 2022 from <https://resources.fphcare.com/content/optiflow-j2-xxl-spec-sheet-pm-615563.pdf>

This Queensland Paediatric Emergency Skill Sheet was developed and revised by the Emergency Care of Children working group Initial work was funded by the Queensland Emergency Department Strategic Advisory Panel.

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- Supporting consumer rights and informed decision making in partnership with healthcare practitioners including the right to decline intervention or ongoing management.

- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary.
- Ensuring informed consent is obtained prior to delivering care.
- Meeting all legislative requirements and professional standards.
- Applying standard precautions, and additional precautions as necessary, when delivering care.
- Documenting all care in accordance with mandatory and local requirements.

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