Queensland Paediatric Emergency Care

Skill Sheets

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

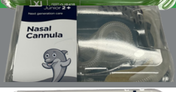
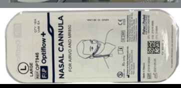
NHFT is used to provide a humidified continuous positive flow of gas, matching the inspiratory flow of the infant or child. This may provide a continuous positive airway pressure similar to that achieved with nasal mask continuous positive airway pressure (nCPAP). Oxygen therapy can be added in to the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

Nasal Prong Selection

Use the table below to ensure you select the nasal cannula that corresponds with the flow being delivered to the infant or child. Incorrect nasal cannula selection will result in device alarms and interrupted flow. The nasal cannula should not fully occlude the nostrils and must allow for expiratory flow.

COLOUR	SIZE	FLOW RANGE
	Neonatal	2-8L/min
	Infant	2-20L/min
	Paediatric	2-25L/min
	Junior	10-50L/min
	Adult Small Adult Medium & Large	10-50L/min 10-60L/min

Flow Rate Selection

Use the table below to ensure you select the recommended litres of flow per kilogram per minute and the mode required:

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

1 GATHER

Water for irrigation

Heated circuit and chamber kit

Nasal prongs

Oxygen tubing (if oxygen required)

Airvo™ 2

2 PREPARE

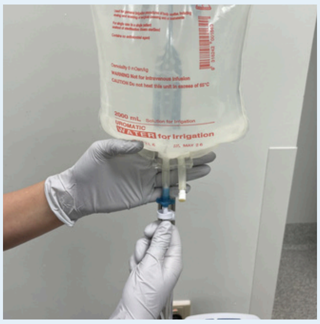
Assemble the water chamber by removing the blue caps. Attach the plastic elbows.

3

Slide the chamber into place until you hear a click.

4

Spike a sterile water bag with the water chamber line. Open the vent cap and the water will flow automatically into the chamber.

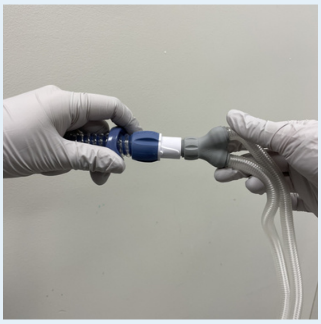


5

Connect the heated circuit tubing to the heated circuit connection port on the Airvo™ 2.

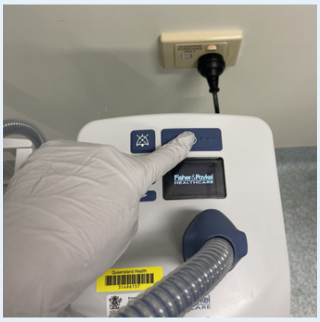
6

Attach appropriately sized nasal prongs to the other end of the heated circuit tubing.



7

Turn the Airvo™ 2 on by holding down the power button. Ensure that the disinfection traffic light display is green.



8

Switch to the required mode. To switch modes, you will need to hold the play button down until you see confirmation on the screen.

9

Three numbers will be displayed:

Humidification temperature

Flow in litres per minute

Fio2 in %

10

Humidification temperature is pre-set to 34°C. To change the temperature, press the play button once.

11

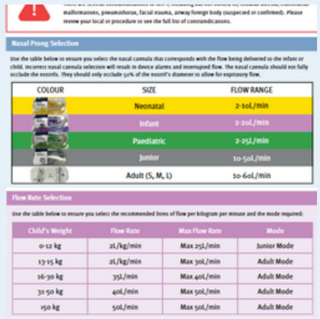
Once the temperature is highlighted, hold down the up and down buttons simultaneously until the number flashes.

12

Program the desired temperature using the up and down buttons and set the temperature by pressing the play button.

13

Refer to the "Flow Rate Selection" Table to select the required litres of flow per minute. Confirm flow rate with doctor.


malformations, pneumothorax, facial trauma, airway foreign body (suspected or confirmed). Please review your local or procedure to see the full list of contraindications.

Nasal Prong Selection

Use the table below to ensure you select the nasal cannula that corresponds with the flow being delivered to the infant or child. Incorrect nasal cannula selection will result in device alarms and interrupted flow. The nasal cannula should not fully occlude the nostrils. They should only occlude 50% of the nostril's diameter to allow for expiratory flow.

COLOUR	SIZE	FLOW RANGE
	Neonatal	2-10L/min
	Infant	2-20L/min
	Paediatric	2-25L/min
	Junior	10-50L/min
	Adult (S, M, L)	10-60L/min

Flow Rate Selection

Use the table below to ensure you select the recommended litres of flow per kilogram per minute and the mode required:

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

14

To change the flow rate, press the play button until the Flow number is highlighted on the display.

15

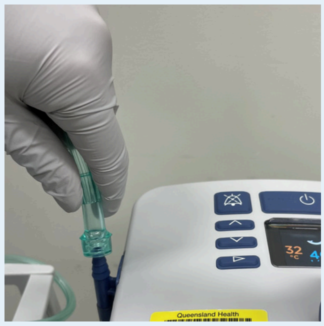
Once the Flow number is highlighted on the display, hold down the up and down buttons simultaneously until the number flashes.

16

Program the required flow rate using the up and down buttons, and set the rate by pressing the play button.

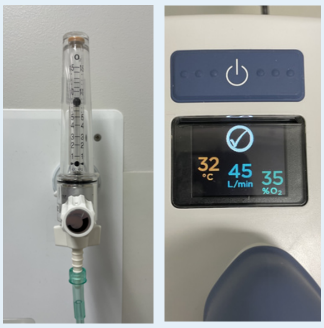
17

If the patient requires supplemental oxygen, attach oxygen tubing from the wall flow meter to the Airvo™ 2 oxygen inlet port.



18

Increase the oxygen flow on the wall flow meter until desired Fio2 is achieved as displayed on the Airvo™ 2.



19

Once settings have been confirmed, the "Ready for Use" tick symbol will be displayed on the screen.

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

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

Refer to local infection control policies and procedures for more information.

20 PROCEDURE

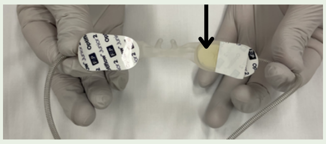
Perform hand hygiene and don appropriate PPE.

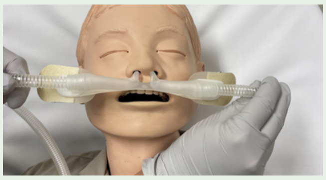
21

Consider whether the patient requires a nasogastric tube. Cluster cares where appropriate.

22

Remove inner paper tabs of wiggle pad. Stretch prongs laterally and apply prongs to patient.





23

Remove outer paper tabs of wiggle pad and secure to face. Ensure prongs and heated circuit tubing are positioned away from neck.

Tips

Children may be distressed on commencement of NHFT. Ensure caregivers are present to comfort them and use distraction techniques. Slow up-titration of flow rate is suggested to increase compliance. For example, starting at 10L/min and slowly increasing to the target flow of 20L/min. If distress is ongoing, obtain a medical review and consider simple analgesia.

ALERT

The Airvo™ 2 does not have an internal battery. It must be plugged into a power point at all times. When transferring a patient of NHFT, ensure that an approved external battery pack is available.

Recommendations for Oral Intake

Patients who are stabilised on NHFT and are showing signs of clinical improvement may be considered for oral intake. Discuss with the medical officer to determine suitability for oral intake and follow local policy in regards to reducing NHFT flow rate.

Recommendations for Gastric Decompression

A Nasogastric Tube (NGT) may be required to assist with gastric decompression. Ideally it should be placed prior to commencement of NHFT and remain insitu for the duration of therapy. Clustering of cares may be appropriate, however first assess if the patient is stable enough to tolerate both procedures at once. Once the NGT is inserted, it should be aspirated every 2-4 hours to decompress the stomach of air. If left untreated, abdominal distension will worsen work of breathing and respiratory effort due to reduced space for the lungs to expand. Infants may also require NGT feeds as part of their treatment.

< 1 Year	1-3 Years	> 3 Years
NGT insertion is strongly recommended. This is at the discretion of the doctor.		May require a NGT if abdominal distension develops.
If a NGT is not inserted, perform hourly abdominal examination to monitor and assess for distension.		

Recommendations for Nebuliser and Metered Dose Inhalers

Patients receiving NHFT may also require administration of inhaled medications. This may be administered by Metered Dose Inhaler using a spacer and mask, or by nebulisation mask. Some facilities may also have the capabilities to administer in-line circuit nebulisation, please refer to local policies regarding this method.

Metered Dose Inhaler
Remove NHFT prongs and administer dose using spacer and mask, ensure a good seal over mouth and nose. See Salbutamol Administration: Metered Dose Inhaler for more information.

Nebulisation mask
Keep NHFT prongs on and prepare medication ampoule, nebulisation mask, pot and tubing as normal.
Junior Mode - reduce NHFT flow to 2L/min and increase oxygen to 95% Fio2 for duration of nebulisation.
Adult Mode - reduce NHFT flow to 10L/min and increase oxygen to 95% Fio2 for duration of nebulisation.

If patient becomes hypoxic, has significant change in stability or there are concerns they may not tolerate NHFT removal, escalate to senior medical officer for review and for consideration of alternative methods.

For further information:

Skill Sheet: Salbutamol Administration: Metered Dose Inhaler
Video: Salbutamol metered-dose inhaler

References:

This Queensland Paediatric 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. (2025, June 9). Nasal High Flow Therapy. Accessed 12 June 2025 from https://qheps.health.qld.gov.au/__data/assets/pdf_file/0037/3314989/gdl-70025.pdf

Fisher & Paykel Healthcare. (2025). F&P Airvo 2 User Manual. Accessed 12 June 2025 from https://resources.fphcare.com/content/airvo-manual-uk-us-and-az-ui-185045495-h-15thmarch22.pdf?_gl=1*iv5pyk*_gcl_au*MzcwNzE5MDk1LjE3NDk2OTYzMDQ.

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.

Skill Sheet Disclaimer